

**City Council
Study Session
Community Wellness SFA
April 28, 2025 - 5:30 PM
City Hall Council Chambers**

AGENDA

CALL TO ORDER

PUBLIC PARTICIPATION

- A. The Auburn City Council Study Session Meeting scheduled for Monday, April 28, 2025, at 5:30 p.m. will be held in person and virtually.

Virtual Participation Link:

To view the meeting virtually please click the below link, or call into the meeting at the phone number listed below. The link to the Virtual Meeting is:

<https://www.youtube.com/user/watchauburn/live/?nomobile=1>

To listen to the meeting by phone or Zoom, please call the below number or click the link:

Telephone: 253 215 8782

Toll Free: 877 853 5257

Zoom: <https://us06web.zoom.us/j/84427787491>

ROLL CALL

AGENDA MODIFICATIONS

ANNOUNCEMENTS, REPORTS, AND PRESENTATIONS

- A. Police Department Annual Report (Caillier) (20 Minutes)

COMMUNITY WELLNESS DISCUSSION ITEMS

- A. Consolidated Annual Performance Evaluation Report (CAPER) for 2024 (Hay) (20 Minutes)
- B. Resolution No. 5825 (Hay) (20 Minutes)
A Resolution adopting the 2025-2029 Consolidated Plan and the 2025 Annual Action Plan

AGENDA ITEMS FOR COUNCIL DISCUSSION

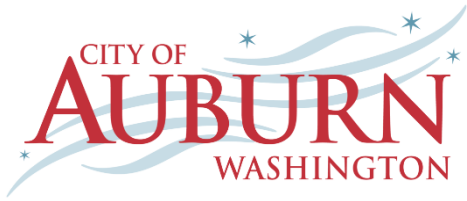
- A. 4th Quarter 2024 Financial Report (Thomas) (20 Minutes)
Financial Report through December 2024
- B. Ordinance No. 6974 (Gaub) (10 Minutes)
An Ordinance granting to Level 3 Communications, LLC, a franchise for fiber optic telecommunications

C. Ordinance No. 6978 (Krum) (30 Minutes)

An Ordinance relating to adoption of a temporary 6-month moratorium on the acceptance, processing, and/or approval of applications for Building and Land Use Development Permits and related Land Use Decisions for Energy Storage System Facilities proposed to be located within the City of Auburn

ADJOURNMENT

Agendas and minutes are available to the public at the City Clerk's Office and on the City website (<http://www.auburnwa.gov>).



AGENDA BILL APPROVAL FORM

Agenda Subject:

Police Department Annual Report (Caillier) (20 Minutes)

Meeting Date:

April 28, 2025

Department:

Police

Attachments:

Annual Report 2024, 2024
Council Pursuit Presentation,
2024 Pursuit Analysis, 24_APD
Annual Report_FINAL, 2024
Annual CIA Review, 2024 Use of
Force Summary, UOF 2024
Council Powerpoint, CIA 2024
Council Powerpoint

Budget Impact:**Administrative Recommendation:**

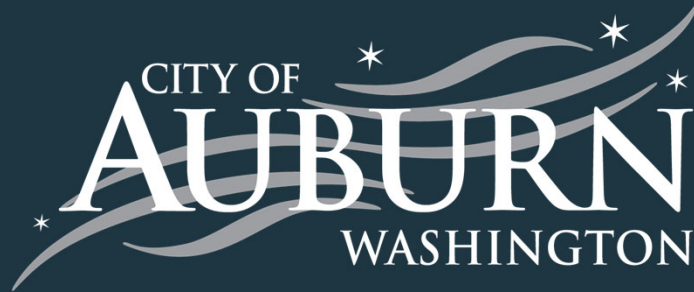
For discussion only.

Background for Motion:**Background Summary:**

The Police Department will present the 2024 Annual Report.

Councilmember: Cheryl Rakes

Staff: Mark Caillier



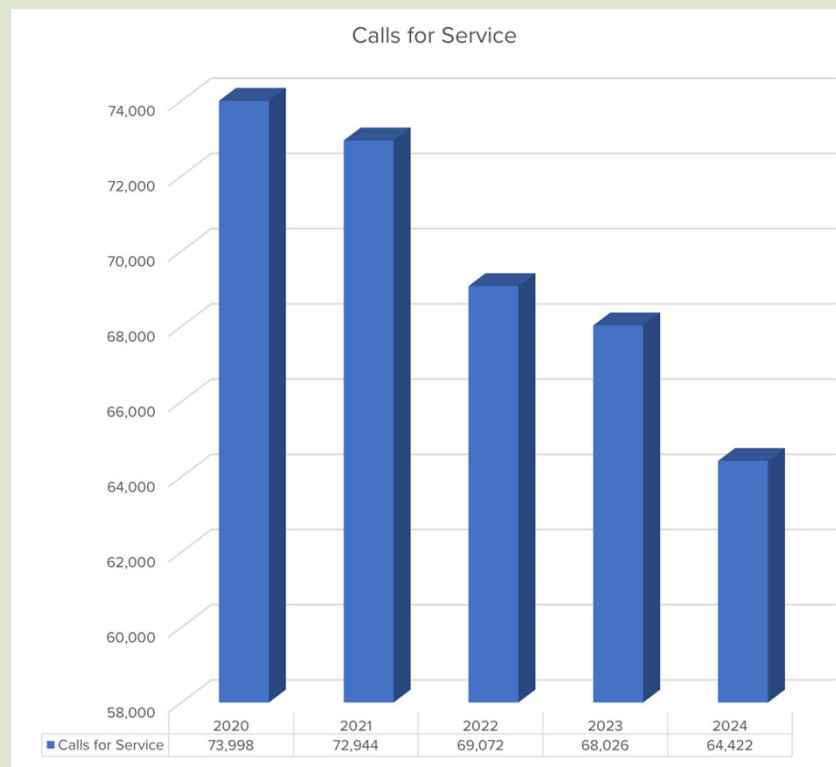
POLICE DEPARTMENT ANNUAL REPORT HIGHLIGHTS

Auburn Police Department

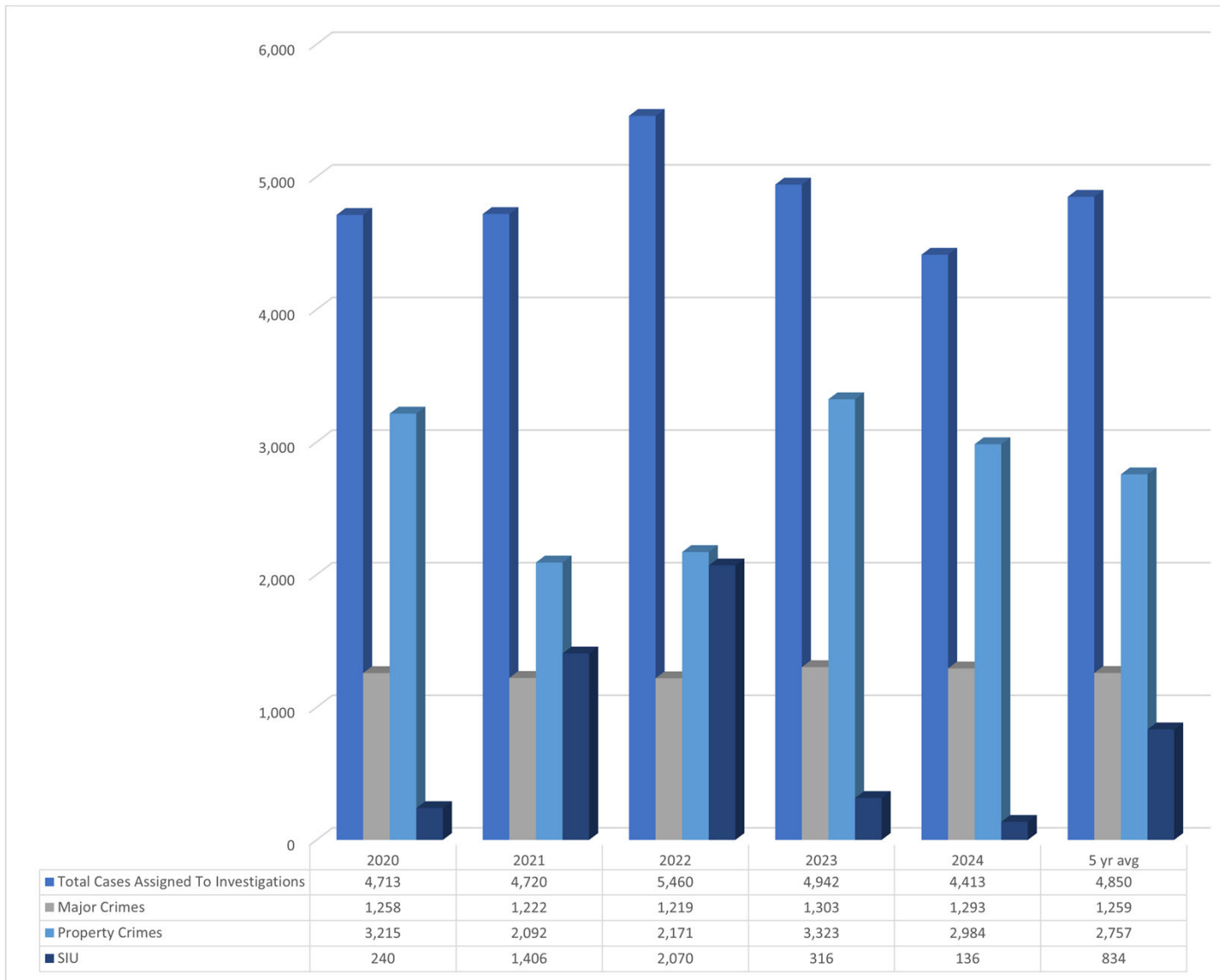
AUBURN VALUES

S E R V I C E
E N V I R O N M E N T
E C O N O M Y
C H A R A C T E R
S U S T A I N A B I L I T Y
W E L L N E S S
C E L E B R A T I O N

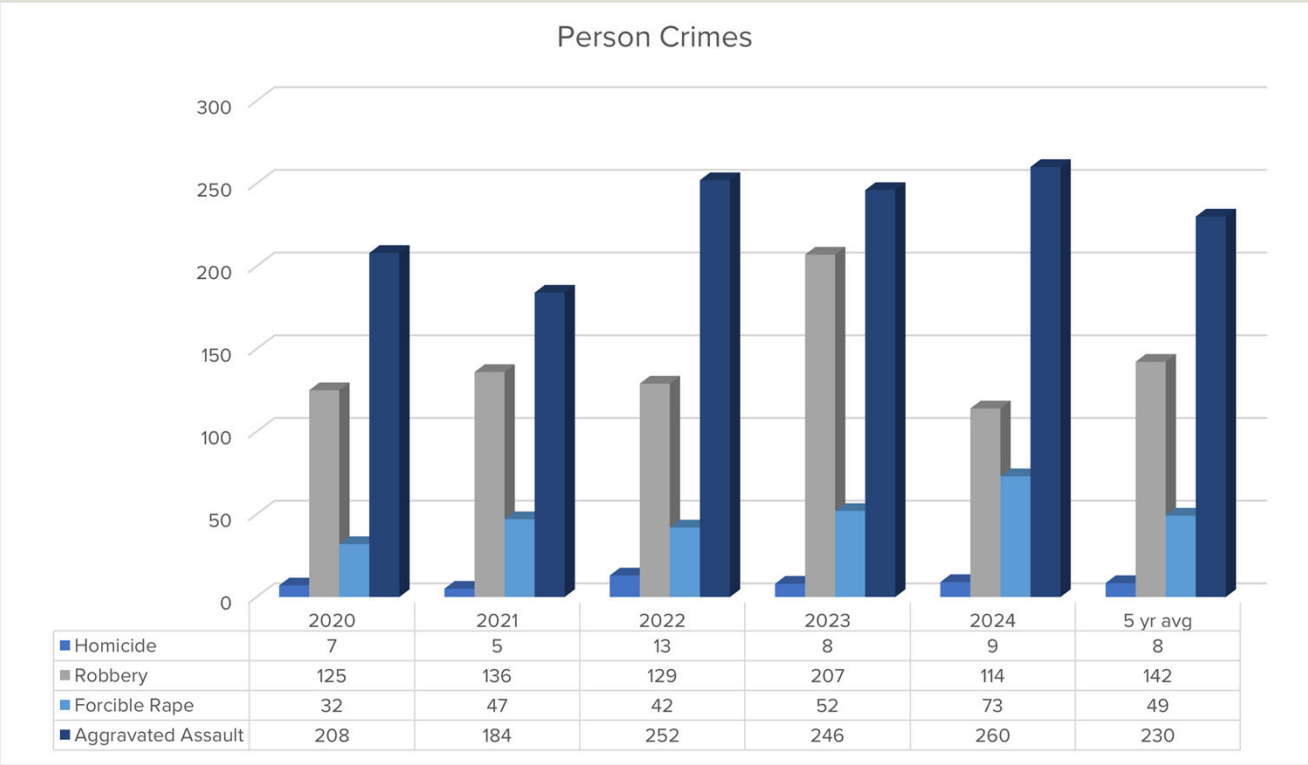
CALLS FOR SERVICE



SERVICE • ENVIRONMENT • ECONOMY • CHARACTER • SUSTAINABILITY • WELLNESS • CELEBRATION

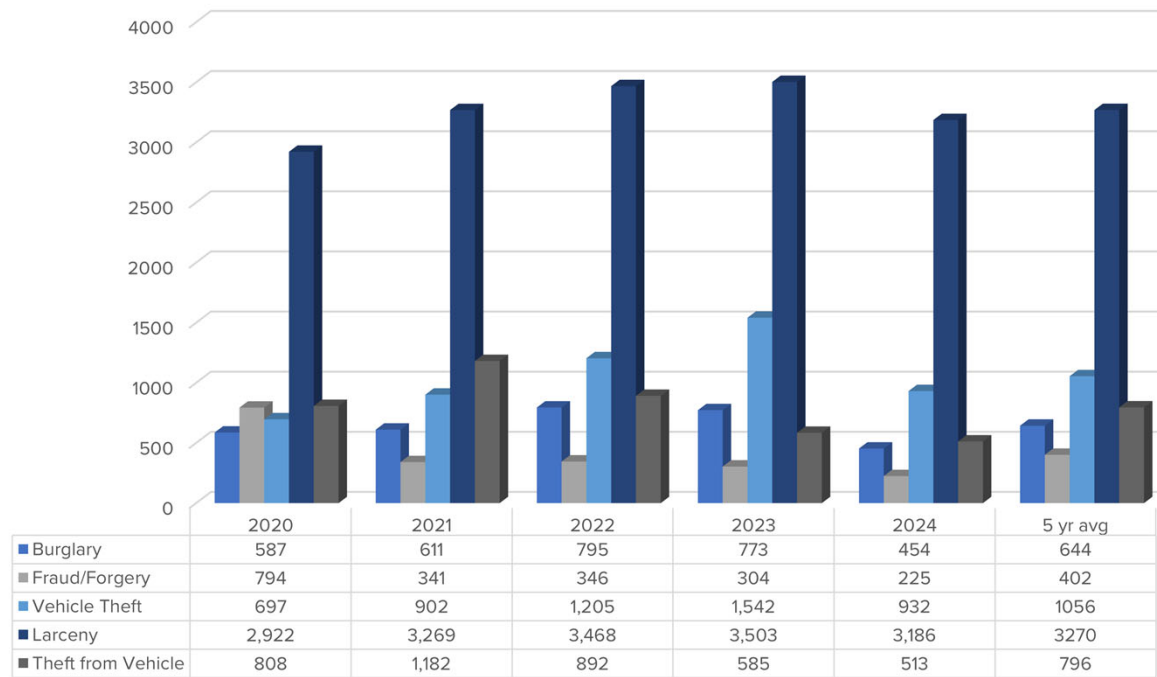


FELONY INVESTIGATIONS

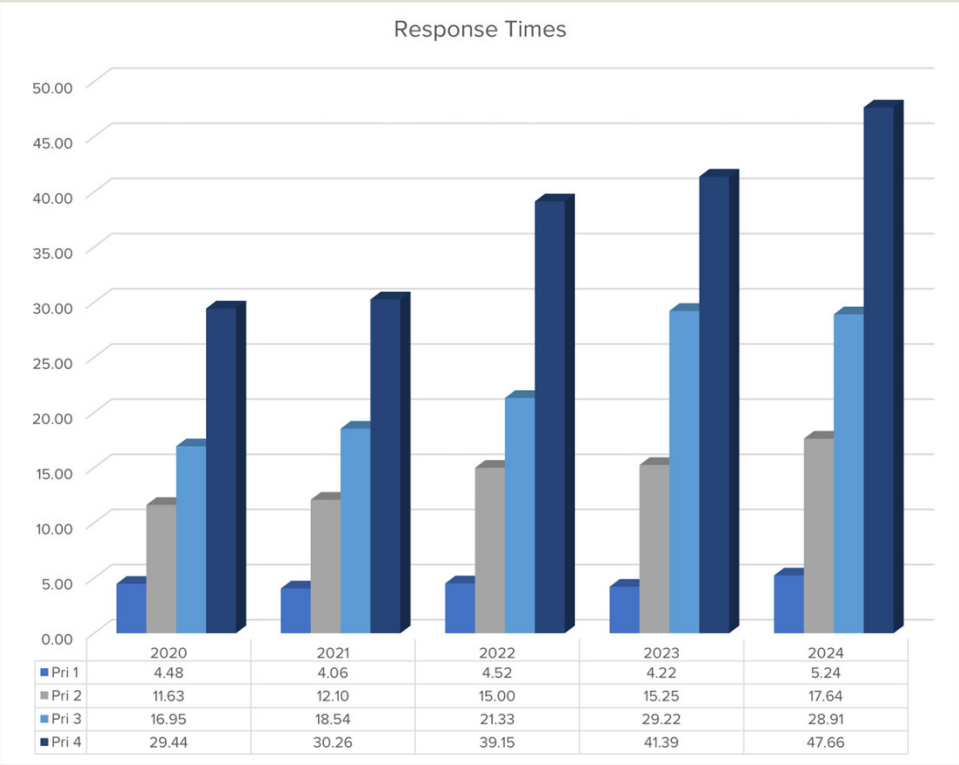


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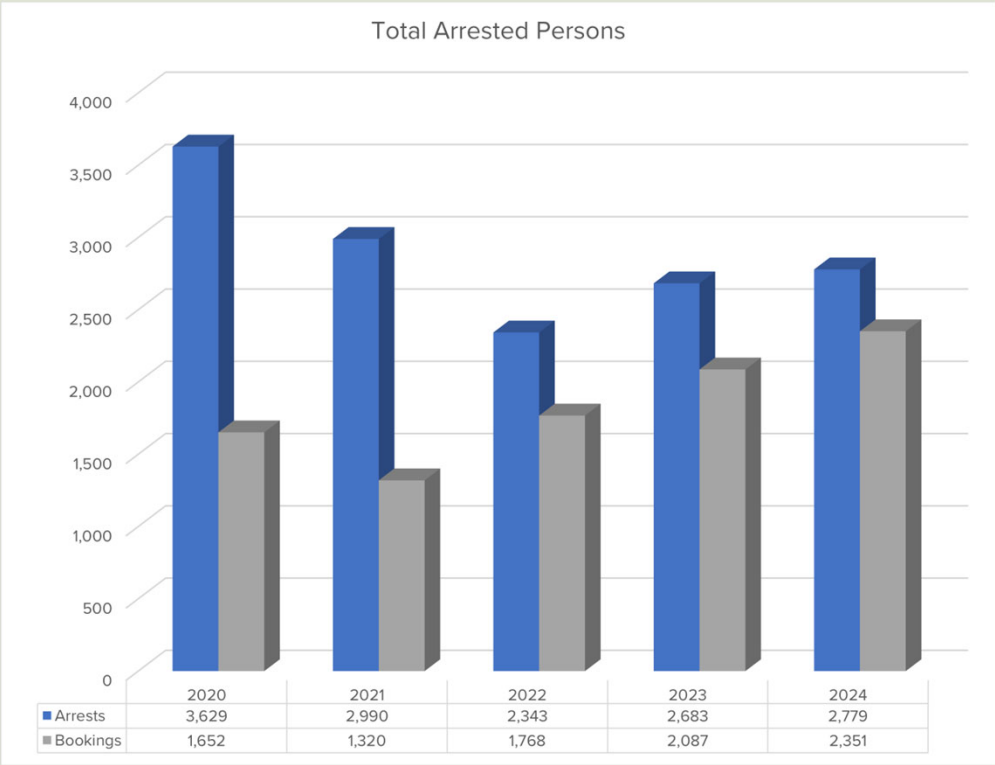
Property Crimes



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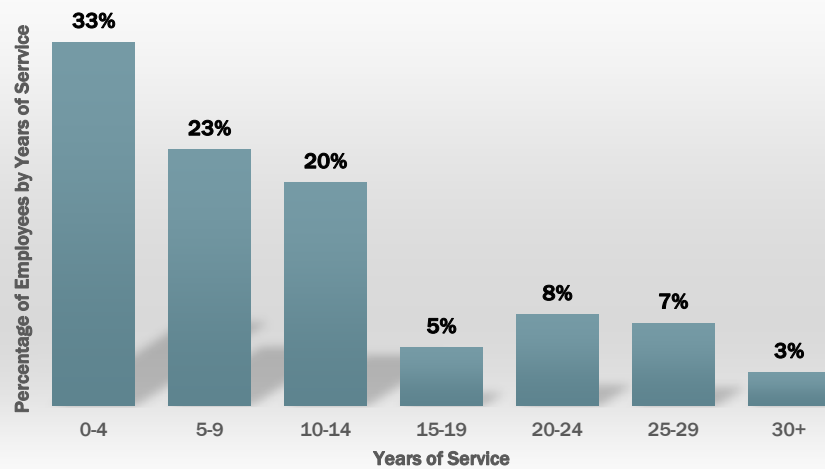


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EMPLOYEES

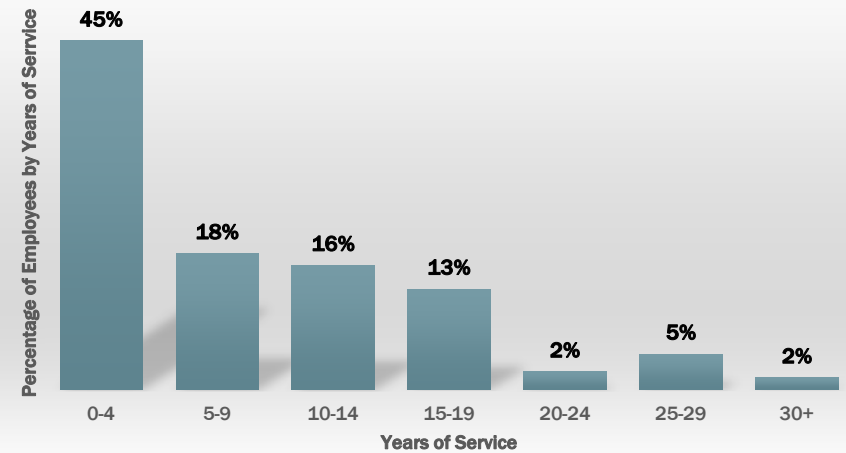
2020

All Employees by Years of Service



2025

All Employees by Years of Service

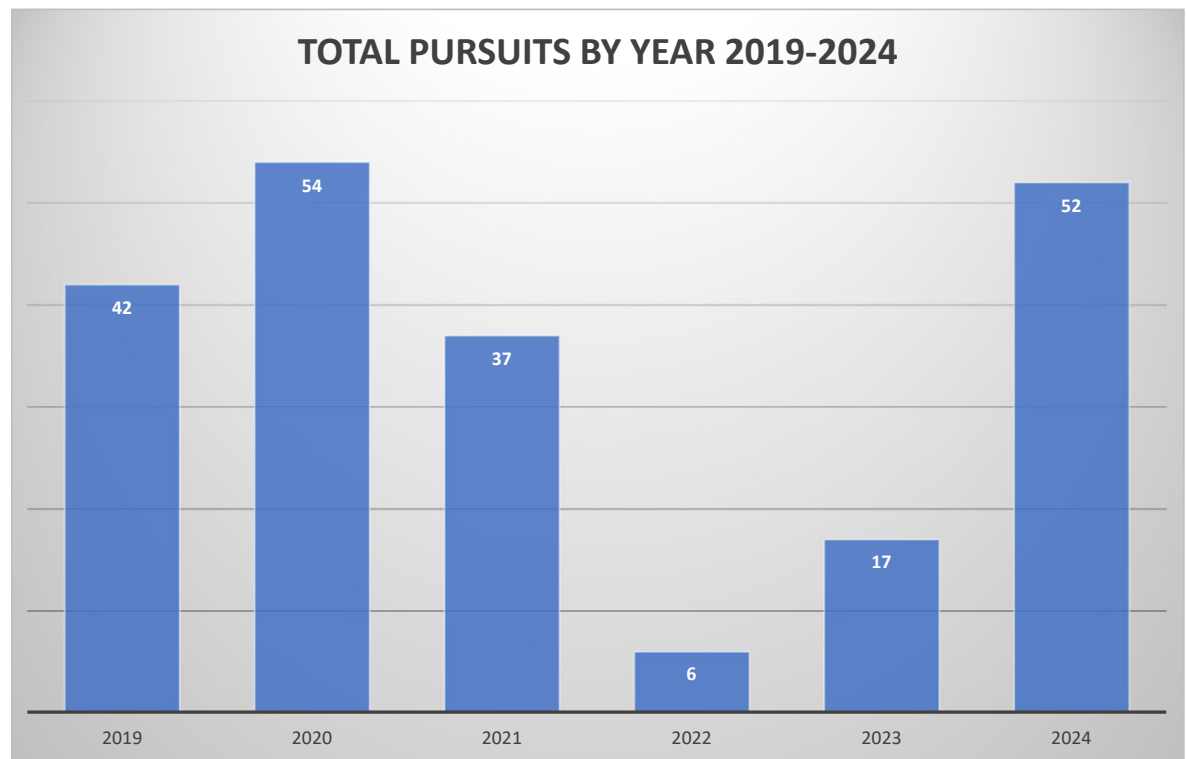


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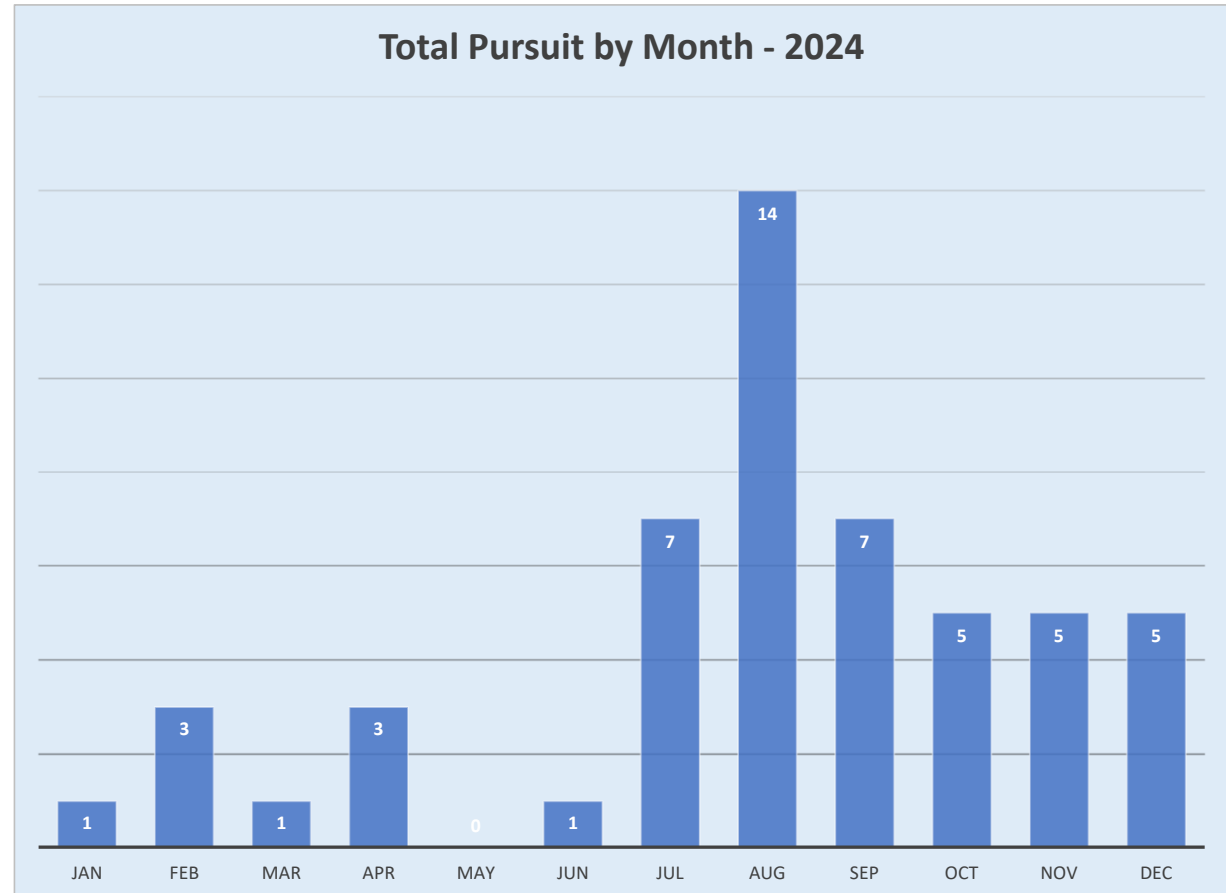
Auburn Police Department 2024 Pursuit Analysis

Commander Todd Byers

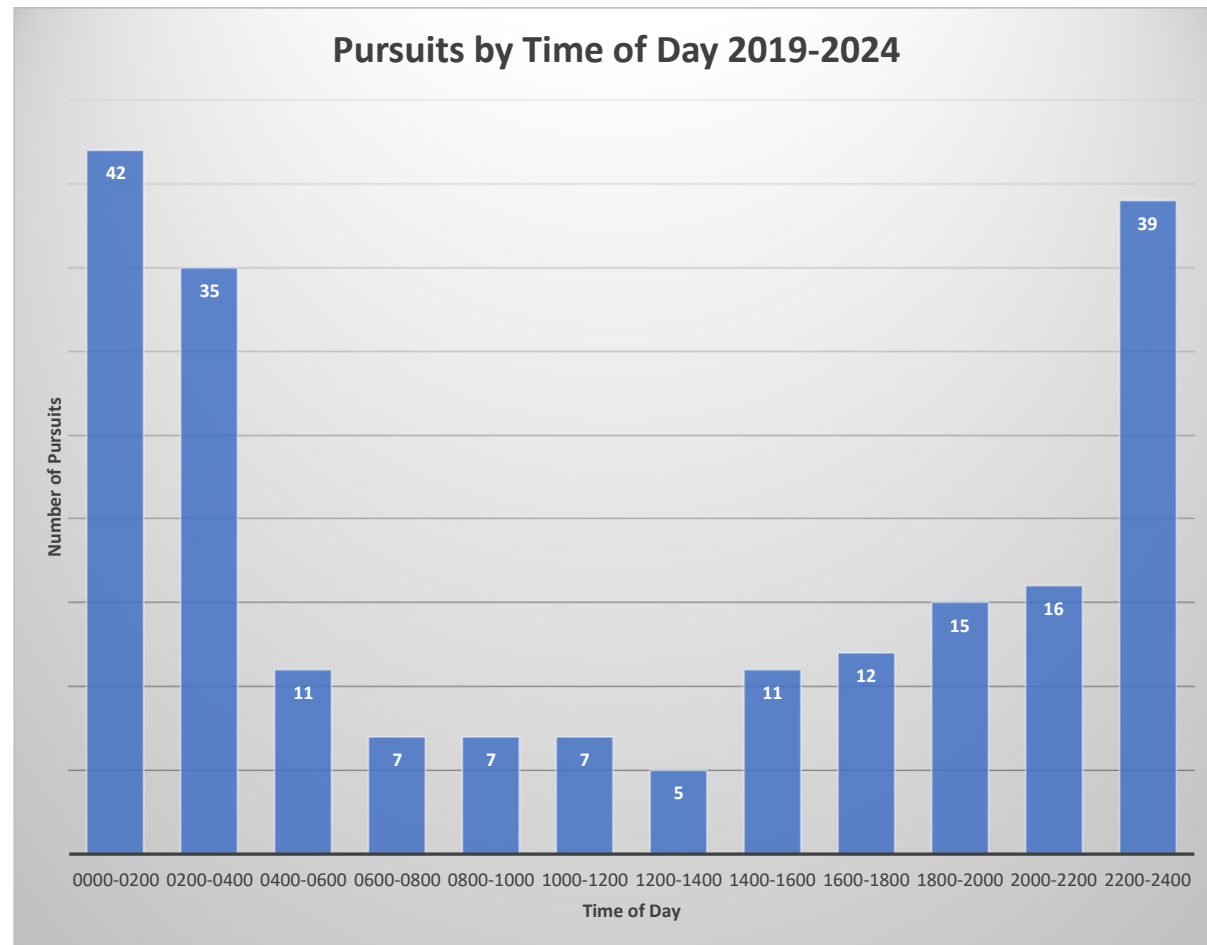
There was a significant statistical increase in the number of pursuits in 2024 as they increased by 205%. However, there were only seventeen pursuits in 2023



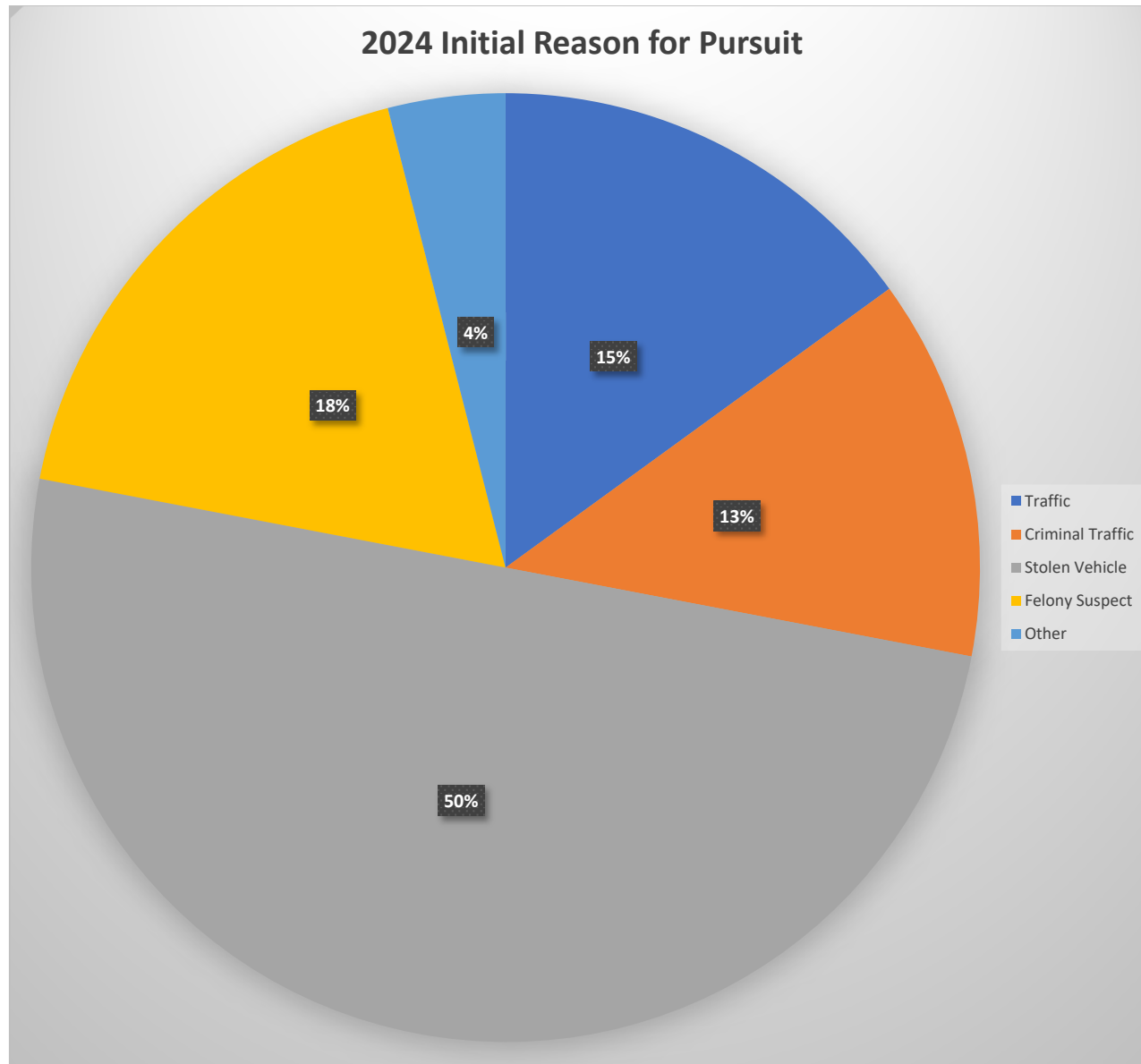
The month of August had the most pursuits in the City of Auburn, with fourteen. July and September had seven each.



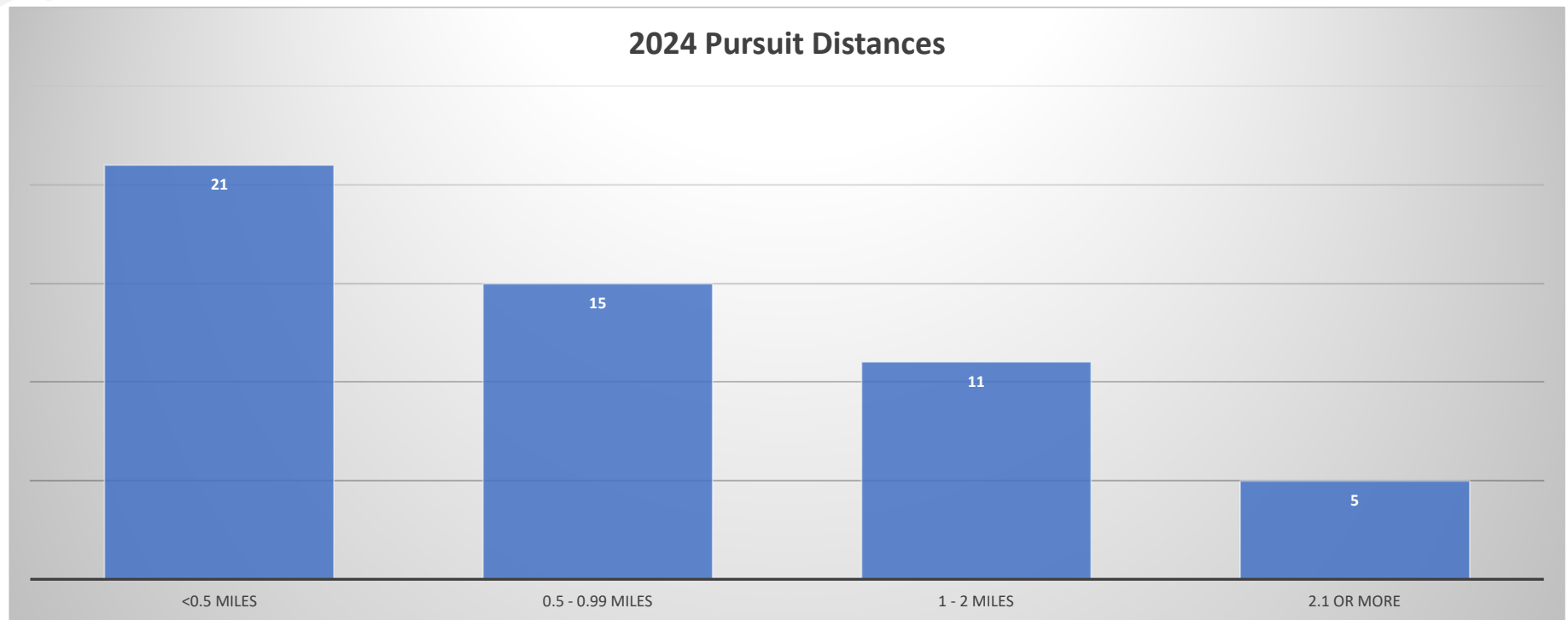
Pursuits in Auburn historically occur between 2000 hours and 0400 hours. The period between the hours of 2200 and 0200 has the highest frequency of pursuits, followed by 0200-0400 hours. This continued in 2024 as 28 of the 52 pursuits occurred between these hours.



In 2024, the legislature relaxed the requirement to pursue by passing Initiative 2113, which became law, June 6, 2024. This returned the ability for the Police to pursue for less violent offenses. It continued to mandate that Police constantly weigh the danger to the public created by the pursuit against the danger created by the suspect escaping.



In 2024 the total number of miles Auburn Officers pursued suspects was 47.45miles, versus 33.3 miles in 2023. This was an average of .91 miles for the fifty-two pursuits, whereas in 2023 the seventeen reported pursuits averaged 1.96 miles per pursuit.



Initiative 2113

- Initiative 2113 became law on June 6, 2024. This restored autonomy to law enforcement agencies within the state. This initiative removed restrictions previously implemented by the legislature regarding Police pursuits. It allowed the Department to implement a pursuit policy that is determined by Chief Caillier and can be modified as needed based upon local crime trends, performance by the officers, and the standards and expectations of the community.

Pursuit Analysis 2024



This document is to report 2024 pursuit information, conduct a comparative analysis against recent years on a variety of pursuit aspects, offer suggestions on how to improve decision-making during pursuit driving by Auburn Officers, and to identify areas where Emergency Vehicle Operators Course training can be enhanced.

Commander Todd Byers

AUBURN POLICE DEPARTMENT

2024 PURSUIT ANALYSIS

The information in this analysis was obtained from a combination of Spillman Incident reports and pursuits reported via *Supervisors Report of Pursuit* in Blue Team to IA Pro.

The current procedure for collecting data on pursuits is outlined below and in the Auburn Police Department Policy Manual, Chapter 307.

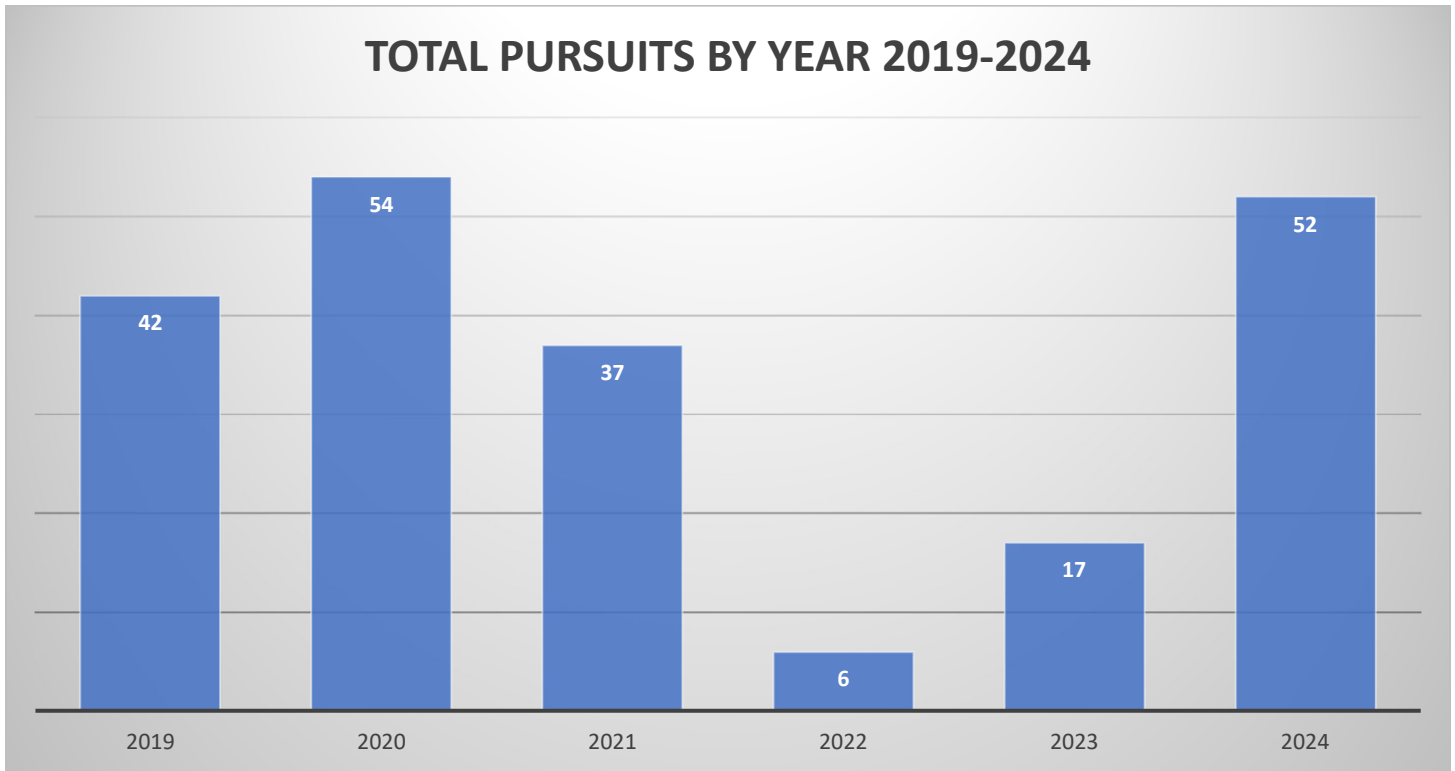
Vehicle Pursuit Reporting

1. Immediately following pursuits, patrol supervisors are responsible for completing a *Supervisory Report of Pursuit* through Blue Team. This report is forwarded through the chain of command to the Chief of Police. The Division Commander has the option of providing additional critiques for any pursuit, for training purposes. All pursuits are documented in this manner and reviewed for this analysis. The report is then forwarded to Inspectional Services and added to IA Pro.
2. Following the pursuit, at the next opportunity, the patrol supervisor completes the *Supervisors Report of Pursuit*. Oftentimes, this occurs immediately following the pursuit. The first line supervisor will interview the involved officer(s) and review all available in-car and body worn camera video, prior to completing this report. The purpose of this report and critique is to identify those aspects of the pursuit that went well and those that could be improved upon. It is also designed to determine whether the pursuit met the policy manual guidelines, or whether it deviated from the guidelines. If the pursuit deviated from policy, a determination should be made as to whether this deviation was acceptable. If it was acceptable, the EVOC coordinator can then determine whether a policy modification is in order. If the deviation is unacceptable, the officers actions/decision will be reviewed, documented and the appropriate discipline and training will take place.
3. Once the Office of Inspectional Services logs the report, it is then available to the Emergency Vehicle Operators Course (EVOC) coordinator for the purposes of data collection, annual analysis, evaluating and/or recommending changes to the pursuit policy, as well as identifying potential training opportunities.

2024 Pursuit and Comparative Analysis

On the pages following is a collection of key charts and tables that cover vehicle pursuits by type, time of day, tactical intervention and more. In addition, key observations for each category are provided.

Chart 1. Total Pursuits by Year



Observations: In 2024 there was a 205% increase in the number of pursuits from 2023. This increase is directly attributable to Initiative 2113 becoming law, June 6, 2024. This Initiative allowed pursuit policies and limitations to be determined by individual departments.

Chart 2

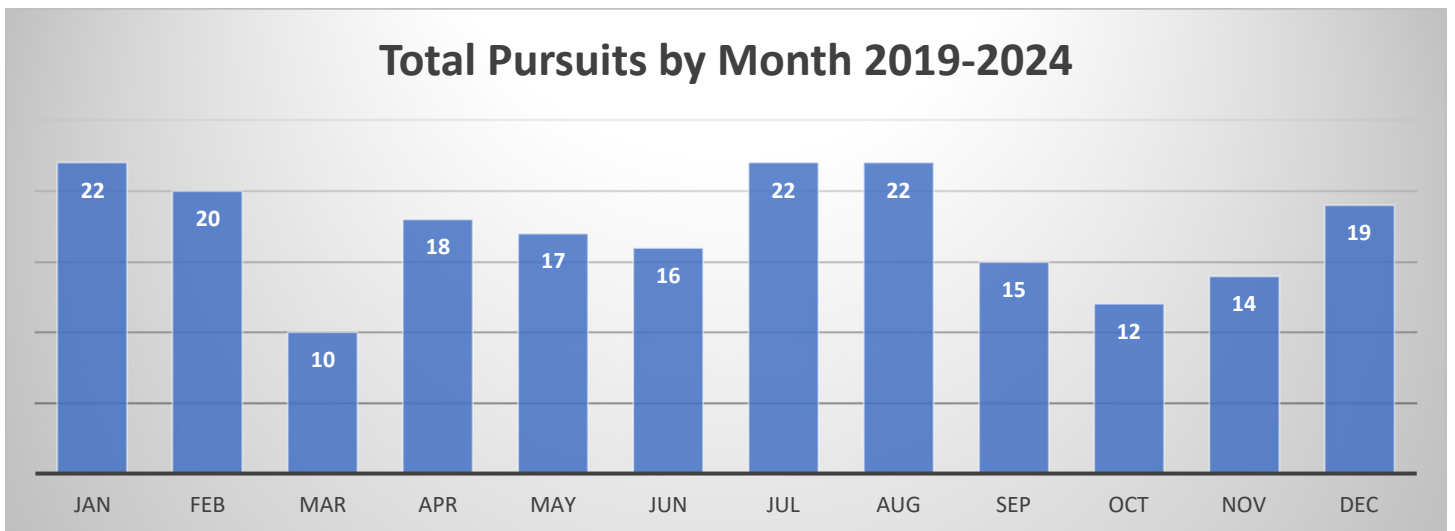
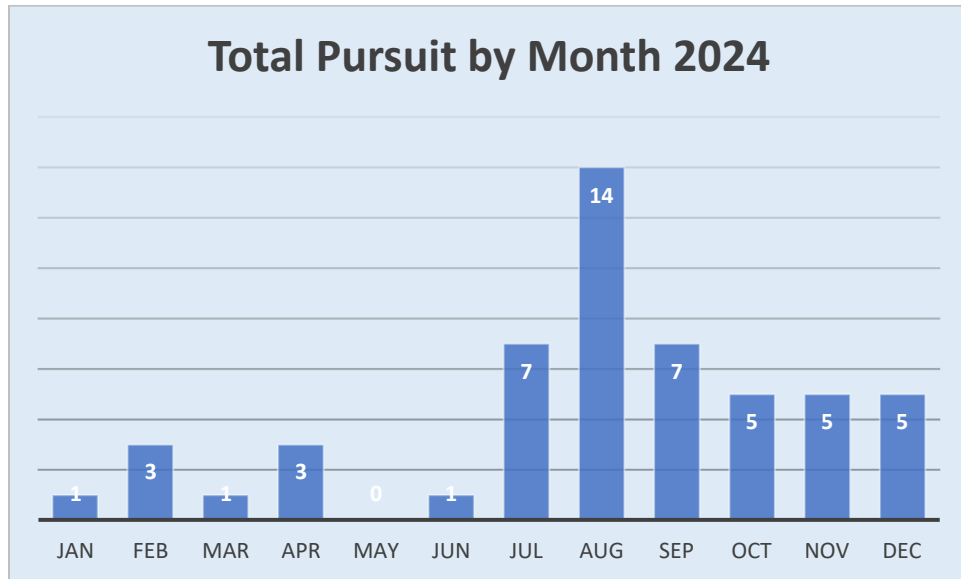


Chart 3



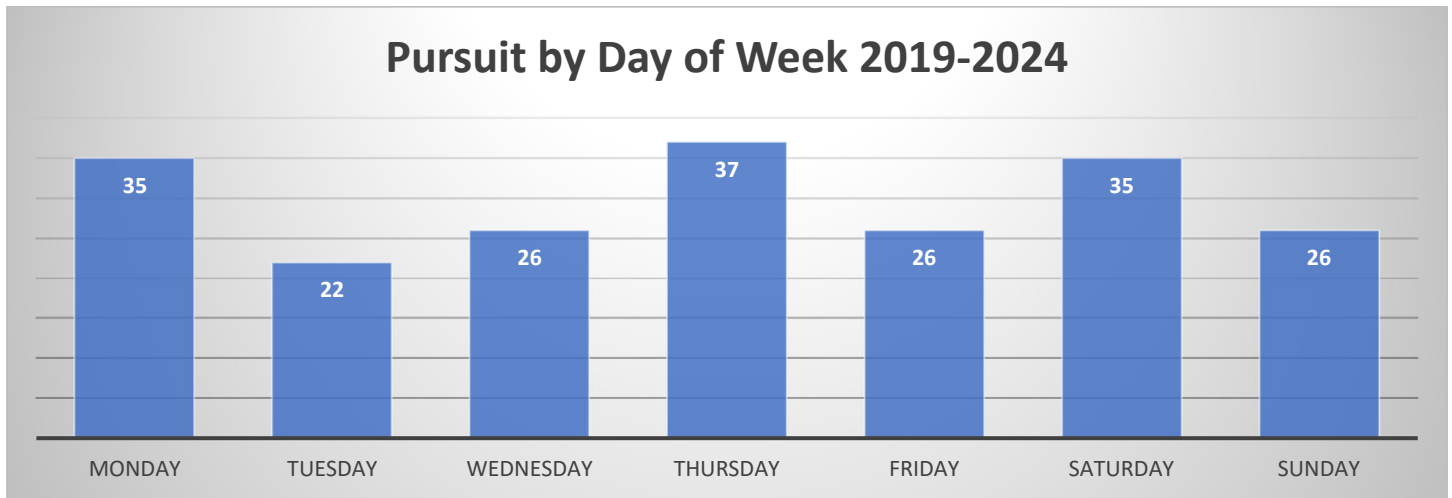
Observations:

Chart 2: There is no significant trend in the cumulative number of pursuits by month. August has the highest number of pursuits for 2024 at 14. There were seven pursuits each in the months of July, September.

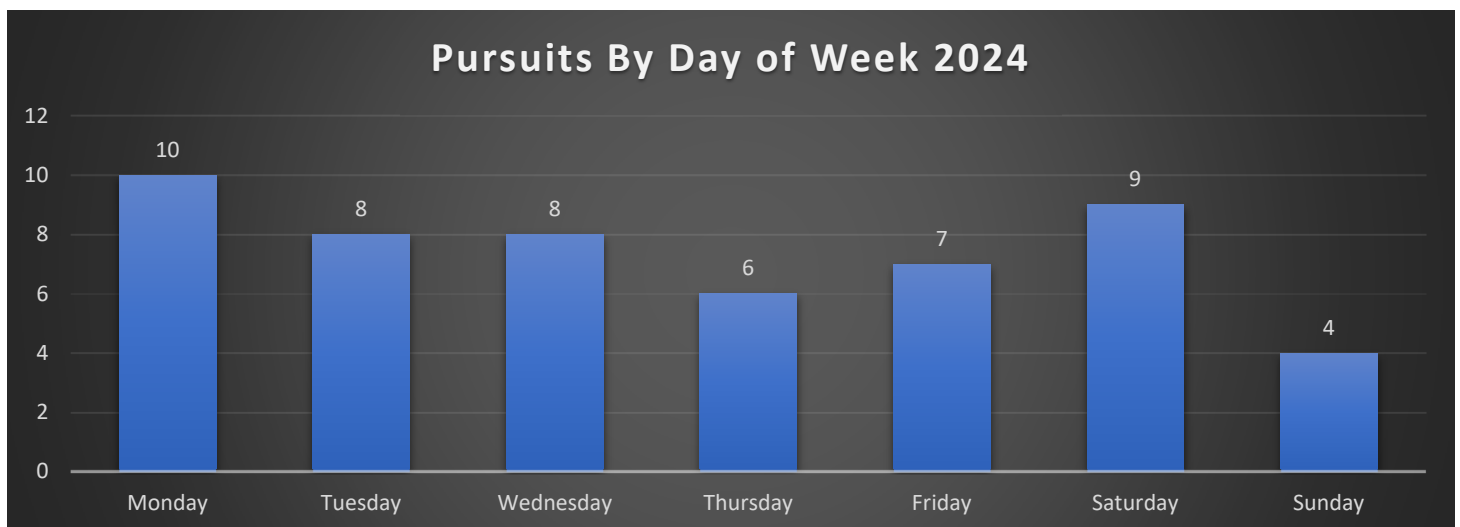
Chart 3: Due to legislation and policy changes in June of 2024, there was a significant increase in the number of total pursuits in second half of 2024. The total number of pursuits for the entire year 2023 was seventeen.

Officers were once again allowed to pursue offenders that failed to obey the initial order to stop or that had committed less serious crimes.

Chart 4. Pursuits by Day of the Week 2019-2024



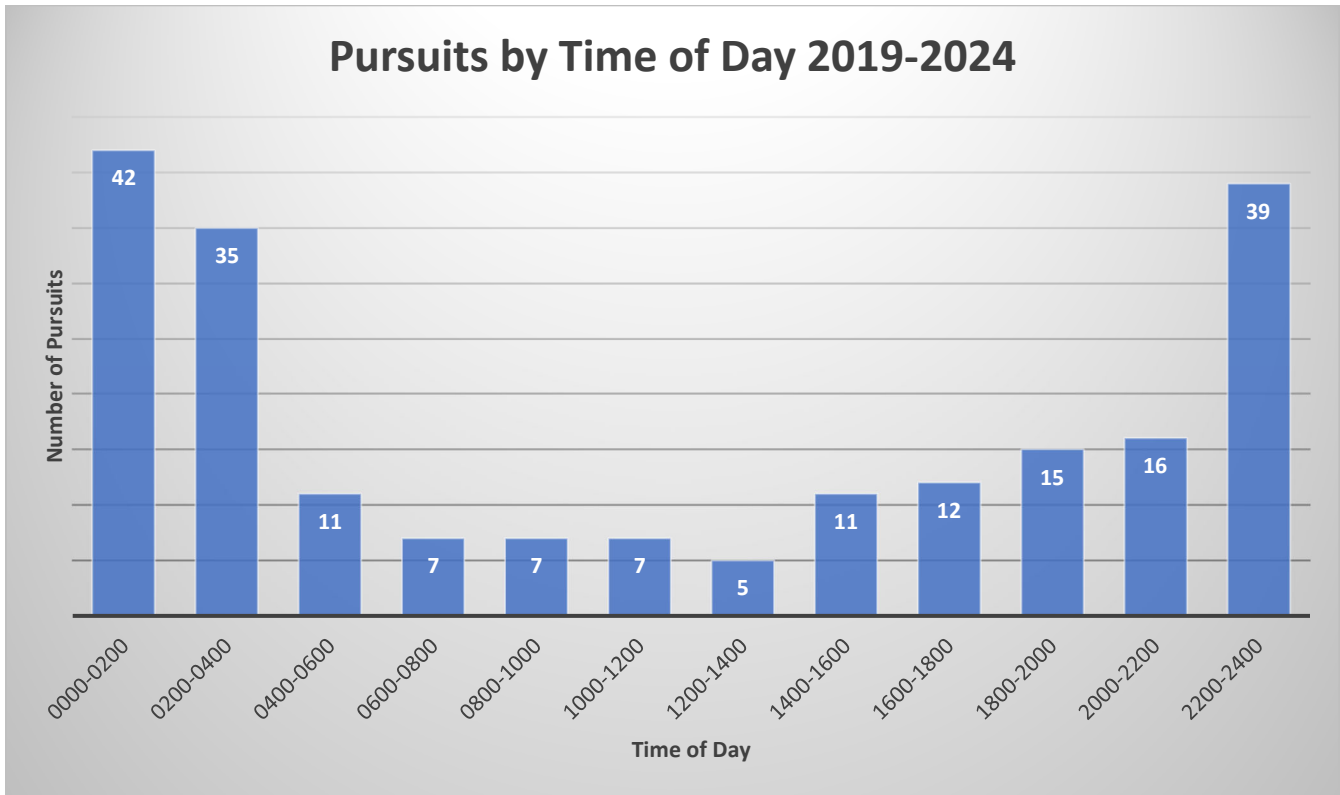
Pursuits by Day of the Week 2024



Observations:

- ❖ Weekends typically have more pursuits. However, this changed in 2024 with the most pursuits, 10, occurring on Monday.
- ❖ In 2024, There were 10 pursuits on Monday, 9 on Saturday and 8 each on Tuesday and Wednesday.

Chart 5. Pursuits by Time of Day (2019-2024)

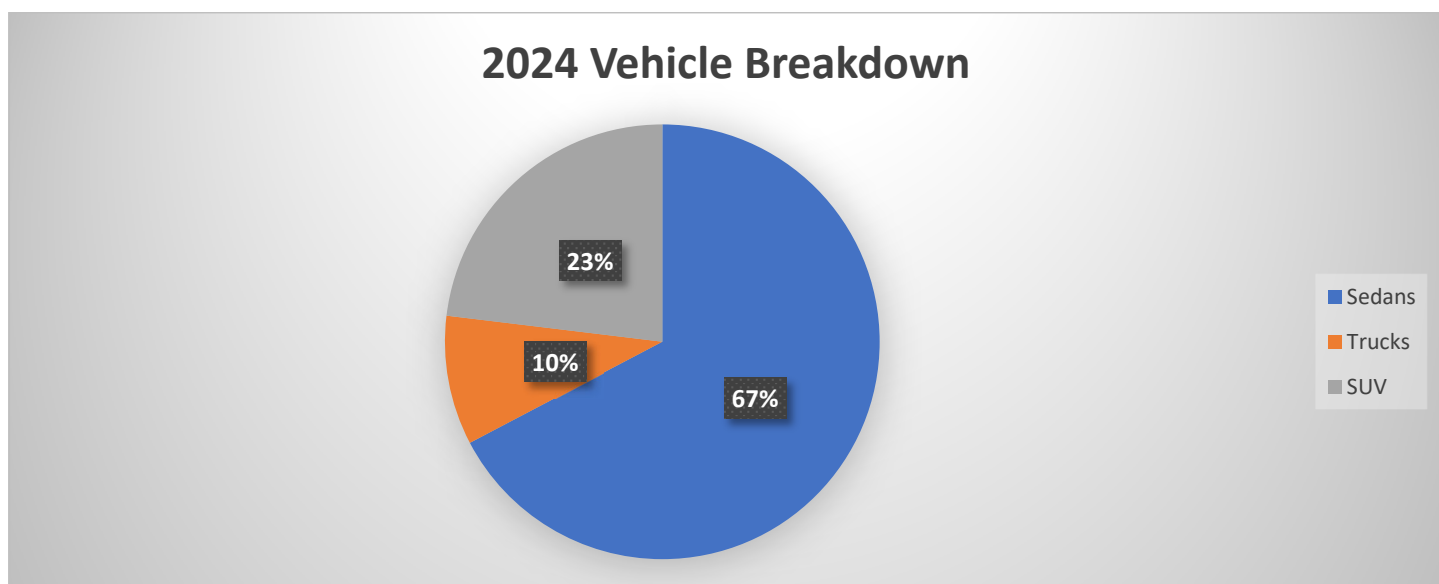


Observations:

Pursuits in Auburn have traditionally occurred between 2000 hours and 0400 hours. In 2024 the period between the hours of Midnight and 0400 had the highest frequency of pursuits. There are several possible explanations for this. During this time there are favorable traffic conditions. The ratio of officers versus citizens on the road is greatest at this time, and Auburn crime data indicates the criminal element is more active between these hours. Except for the afternoon rush hour, this is reflective of the APD workload and staffing distribution. Patrol staffing deployment between these hours is increased as this period correlates with the hours of the highest calls for service.



Chart 6. Pursuits by Vehicle Type



Observations:

Sedans traditionally make up most vehicles initiating pursuits. In 2024, 35 pursuits involved Sedans, making up 67% of the total. SUVs were pursued 12 times, making up 23% of the total. There were no pursuits involving vans or motorcycles.

Chart 7.

Chart 8.

Observations: Most pursuits occur at night and on dry roadways. Historically, this is a stable trend for pursuits in Auburn.

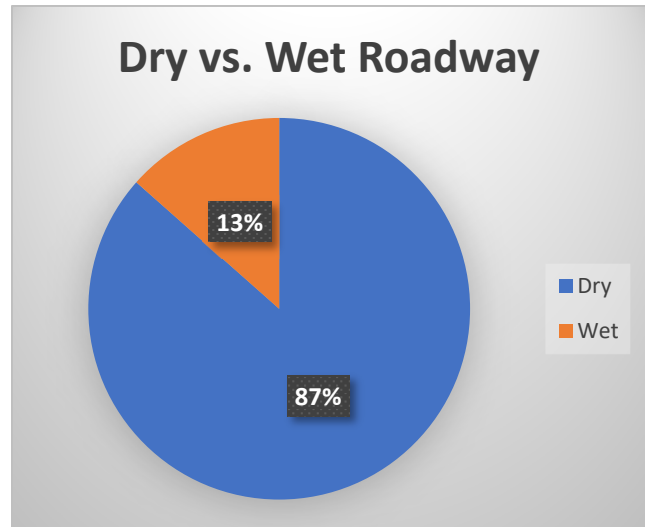
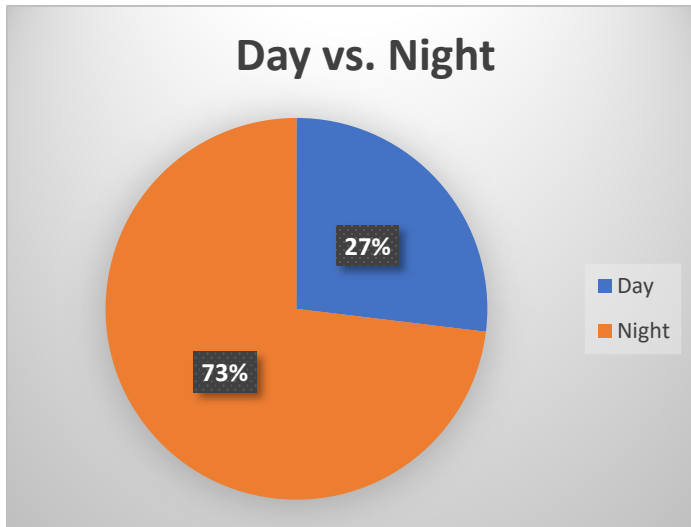
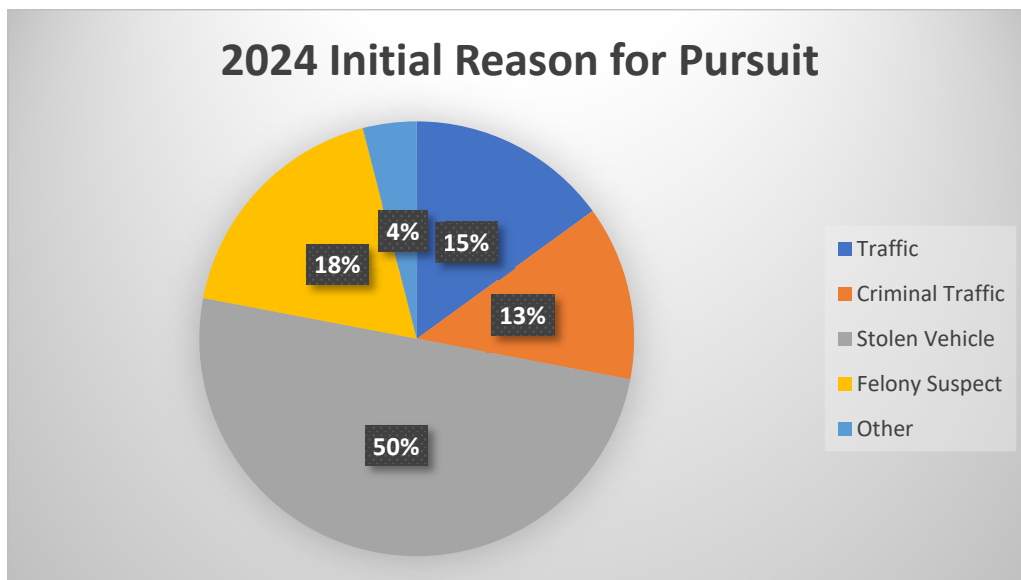


Chart 9. Initial Reason for Pursuits

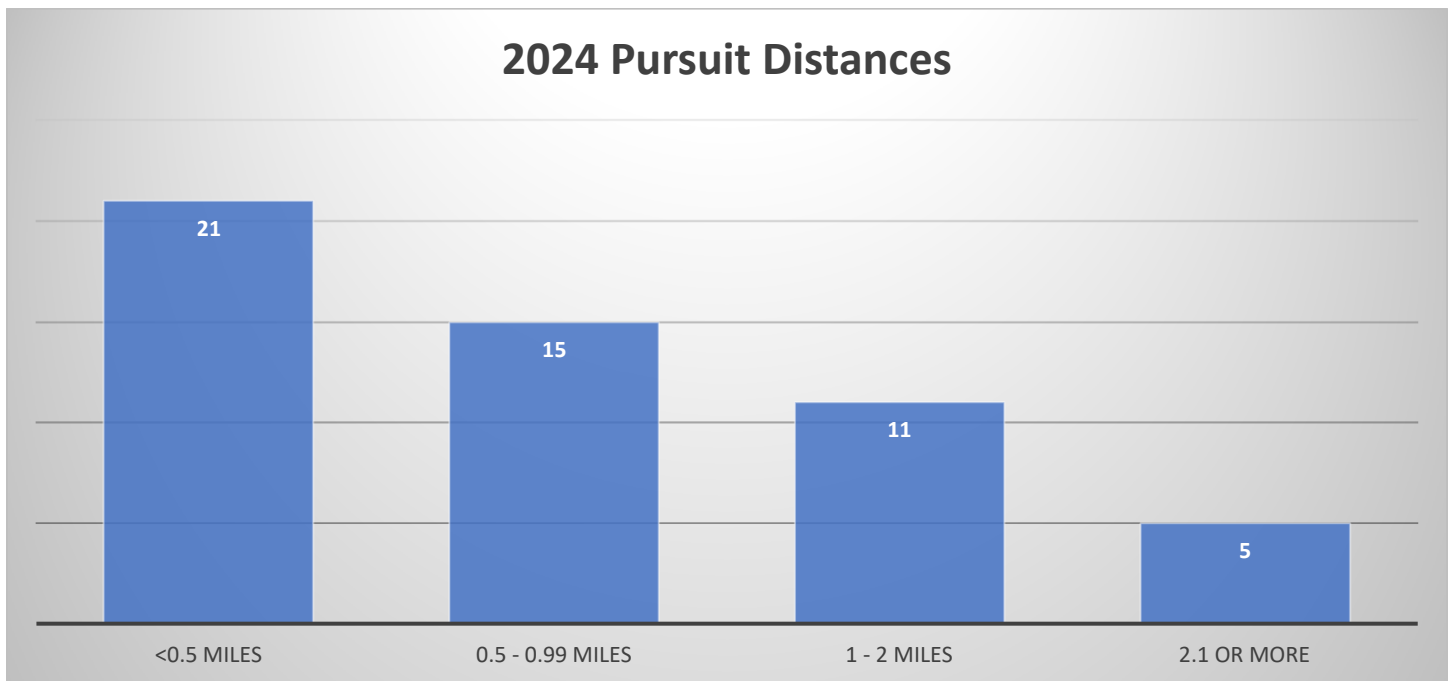


Observations:

- ❖ Definition: The *Initial Reason for Pursuit* refers to the crime or infraction observed by the officer that provided probable cause for the initial stop. The purpose for collecting this data is to show that officers often have only limited knowledge as to the underlying reasons why suspects are fleeing from them.

- ❖ In 2024, 50% of pursuits were initiated for stolen vehicles. 18% of pursuits were initiated for felony suspects. In 2023 65% of pursuits were for felony suspects. This can be directly related to the more restrictive law in place at that time.
- ❖ In 2024, there was a significantly higher number of pursuits for non-felony crimes. This was related to the legislative and policy changes that allowed officers to pursue for these offenses.

Chart 10. Pursuit Distances

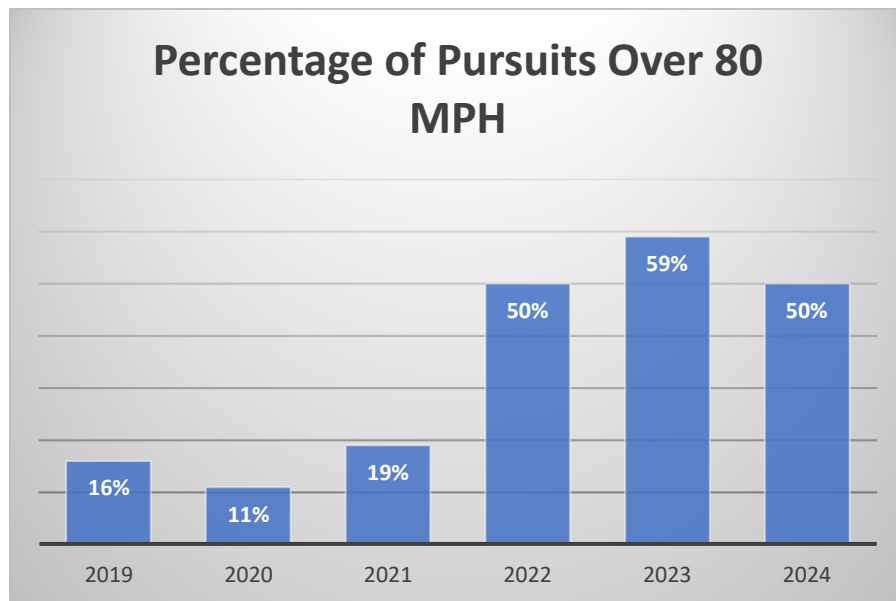


Observations:

- ❖ Chart 10 depicts the categorical distance of the fifty-two pursuits in 2024.
- ❖ In previous years, officers were reporting exact distances of pursuits. That changed when all reports of pursuits were entered into Blue Team. This program only reports the distance by category. However, a rough estimate was still available. Through training, the department has been able to reduce the length of pursuits such as in 2017, When the average pursuit was less than one mile (0.94).
- ❖ In 2024 the total number of miles Auburn Officers pursued suspects was 47.4 miles, versus 33.3 miles in 2023. This was an average of .91 miles for the fifty-two pursuits in 2024, whereas in 2023 the 17 reported pursuits averaged 1.96 miles per pursuit.

- ❖ Also, in 2024 the shortest pursuit, (aside from those pursuits that were immediately terminated), was less than one-quarter of a mile, with a total of 21 pursuits that were less than one-half mile in length.

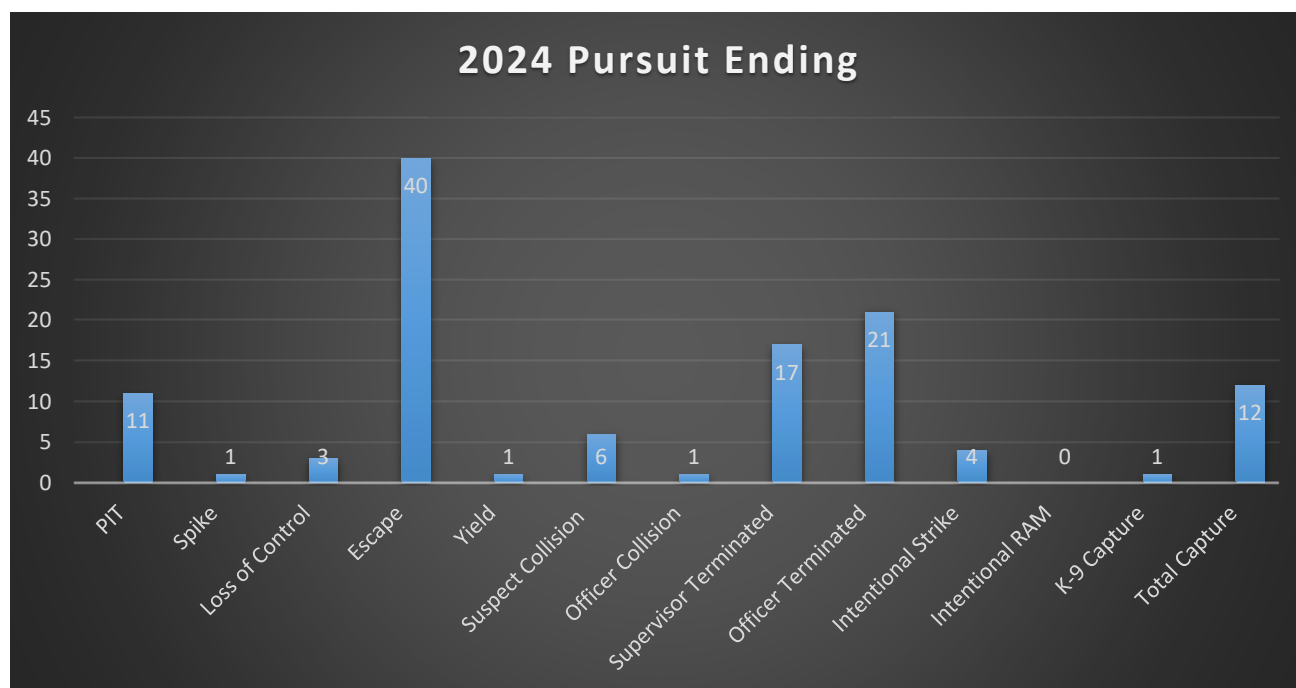
Chart 11. Pursuit Speeds (2019-2024)



Observations:

- ❖ Of significant note is the percentage of pursuits during each year with sustained speeds at 80 MPH or greater. The reason for selecting this range of speeds is so officers understand the importance of ending pursuits as soon as possible. Furthermore, there is a correlation between high speeds and prolonged distance, to pursuits that end in a collision. The above chart shows the percentage of pursuits between 2019 and 2024 that were classified at speeds greater than 80 MPH. All years prior to 2019 were a combined average of 19.6% over 80 MPH.
- ❖ The 50% total for 2024 was a 9% drop from the total number of pursuits over 80 MPH in 2023.

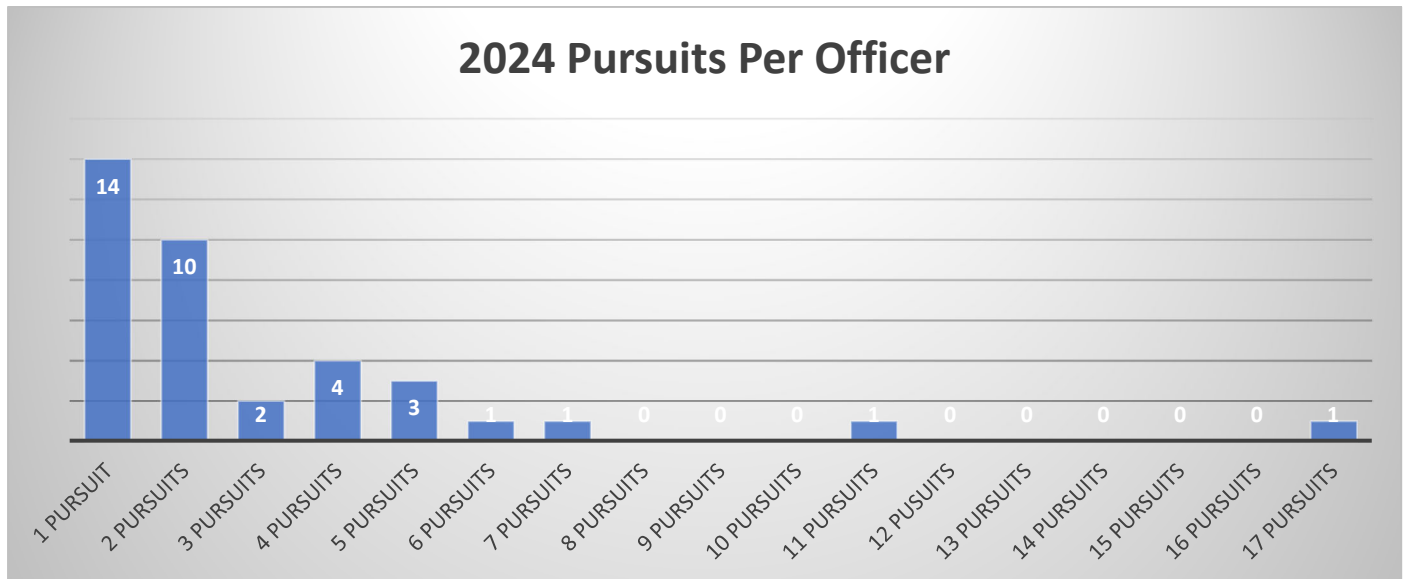
Chart 12. Pursuit Ending



Observations:

- ❖ The above chart reflects how 2024 pursuits concluded. Some pursuits are represented by more than one category. For example, while 40 suspects escaped, some of them are represented under suspect collision, PIT or terminated. Of note, in 2024 78% (38) of the 52 pursuits were terminated by the involved officer or supervisor. This demonstrates that the sergeants were closely monitoring their officers involved in the pursuits and the circumstances of the pursuit. It also shows that the officers themselves recognized on their own the need to terminate the pursuit. They were compelled to terminate the pursuit when the hazards created by it were greater than the danger posed by the suspects escape.
- ❖ Officers had only one opportunity to use spike strips in 2024. This is most likely because nearly all pursuits were terminated or ended after a very short distance.
- ❖ Of the 52 pursuits in 2024, twelve resulted in the capture of the suspect.

Chart 13. Officer Frequency 2022

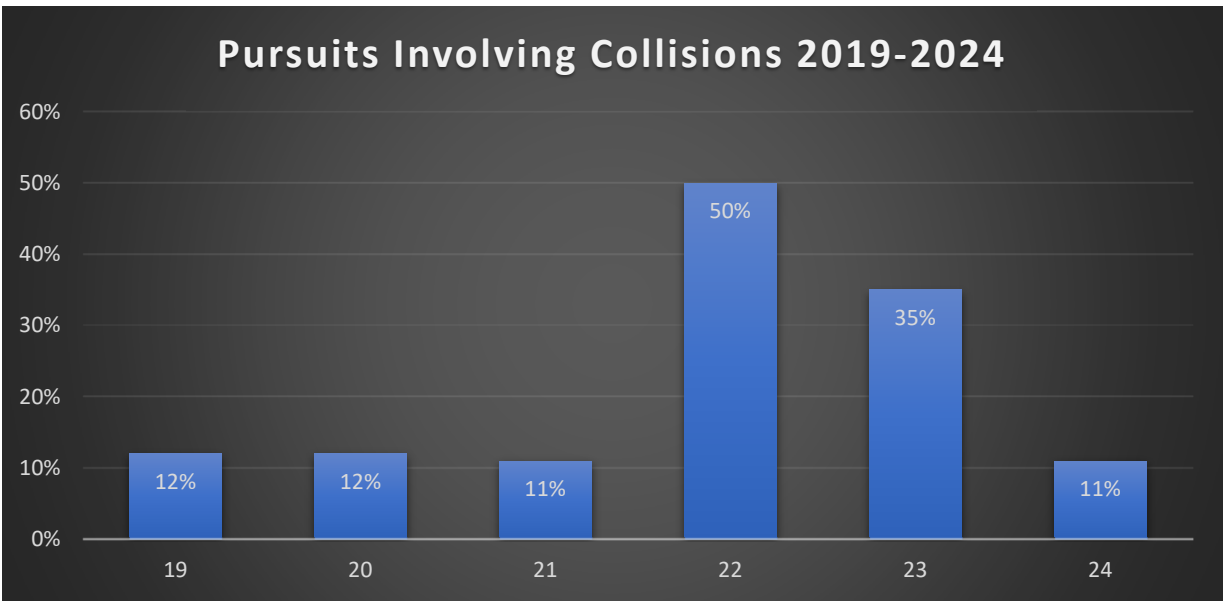


Observations:

For training purposes, it is helpful to monitor the number of pursuits that individual officers initiate. For example, in years past, an officer who initiated far more pursuits than other officers prompted a review of the officer's practice. It was determined that this officer made a habit of turning on emergency equipment from long distances behind motorists. This possibly instilled confidence in the motorist to flee. After training, the following year when that officer turned on the emergency equipment directly behind the motorists, the frequency of pursuit was significantly reduced. In 2024, of the 52 pursuits, 14 officers initiated one pursuit, 10 officer initiated two pursuits, 2 officers initiated three pursuits, and 4 officers initiated 4 pursuits.

It should also be noted that we have started to monitor not just the officer initiating the pursuit, but also an officers involvement in the pursuit. Meaning that if he/she joins as a second unit involved, they will be shown in this statistic.

Chart 14. Pursuits Involving Collisions 2019-2024

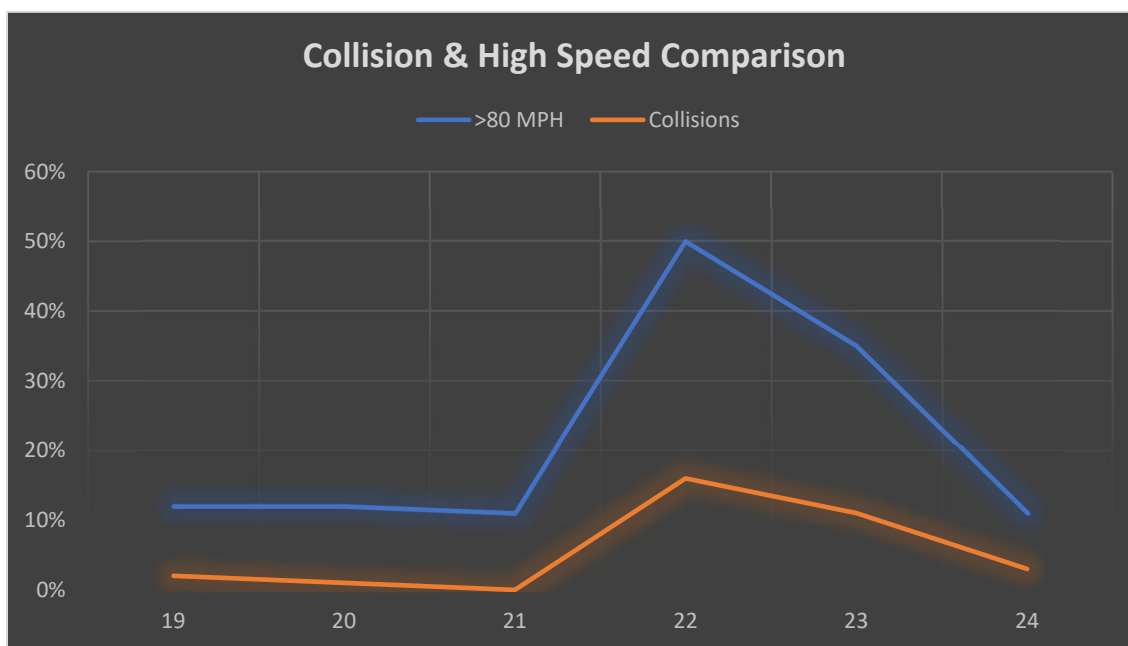


Observations:

- ❖ In 2024, there were 4 collisions by suspects and 1 by an Officer associated with a suspect collision. Injuries were minor to the suspect in one collision. No officers were injured because of these pursuits.



Chart 15. Collisions Vs. High-Speed Pursuits 2019-2024



Observations:

This chart depicts a possible correlation between the incidence of collisions and pursuits at speeds greater than 80 MPH, at least for most of the years shown. It is interesting to note that in years 2014-2017, there were no reported collisions involving speeds over 80 MPH, (not shown on graph). The minor collisions that did occur were at slower speeds. In 2019, there was only one collision in a pursuit where speeds reached 80 MPH. However, the collision occurred at a slower speed when the suspect collided with two police cars.

In 2024 there were no collisions involved in pursuits at speeds greater than 80 MPH. There was one minor injury collision involving a suspect and 4 non-injury collisions involving suspects.

Even though legislative and policy changes significantly increased the number of pursuits, officers and supervisors are still responsible to constantly weigh the risk of the pursuit against the seriousness of the crime involved and the danger posed to the public. This statistic points to the fact that sergeants and officers are very cognizant of this and are terminating pursuits appropriately.

Chart 16. Suspect Gender

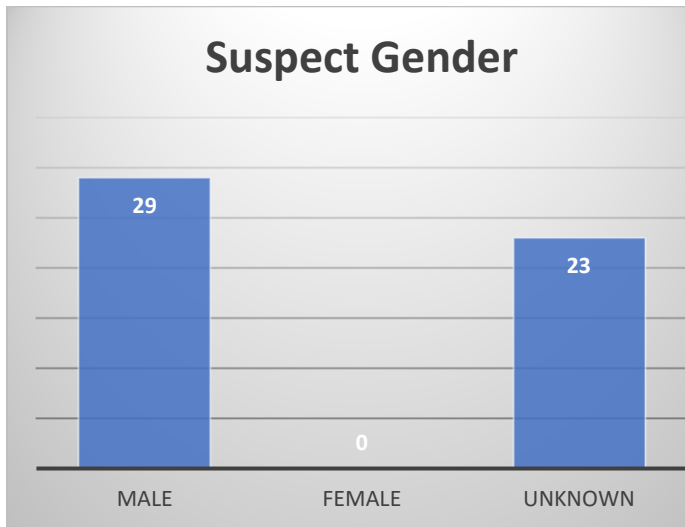


Chart 17. Suspect Age

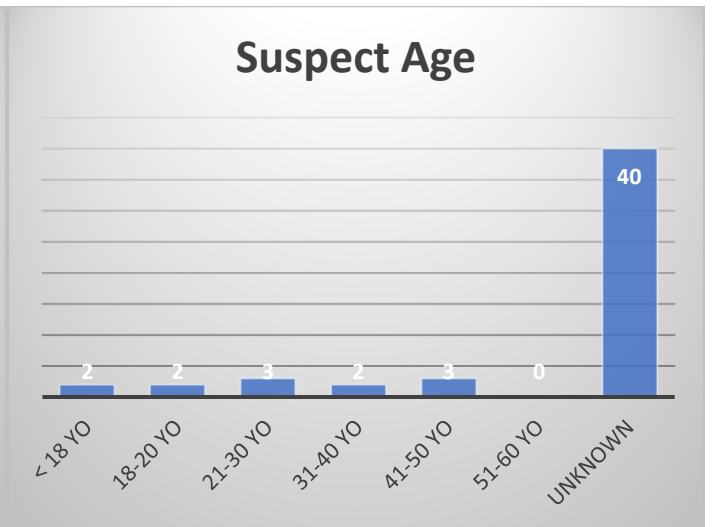
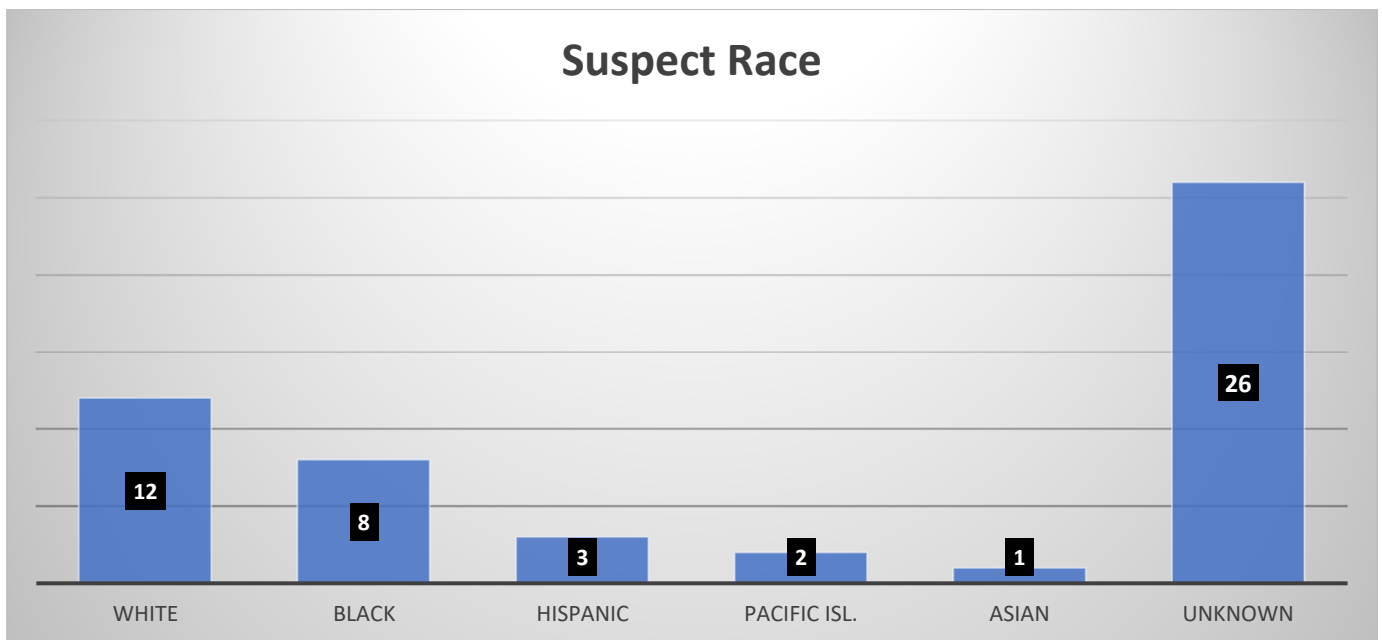


Chart 18. Suspect Race



Observations:

- ❖ Of the known suspects in 2024 pursuits, 29 were male and there were no known female suspects. 12 suspects were White, 8 were African American, 3 were Hispanic, 2 were Pacific Islander and 1 was Asian. Two identified suspects were less than 18 years old.
- ❖ Not all suspects are identified or captured. Due to the higher probability of pursuits occurring at night, and the fact that most pursuits are terminated, it is difficult for officers to obtain these characteristics.

Summary:

- 1) The number of pursuits in the City of Auburn tends to fluctuate like other crimes reported. 2008-2014 were recorded as low years with averages in the teens. The next five years (2015-2019) there was a significant increase in the number of pursuits. 2020 has the second most pursuits recorded in a calendar year, and the highest recorded captures of any prior year. In 2022, however, due to significant legislative actions, discretionary police practices were removed and nearly all incidents of pursuits ceased. In 2024, these discretionary practices were returned, and the number of pursuits showed a significant increase in the second half of the year.
- 2) In the years leading up to 2024, the average length of pursuits has gradually declined, (with 2022 being an anomaly). This was due to a change in the department pursuit policy of not engaging in pursuits for minor crimes. In addition, this change had likely contributed to the increase in the number of pursuits as many suspects are aware of the “No Chase Policy”. Again, in 2024, considerable legislative changes allowed officers to pursue nearly all violators. However, the distance of the pursuits decreased as the officers and first line supervisors exhibited discretion during these pursuits.
- 3) In terms of what the officers knew at the time each pursuit was initiated, 18% of pursuits in 2024 were initiated for felony violations.
- 4) The Auburn Police Department has a highly efficient method of capturing pursuit data for subsequent analysis and training. The department should continue evaluating what information should be captured, and how that information should be recorded.
- 5) There have been major changes in legislation and modification of the pursuit policy to allow for greater discretion for officers and supervisors on pursuits for crimes that are less severe. There are always underlying reasons why suspects flee from the police. We do not know the extent of the reasons for motorists to flee, such as warrants, weapons violations, and other felonies. As mentioned in #4 (above), the “real” reasons suspects are fleeing should be recorded on those suspects who are captured and are willing to speak.

- 6) Supervisors were very involved in monitoring the 2024 pursuits. This year, 38 of 52 pursuits (73%) were terminated by either first line supervisor or the involved officer(s) after approval had initially been given to pursue.
- 7) Supervisors and officers have often made the correct decision and chose not to continue to pursue even when it was allowed by legislation and policy. It is commendable that they have made these decisions, as it shows that they are constantly weighing the danger of the pursuit to the public, against the danger created by the suspect escaping.

Training

For many years, Emergency Vehicle Operators Course, (EVOC), training consisted of eight hours for each officer, every three years. During the eight hours, the officer received training in the Pursuit Policy, vehicle placement, auto-cross, high speed tactical driving, pursuit scenarios, and the Pursuit Immobilization Technique (PIT).

The EVOC training provided has changed over time. It has adapted to Legislative and policy changes. To capture officer attention, EVOC training was shortened to four hours of intensive high speed, PIT, and scenario-based training. At least one half of all commissioned officers receive pursuit driving and pursuit scenario training per year. The officers also received refresher training in the PIT maneuver.

EVOC instructors have the officers continue to perform high speed training and the PIT maneuver until both the officer and instructor are confident that the officer is thoroughly familiar with these techniques. The intent of training at Pacific Raceways is to get more officers through this critical high risk – low frequency training, and on a more frequent basis. This is even more important now that this critical task is less frequent. This training is mandated to occur for every officer every two years, which is a change from the previous requirement of every three years.

The EVOC coordinator and several instructors review department pursuits and collisions. A determination is made to consider additional training for the officers that are found to be involved in preventable collisions. In 2024 EVOC Instructors noted that the number of preventable, slow speed collisions was increasing within the department. Through cooperation with the Auburn School District, the EVOC staff provided additional slow speed training at Bowman Elementary School, in the hope of decreasing these types of collisions. This training occurred during Spring Break for the school and provided space for the courses that were designed for the training.

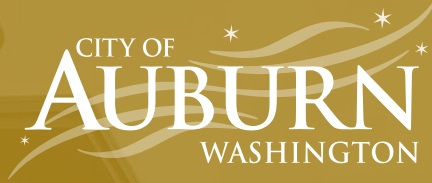
There is currently a push to provide basic EVOC training to new recruits to give them this important training prior to annual training in October or November. This is problematic at times as finding a location that will allow the training is challenging.

We have been sending our new hires to EVOC training prior to the academy if they are in that period between being hired and attending the academy.

The pursuit policy in the State of Washington was again modified by legislation and took effect on June 6, 2024. The law relaxed the requirements for officers to pursue but still compelled them to weigh the danger of the pursuit against the threat to the public of the suspect escaping.

First-line supervisors received training on the new law and updated departmental policy. It was emphasized that they continue to closely monitor each pursuit. This training was then presented to the officers during patrol briefings. EVOC training has been tailored to adhere to this new legislation and will continue to evolve based upon the changing needs and expectations of the community.





AUBURN POLICE DEPARTMENT

2024 Annual Report



VISION

To be a premier law enforcement agency that is trusted, supported and respected.

MISSION

To provide professional law enforcement services to our community.

CORE VALUES

COURAGE

Bravely standing up to danger and adversity

HONOR

Serving a noble purpose, we hold this profession in high esteem

INTEGRITY

Our decisions and actions are based on trust and honesty

PROFESSIONALISM

Our sense of duty to conduct ourselves to the highest level of competence and character



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MESSAGE FROM CHIEF MARK CAILLIER

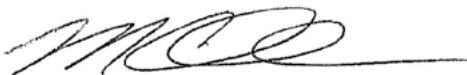
Welcome to the Auburn Police Departments 2024 Annual Report! This report is intended to provide an overview of the department and provide statistical information related to our activities.

This last year we experienced reductions in almost all areas of criminal activity. Recent legislation has provided us tools to help address issues in the downtown area as well as retail areas in both north and south Auburn. Additionally, we added 20 Flock Safety cameras throughout the city, which have been instrumental in locating stolen vehicles, vehicles involved in criminal activity, and missing or endangered persons. We plan on adding additional safety cameras in 2025. We have continued to provide emphasis patrols in the downtown core, several south business parks, and in multi-family housing areas so that residents and visitors feel safe and secure. It is our hope that we will continue to see a downward trend in criminal activity. This will continue to be a priority for the department in 2025 and beyond.

Recruitment and retention of staff continue to be a challenge facing Auburn PD, but it is also a regional and national issue affecting all our partner cities here in south King County. Over the past year, staffing has remained challenging, but we welcomed 12 new officers and 2 non-commissioned staff members. With the increased staffing, we have been able to fill some vacancies in our Detective and CRT units.

Auburn PD also received reaccreditation through the Washington Association of Sheriffs and Police Chiefs, showing that we are following best practices and policies, both locally and nationally. It is an honor to lead such a resilient and dedicated group of employees that continue to demonstrate our core values of courage, honor, integrity, and professionalism.

For additional information, I encourage you to visit us at our website, auburnwa.gov, or follow us on social media, including Facebook, Twitter, and Instagram. For those of you interested in a police career, please visit TeamAPD.com.



Mark Caillier

Chief of Police
Auburn Police Department





ASSISTANT CHIEF BETZ

Assistant Chief Sam Betz has been with the Auburn Police Department since 2006. He started as a Patrol Officer and began working a narcotic detection K9 in 2010. Sam became a member of the Valley SWAT team in 2011. Sam rotated from Patrol to the Investigations division in 2012, and worked in the Special Investigations Unit as a Detective while also remaining on SWAT and continuing to work as a K9 handler. Sam has experience as a member of the Auburn Crime Scene Team, President of the Auburn Police Officer's Association and as an executive board member for the Auburn Police Officer's Guild during his time as an Officer and Detective. Sam was promoted to Sergeant in 2013 and worked in Patrol and Major Crimes as a first line supervisor. As a Sergeant, Sam continued his time on SWAT and was elevated to a Team Leader position for the regional team. Sam also served on the Sergeant's Association executive board. Sam was promoted to Commander in 2020 where he served in the Patrol Division and as the Inspectional Services Commander. As a Commander, Sam was able to oversee the development of Patrol, SWAT, School Resource Officers, Bicycle Officers and the Traffic Unit. Additionally, Sam acted as the overall Commander for the Valley SWAT team prior to his promotion to Assistant Chief in December 2021. Sam is a graduate of the Leadership Institute of South Puget Sound and Leadership in Police Organizations. Sam has obtained certifications as a handgun instructor, less lethal impact munitions instructor, de-escalation instructor, Force Science, FBI-LEEDA Trilogy, and as an Active Shooter Instructor (NTOA). Sam is a current member of NTOA, IACP and FBI-LEEDA. Sam graduated from Azusa Pacific University with a Bachelor's degree in Biblical Studies, and graduated from Gonzaga University with a Masters degree in Organizational Leadership.

ADMINISTRATIVE ASSISTANTS

Kerri Scranton started with the Police Department in September 2019 and Leslie Corey in October 2018. Cecelia Lee started as an Officer in 1997 and became an administrative assistant in 2024. They are responsible for providing direct support to Chief Mark Caillier and Assistant Chief Sam Betz, as



KERRI SCRANTON



LESLIE COREY



CECELIA LEE

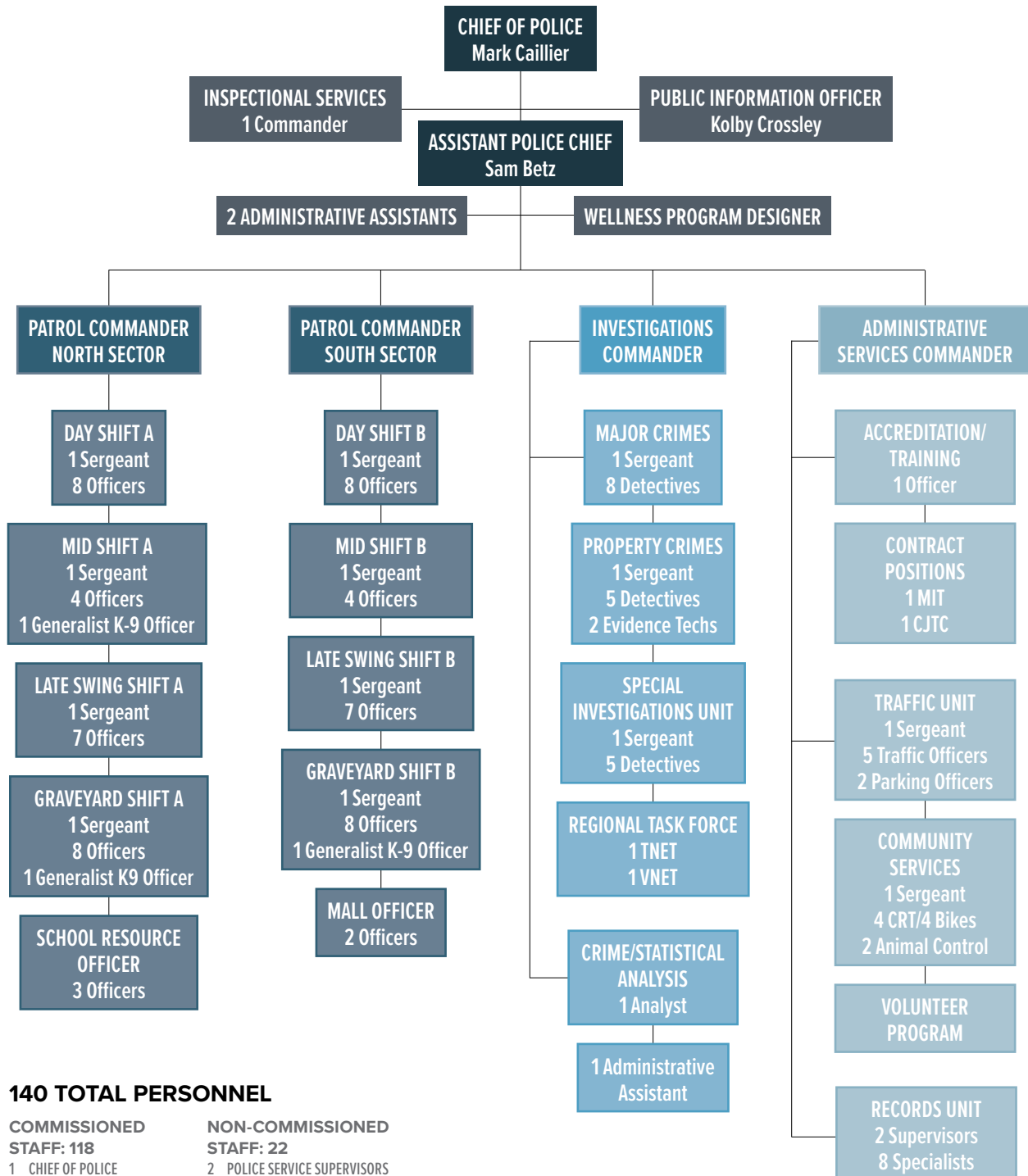
well as the department's Command Staff. They have a variety of duties that span from payroll, purchasing training and travel and all responsibilities associated with administrative assistance to the department.

Leslie Corey is the investigations Administrative Assistant. She reports to the Investigations Commander.

Auburn, Washington, is a vibrant city located in King County, in the beautiful Pacific Northwest region of the United States. Situated between Seattle and Tacoma, Auburn is known for its natural beauty, rich history, and diverse community. Auburn is a thriving suburban community with a population of over 80,000 residents. The city offers a mix of residential neighborhoods, commercial centers, and recreational areas. Auburn's location along the Green and White rivers provides picturesque landscapes and opportunities for outdoor activities like hiking, fishing, and boating. Notably, the Auburn Police Department holds state accreditation with WASPC and operates with a dedicated team of 140 employees. We are steadfast in our commitment to fostering the professional growth of our officers through a comprehensive range of training opportunities, including those conducted at our outdoor firearms range, as well as mentorship programs and the chance to shadow detectives and explore other specialized areas. Our utmost priority is to ensure that the Auburn community feels embraced and secure under our watchful care.



ORGANIZATIONAL CHART



INSPECTIONAL SERVICES

Commander Shaun Feero leads Inspectional Services. This department is responsible for managing commendations and allegations of misconduct. The Inspectional Services Commander is also responsible for staff inspections. The Inspectional Services Commander reports directly to the Chief.

Commendations, Inquiries and Allegations of Misconduct (CIA) investigations are designed to allow the agency to look at our department from the eyes of our community members. To meet these demands, we must be a disciplined and well-regulated organization. The report on the next page illustrates how well the Auburn Police Department is perceived to be following our Vision and Mission statements, as well as our stated Manual of Standards.





INSPECTIONAL SERVICES COMMANDER **SHAUN FEERO**

Commander Shaun Feero has been with the Auburn Police Department since 2007. Commander Feero graduated from American Military University with a Master of Arts degree in Criminal Justice and additionally received a Graduate Certificate in Executive Law Enforcement Leadership at AMU after attaining undergraduate degrees from Portland State University and the Community College of the Air Force. Commander Feero spent time on the Crime Scene Team, Valley SWAT Team, Valley Civil Disturbance Unit, Field Training Officer, Firearms Instructor, Bicycle Unit, and was recognized as a Mater Police Officer (MPO) in 2016. Commander Feero worked as a Patrol Sergeant, Major Crimes Sergeant, and was a team leader on the Valley Civil Disturbance Unit (VCDU). VCDU Commander, Honor Guard Commander, and is responsible for the APD firearms program and drone program. Additionally, Commander Feero is Auburn PD's Military Liaison, providing resources to veterans and keeping the APD administration apprised of current reserve and guard commitments. Commander Feero was a Retired Senior Master Sergeant (SMSgt) serving in the Air Force Reserve as an Operations Superintendent in the 446th Security Forces Squadron at Joint Base Lewis-McChord.

In 2024, Auburn Police Officers responded to 64,422 Computer Aided Dispatch (CAD) incidents and completed 13,624 case reports. Officers made 2,779 arrests, with 2,351 of those arrestees being booked into the SCORE Jail, and officers issued 3,801 infractions/citations. All of this activity accounts for only a portion of the personal contacts with our community members that are made by our police officers throughout the year.

As outlined in the Auburn Police Department Manual of Standards (MOS), the CIA system provides a uniform means of reporting, investigating, and documenting Commendations, Inquiries, Allegations of Misconduct and Collision Reviews.

A Commendation is used to recognize actions or performances by members of the police department who act or perform in a manner that is outstanding or beyond what is normally

expected. The Commendation process recognizes employees for Professionalism, Exemplary Job, Exemplary Actions, Life Saving and Heroism.

During 2024, there were 63 commendations awarded to a total of 110 employees. The commendations include Life Saving Medals, Letters of Commendations, and Tactical Medals.

To better understand how commendations work, most of them come from citizens who took the time to recognize one or more officers due to their exemplary and professional work.

Other commendations come from supervisors recognizing officers for a job well done and those are known as Supervisor Comments. These commendations can range from officers conducting school speeches, helping someone change a tire or going above and beyond to investigate someone's case.

A Supervisory Inquiry involves a complaint made regarding the quality of service delivery. These complaints vary in degrees from regarding an employee's demeanor, tardiness, related to customer service, or the nature of a department practice. The employee's immediate supervisor typically handles this type of complaint. At times, the outcome of the inquiry will be forwarded to the Inspectional Services office, but many times it is not. If an employee has multiple service delivery complaints where the conduct has been determined to be unacceptable then the complaint may be handled and documented as an Internal Investigation.

An Internal Investigation involves a complaint of a possible violation of department standards, written directive, City policy or applicable Civil Service Rules. These allegations include, but are not limited to, complaints of bias based profiling, excessive force, alleged corruption, insubordination, breach of civil rights, false arrest, and other types of allegations of serious misconduct.

Below are the 2024 Investigations and Findings:

No. of Investigations	8
No. of Employees Investigated	10
Findings of Misconduct	6

A Collision Review is conducted whenever an Auburn Police Department employee is involved in a collision while the employee is the driver and on duty, or in a city-owned vehicle while driven by a police department employee. Below are the results of collision investigations:

No. of Collisions	45
Determined Preventable	16

The number of sustained allegations compared to the number of contacts that employees make every year is extremely low.

13,624
Case Reports

2,779
Arrests

3,801
Infractions/Citations

The Auburn Police Department works diligently to maintain an open environment where our community members can freely tell us when they are pleased or dissatisfied with our performance. When we receive Commendations, Inquiries, Allegations of Misconduct or an officer is involved in a collision we thoroughly investigate the incident to determine the merit and appropriate response.

Although there is always room for improvement, we believe it can be concluded that we have been successful in fulfilling our Mission and Vision statements and have been providing the utmost in quality law enforcement service to our community.



PUBLIC INFORMATION OFFICER **KOLBY CROSSLEY**

Kolby received his degree in Communications from Washington State University then moved to Bozeman, Montana where he got his first job as a reporter. From there, he took a position in Colorado Springs to become the new morning reporter for WAKE UP COLORADO. Kolby is originally from Odessa, Washington. As someone with prior media experience he can best assist our media outlets to get the information they need while working on their stories.

Kolby manages all public outreach and media relations for the Department, oversees the content for APD social media accounts and assists in all aspects of community engagement.



APD CHAPLAIN | WELLNESS PROGRAM DESIGNER **ANGEL OGANDO**

Angel has been with the Auburn Police Department (APD) for 9 years. In that time, he has served the department as a Chaplain, and currently is the Wellness Program Designer for APD.

Angel's focus is the professional and analytical development of a wellness program that encompasses all aspects of an APD employee's wellness (Mental, Physical, Spiritual, and Emotional Health).

Angel manages the APD Chaplain Program, the Peer Support Team, the APD Fitness Coaches as well as the Blue Auburn Resilience program. He brings with him a wealth of leadership through compassion, national, regional and local relationships, and an analytical approach to ensuring the programs that he manages are based on best practices and research, while also being able to pivot and be personalized for individual participants.

Some of these innovations include incorporating holistic health trainings throughout APD, conducting new employee and family orientations, providing wellness outings for families to connect and strengthen their relationships with each other as well as the department, and working closely with the local community to build relationships and opportunities for connections.

PATROL DIVISION

The Patrol Division is the Department's largest division. In 2024, Commanders Burger and Skeen led a staff of 8 Patrol Sergeants, 55 Patrol Officers, Admin Services, 3 K-9 Officers, 2 Mall Officers and 3 School Resource Officers.

The Division is primarily responsible for handling 911 calls for service, traffic enforcement, as well as pro-active crime prevention in the City.





SOUTH SECTOR COMMANDER BRANDON SKEEN

Commander Skeen has been with the Auburn Police Department since 2008. Before joining the department, he was on active duty Army for 4.5 years as a combat medic and completed one deployment to Iraq in 2007. Brandon has been a member of the civil disturbance unit, a field training officer, Auburn Police Guild Executive Board member, master police officer, and member of the Valley Regional SWAT Team. In August 2018, Brandon was promoted to the rank of sergeant, and in 2024 was promoted to Commander. Brandon holds a Bachelor's degree in Criminal Justice from Southern New Hampshire University.



NORTH SECTOR COMMANDER CHRIS BURGER

Commander Burger was hired by the Auburn Police Department on 07/30/2007. Commander Burger has served as a Patrol Officer, Field Training Officer, Defensive Tactics Instructor, Emergency Vehicle Operations Instructor, Taser Instructor, Explorer Advisor, Crime Scene Response Team member, Drone Pilot, and a Major Crimes Detective. Commander Burger was promoted on February 1st, 2020 to the rank of Sergeant. During his time as a Sergeant, Commander Burger was responsible for the Side B Day Shift Patrol crew. Most recently, as a Sergeant, Commander Burger had the pleasure of leading the Community Response Team, Bicycle Patrol Unit, Animal Control Officers, and MIT Officer. On February 1, 2024, he was promoted to the rank of Commander, assigned to the Patrol Division.

PATROL SERGEANTS

Patrol Sergeants supervise a shift of officers and are responsible for developing strategies to address on-going crime and related concerns in their respective districts.



JASON BLAKE DAY SHIFT A | 8 OFFICERS

Sergeant Jason Blake has been with the Auburn Police Department since 2003. During Jason's career at Auburn PD he has worked as a Patrol Officer, a Field Training Officer and attained the designation as a Master Police Officer. Jason has also served as a Detective in both the Property Crimes and Major Crimes Divisions and worked in the department's Community Response Team. Jason has served on the department's Crime Scene Response Team and Civil Disturbance Unit. Currently, Jason is a member of the department's Peer Support Team and the Valley Hostage Negotiations Team, where he serves as a Team Leader. Jason was promoted to the rank of Sergeant in December 2021 and is currently assigned to the Patrol Division. Jason holds a Bachelor's Degree in Criminal Justice Administration.



MAJOR CRIMES SERGEANT **ANDY CLAPP**

Sergeant Andrew Clapp graduated from Seattle University with a Bachelor of Arts degree in Humanities and a Bachelor of Arts in Criminal Justice. Andrew was hired by the Auburn Police Department in 1996 as a Police Service Specialist. In 2000, Andrew became a commissioned Auburn Police Officer. Andrew became an FTO, joined the Crime Scene Team and became an instructor of the Emergency Vehicle Operations Course (EVOC). Andrew is also part of the Peer Support Team, providing emotional support to all members of the Department. Andrew was the Property Crimes Sergeant from 2018 to 2024.



MATT WILKINSON

SWING SHIFT B | 7 OFFICERS

Sergeant Wilkinson started working with the Auburn Police Department in December of 2013. He has primarily served in the patrol division, where he was assigned as a field training officer for four years with additional time helping train new officers as needed. While within the patrol division he was designated as the 'Officer in Charge' in the event a sergeant wasn't present and has received three lifesaving awards. Matt was an executive board member for the Auburn Police Officers Guild for four years, which included two contract negotiations for the bargaining unit. Matt was promoted to the rank of sergeant in February of 2023, and assigned to the patrol division.



JAMES FRITH

MID SHIFT B | 4 OFFICERS

Sergeant Frith has been with the Auburn Police Department since 1997. Before joining the department, he served in the United States Army. In addition to working patrol, James was a member of the Honor Guard, the Civil Disturbance Unit and the Valley SWAT Team. He also served as a Narcotics Detective with the Special Investigations Unit and as a Field Training Officer. Sergeant Frith was promoted in 2010 and has been assigned to Patrol, Property Crimes, and Major Crimes. James is also a Defensive Tactics Instructor and an Emergency Vehicle Operations Instructor. Sergeant Frith holds a Bachelor's Degree from Central Washington University. He completed the IACP Leadership in Police Organizations course, and is a graduate of the Northwestern University School of Police Staff and Command class #422. Sgt. Frith is ABLE trained (Active Bystander for Law Enforcement).



DAMON HEWIN

SWING SHIFT A | 7 OFFICERS

Damon Hewin is from Detroit, MI and a graduate of the University Of Michigan. He came to the State of Washington after enlisting in the US Army and being assigned to a Stryker Brigade at Fort Lewis, WA. Damon deployed to Iraq twice and was awarded the Bronze Star service for his actions in service to our nation. He left the Army in 2014 and was hired by the Auburn Police Department in July of 2014. He has served as a Patrol Officer, Field Training Officer, Property Crimes Detective, Firearms Instructor, and Patrol Tactics Instructor. Damon was awarded the life-saving medal in 2019 for helping save the life of a 16-year-old student-athlete who was suffering a cardiac arrest due to a breathing condition.



JOSH GUSTAFSON

SWING SHIFT B | 7 OFFICERS

Sergeant Gustafson was hired with the Auburn Police Department in December 2013. Sergeant Gustafson has spent the last 11 years working as a Patrol Officer, including several years as a Field Training Officer. Sergeant Gustafson was promoted to the rank of Sergeant in April of 2024. Sergeant Gustafson graduated from Central Washington University with a degree in Law and Justice.



JASON SCHULTZ

GRAVE SHIFT B | 8 OFFICERS, 1 K-9 OFFICER

Sergeant Jason Schultz began his career with the Auburn Police Department in March 2012. Prior to joining APD, Jason worked in Special Education in public schools. During his time with the department, Jason has served in both the patrol division and as a detective in the Special Investigation Unit. Jason has served as a Field Training Officer, Taser instructor, Fitness Team coach, and a member of the Peer support team. Jason is also a department ABLE instructor, who teaches officers how to successfully intervene to prevent harm, prevent misconduct and promote officer health and well-being.



FERNANDO CORDOVA

GRAVE SHIFT A | 8 OFFICERS, 1 K-9 OFFICER

Sergeant Fernando Cordova began his career with the Auburn Police Department on January 9, 2015. His time with the department has been primarily spent in the patrol division where he has been a member of the Peer Support team, and Crime Scene Response team and was also designated as an Officer in Charge. Sergeant Cordova has held multiple specialties as well, including Field Training Officer, Defensive Tactics Instructor, and Hostage Negotiator. Sergeant Cordova was recognized as Officer of the Year for three consecutive years while on patrol and has also received multiple lifesaving awards. Additionally, he was awarded the Citizen Commendation from the City of Kent for diffusing and de-escalating an argument between two men at a sports field occupied by children and families, while he was off duty, where one of the men was armed and pulled out a firearm. He is a proud graduate of the University of Washington.

TRAFFIC UNIT

The primary responsibility of the traffic officers is traffic enforcement and collision investigations, with the goal of improving driving behavior in the City. Auburn PD investigated 2,526 traffic collisions in 2024.



TRAFFIC SERGEANT TYSON LUCE

Sergeant Luce graduated from Auburn Riverside High School before earning a law & justice bachelor's degree from Central Washington University. Tyson has been with the Auburn Police Department since 2013. As a Patrol Officer, he was a member of the Crime Scene Response Team, Crime Scene Photographer, Vice President of the Auburn Police Officer's Association, and Auburn Police Guild Executive Board. In 2017, he was assigned to the Traffic Unit as a Motorcycle Officer. Tyson is a Collision Reconstructionist, Traffic Investigator, Emergency Vehicle Operations Course (EVOC) Instructor, and Pursuit Immobilization Technique (PIT) Instructor. Tyson was promoted to Sergeant in 2021 and assigned to the Patrol Division. Tyson transferred to the Traffic Unit in December 2023. Tyson is assigned as the EVOC and CSRT supervisor. Tyson is the President of the Auburn Police Sergeant's Association Executive Board.





2,526 Investigated Traffic Collisions

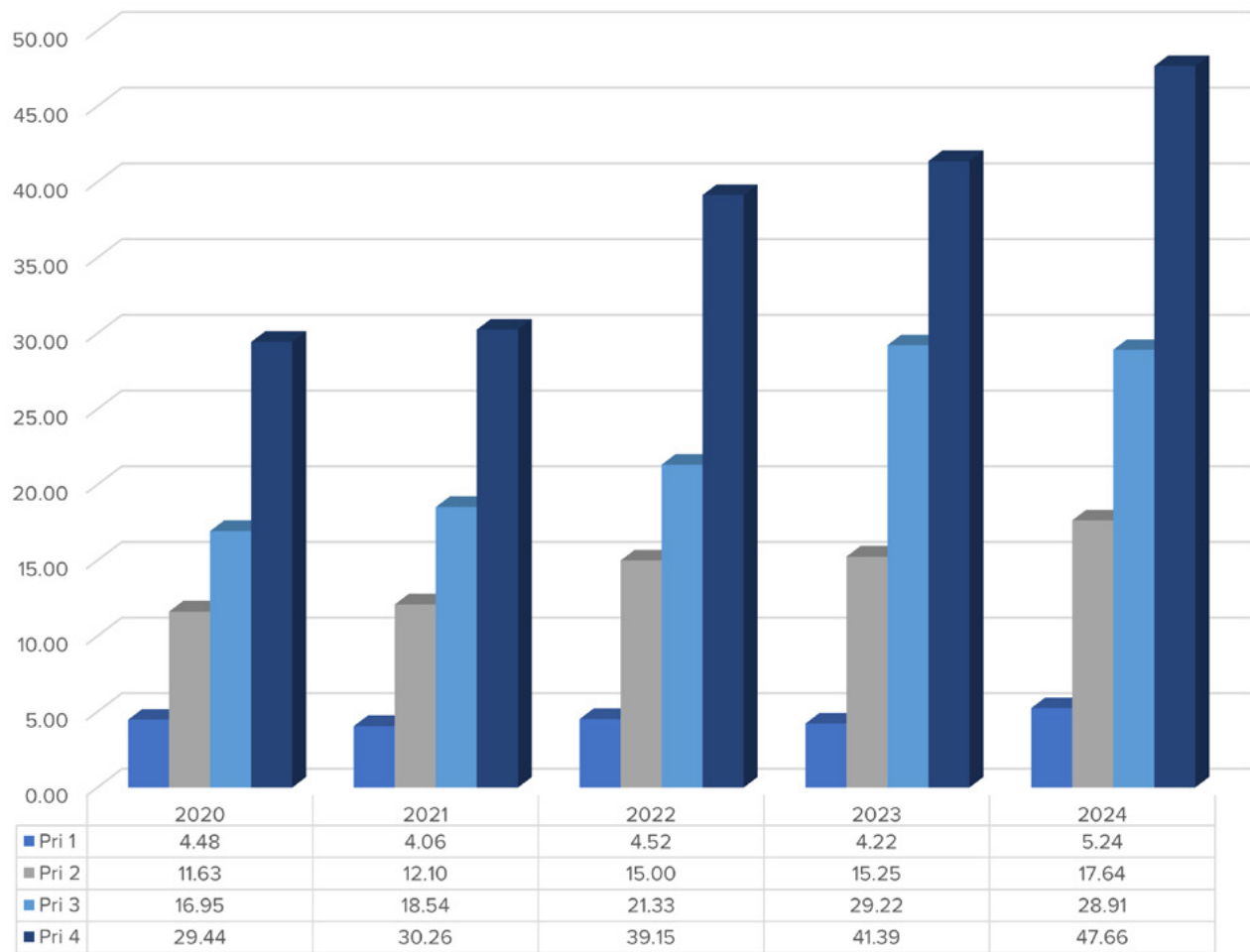
Traffic Unit Officers include Derek Anderson, Patrick Douglas, and Mike Mabis, supervised by Sergeant Tyson Luce. Derek, Patrick and Mike have all achieved the highest levels of certification as Collision Reconstructionists and are recognized experts in this field.



3,063 Parking Tickets

Parking Control Officers include Suzie Conner and Ron Reardon. Their primary responsibility is to enforce the parking ordinances of Auburn and respond to abandoned vehicle complaints. In 2024, the Auburn Police Department wrote 3,063 parking tickets in the City of Auburn.

RESPONSE TIMES



DEFINITION OF RESPONSE TIMES PRIORITY RATINGS

PRI 1 = Highest priority, confirmed hazard which could result in extensive loss of life or property

PRI 2 = Minimal hazard with considerably less potential for loss of life or property

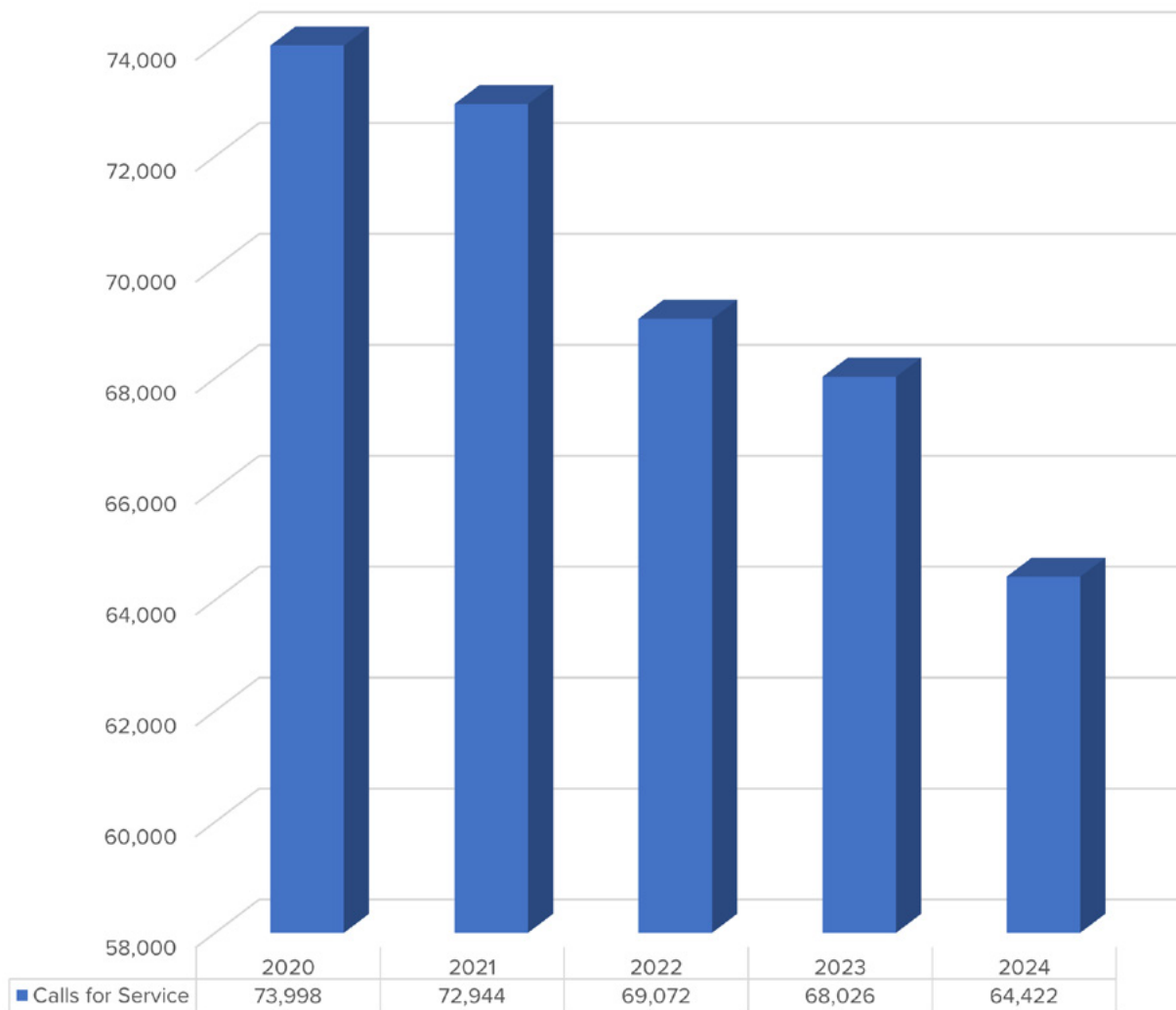
PRI 3 = Low hazard, non-life threatening

PRI 4 = Police reports or cold calls



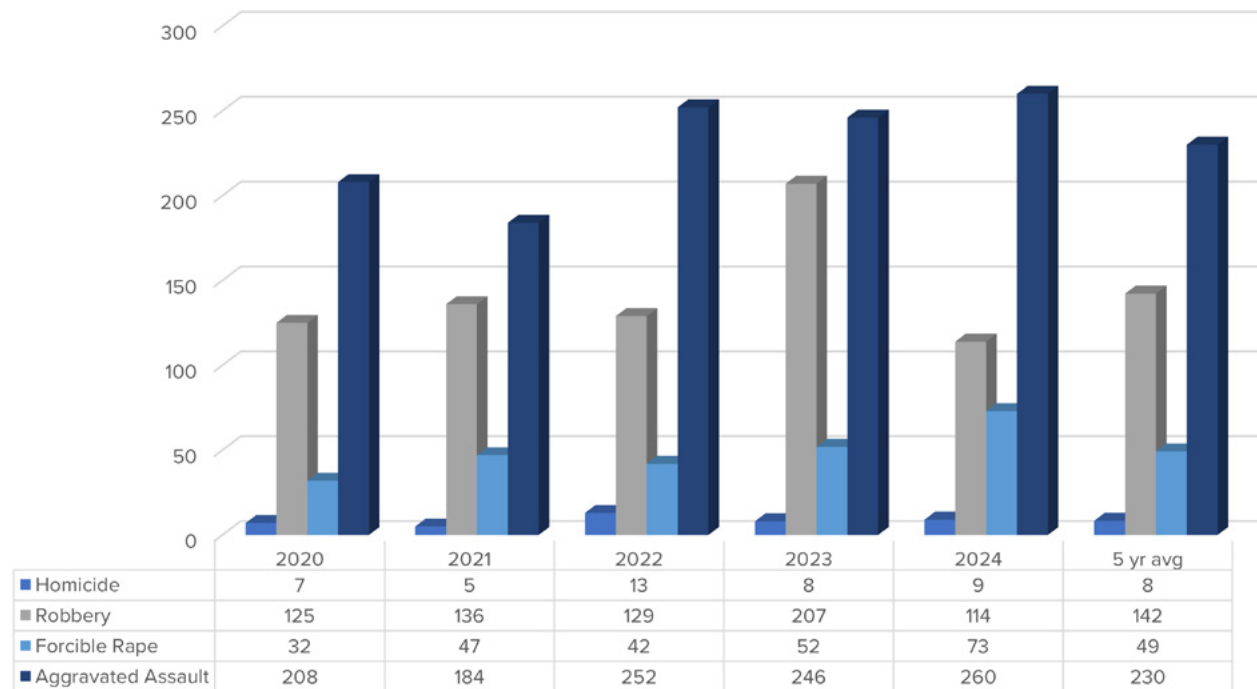
CALLS FOR SERVICE

Computer Aided Dispatch (CAD) calls for service have decreased over the past 5 years. Auburn police received 68,026 calls in 2024. Increasing online reporting, which was updated in 2020, has helped lead to decrease in calls.

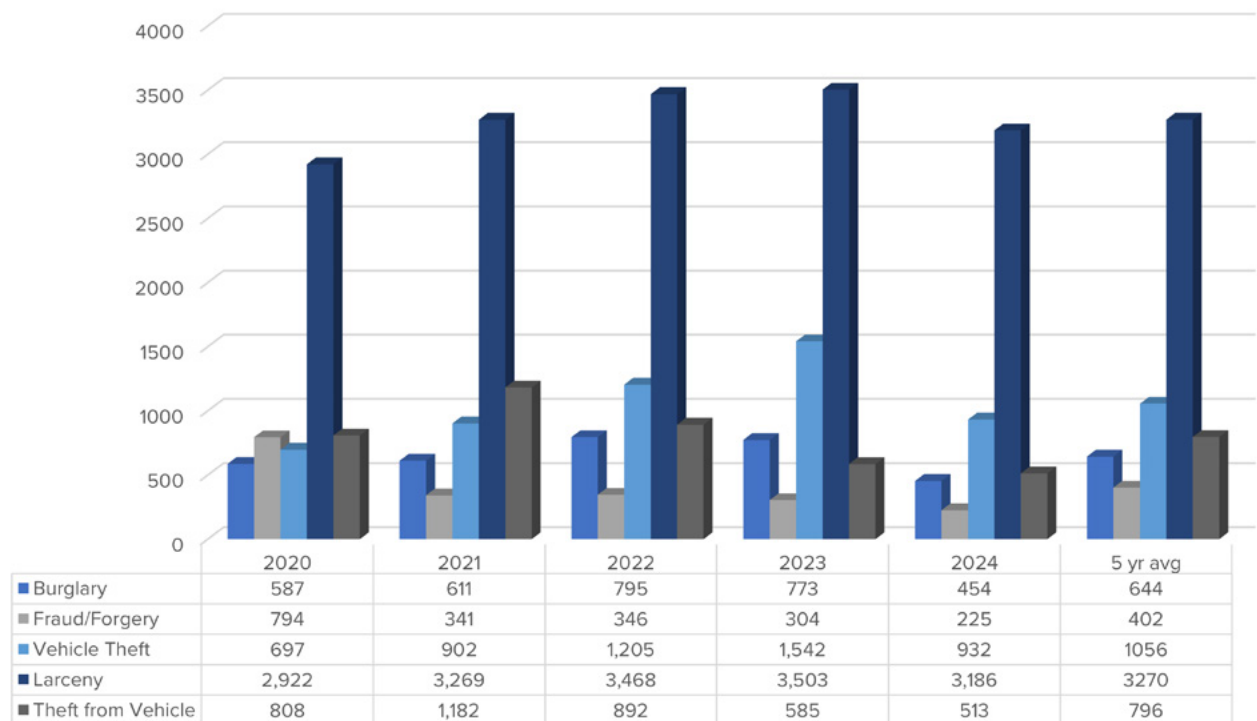


2024 CRIME STATISTICS

PERSON CRIMES



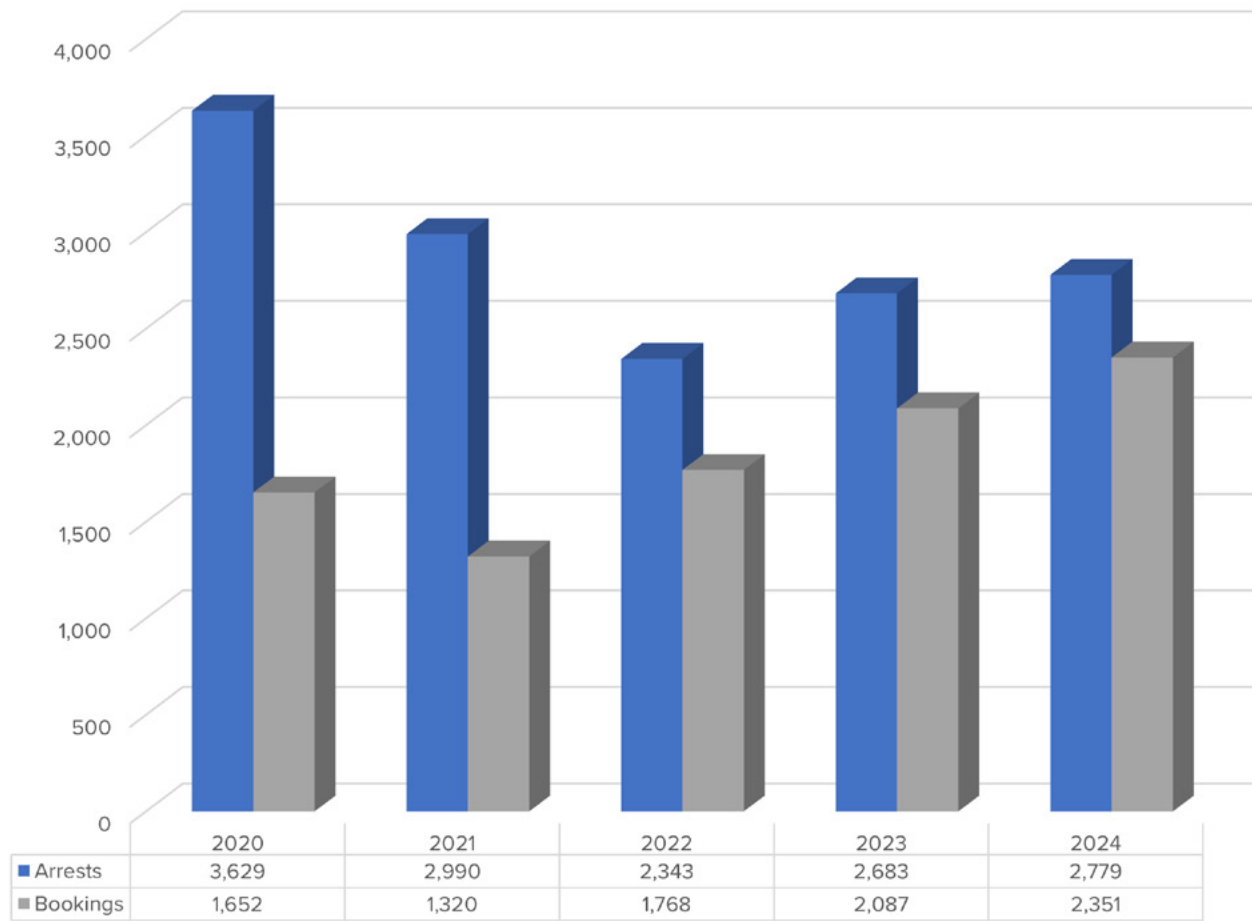
PROPERTY CRIMES



Larceny accounted for the largest number of reported property crimes in 2024.

Larceny is defined as theft, which includes crimes like theft from vehicle, shoplifting, a bicycle being stolen, etc. Vehicle theft continues to be a hot topic for every agency, the prosecutor's office, and the legislature.

TOTAL ARRESTED PERSONS

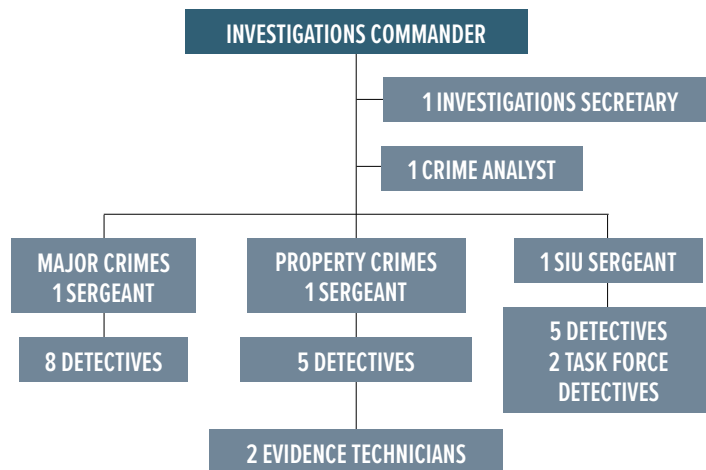


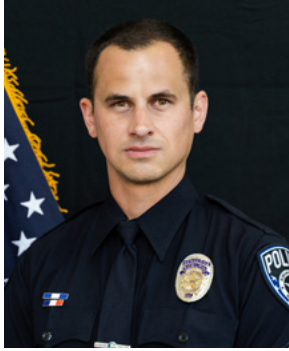
INVESTIGATION DIVISION



INVESTIGATIONS COMMANDER **TODD BYERS**

Commander Byers started his law enforcement career in 1987 when he became a Police Officer for the City of Las Cruces, NM. He transferred to the Auburn Police Department in November 1996. While working in the Patrol Division, Byers became a Field Training Officer in 1998 and trained several Officers for the Department. Byers moved to the Traffic Division as a motorcycle Officer and worked in that capacity until early 2000. In 2000, Sergeant Byers became a TAC Officer at the Washington Criminal Justice Training Commission and remained there until 2003 when he returned to the Auburn Police Department Traffic unit. Byers rotated back to the Patrol Division in January 2014 and was promoted to the rank of Sergeant in 2019. Todd has a Bachelor of Science in Criminal Justice from New Mexico State University.





PROPERTY CRIMES SERGEANT **CHRIS BOLDMAN**

Sergeant Boldman has been with the Auburn Police Department since 2012. Before joining the department, he received his Bachelor of Arts Degree in Psychology from Seattle Pacific University. Sergeant Boldman has previously served as a Field Training Officer and an executive member of the Auburn Police Officers Guild. He has also served as a detective assigned to property crimes and the Puget Sound Auto Theft Task Force.



MAJOR CRIMES SERGEANT **JOSH MATT**

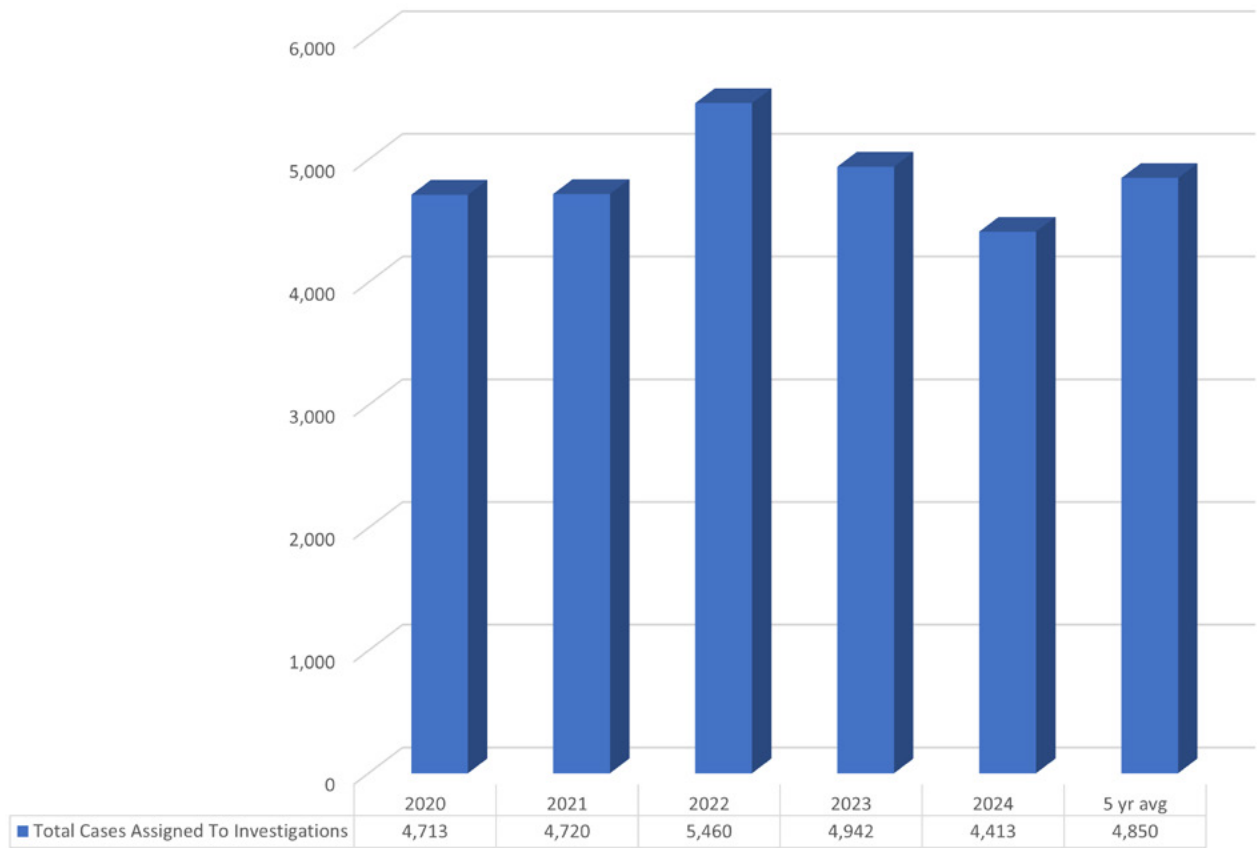
Sergeant Josh Matt started his career as a patrol officer with the Auburn Police Department in March of 2007. While in patrol he was part of the Crime Scene Response Team, Valley Civil Disturbance Unit, and was a Field Training Officer. In 2013 Sergeant Matt was assigned to the property crimes unit as a detective specializing in burglary and arson investigations. In 2015 he moved to the major crimes unit and became a part of the Valley Investigations Team. In 2017 Josh was assigned to investigate cold-case homicides and long-term missing persons cases. Sergeant Matt was selected to receive training to be a certified fitness instructor and provides support to officers in fitness and nutrition. Sergeant Matt holds a bachelor's degree in Sociology from the University of Washington. Josh has been a life-long Auburn resident and is proud to raise his family in the community.



SIU **DAVID LIND**

Sergeant Lind began his career with the Auburn Police Department on July 14th, 2007. He has served the residents of Auburn as a Patrol Officer, Property Crimes Detective, Major Crimes Detective, Explorer Advisor and Peer Support Officer. Additionally, from January 2013 through October 2020, Sergeant Lind was assigned to the Valley SWAT Team as an Entry Team Member and Explosive Breacher. Sergeant Lind eventually took on the role of Assistant Team Leader for Valley SWAT until his promotion to Sergeant on October 1st, 2020. Outside of work, Sergeant Lind is passionate about fitness and spending time with his wife and two children.

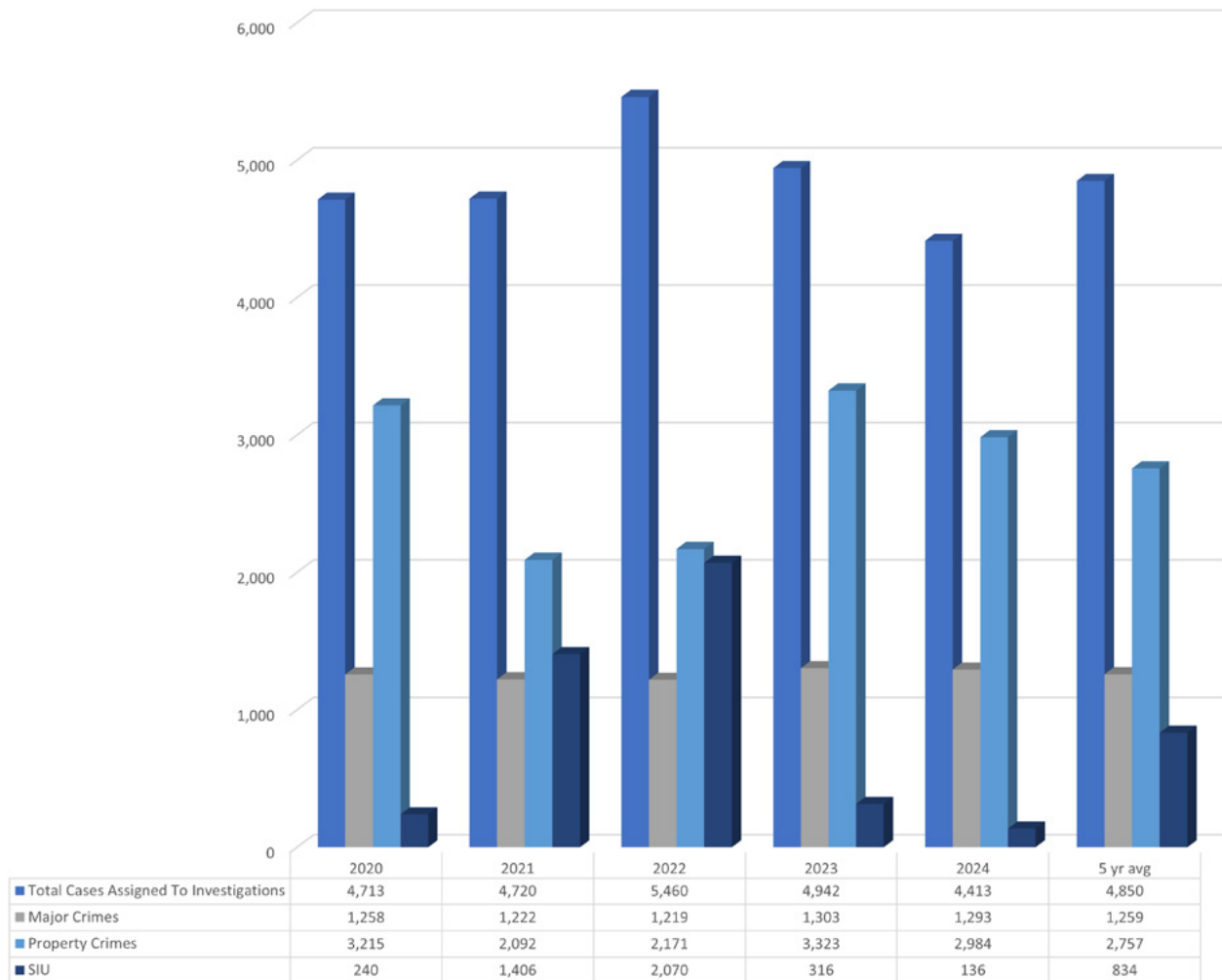
ALL FELONY INVESTIGATIONS CASES ASSIGNED



The Investigations Division remained very busy in 2024. All felony cases are assigned to a detective for review whether or not there is actual suspect information.



MAJOR CRIMES, PROPERTY CRIMES, AND SIU



PROPERTY CRIMES UNIT

The Property Crimes Unit investigates the crimes of auto theft, felony theft, burglary, fraud, and forgery.

SPECIAL INVESTIGATIONS UNIT

The Special Investigations Unit is responsible for investigating drug and vice complaints as well as directed enforcement for specific problems.

EVIDENCE ROOM



The evidence room is staffed by evidence technicians Mary Onorati and Charlene Hoch who are responsible for the proper storage, disposal, and destruction of all the evidence and property taken into custody by the Auburn Police Department. The evidence technicians received 7,193 items in 2024 and destroyed approximately 7,875 items.



EVIDENCE TECHNICIAN
MARY ONORATI



EVIDENCE TECHNICIAN
CHARLENE HOCH

7,193
Items Received
7,875
Items Destroyed

ADMINISTRATIVE DIVISION



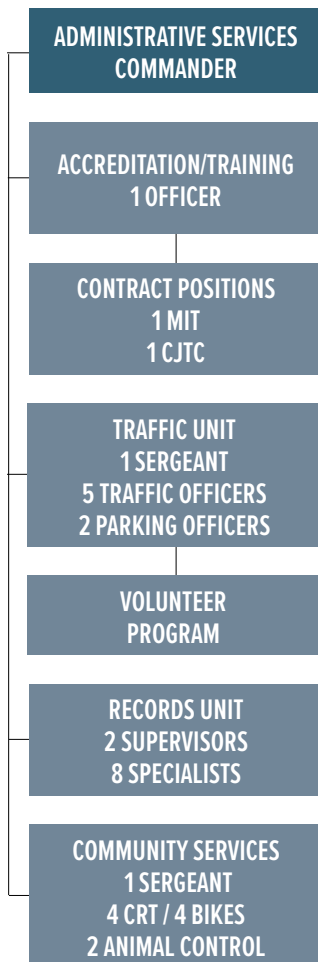
ADMINISTRATIVE SERVICES COMMANDER CRISTIAN ADAMS

Commander Adams began his career with the Auburn Police Department November 21, 2005. He has served as a Detective, Defensive Tactics Instructor and Field Training Officer during those 12 years. He was promoted to Sergeant in July of 2017, becoming the first minority to join the supervision ranks of the history of the police department.

He was promoted to Commander on February 1, 2021 where he is currently assigned to Admin Services. He has been Commander for the Civil Disturbance Unit and Field Training Officer Program. He is currently the Commander for The Valley Hostage Negotiation Team and Defensive Tactics.

Commander Adams is a Co-chair for the Police Advisory Committee and a member of the City of Auburn Diversity, Equity and Inclusion team.

Commander Adams holds a Bachelor of Arts in Law, Society and Justice from the University of Washington where he was a member for the track team specializing in the 400 meters and 1600 meter relay.





COMMUNITY PROGRAMS SERGEANT **BRIAN ANDERSON**

Sergeant Brian Anderson has been with the Auburn Police Department since July of 2007. As a Patrol Officer he was a member of the Crime Scene Response Team, Auburn Police Firearms Staff and the Valley SWAT Team. In 2015 he was assigned as a member of the CRT unit in admin services, after that three year assignment he spent a short time back in the patrol division as a temporary Sgt and then was selected to the Detective Division and assigned to the property Crimes unit. Brian was promoted to Sergeant in May of 2021 and assigned to the Patrol Division.



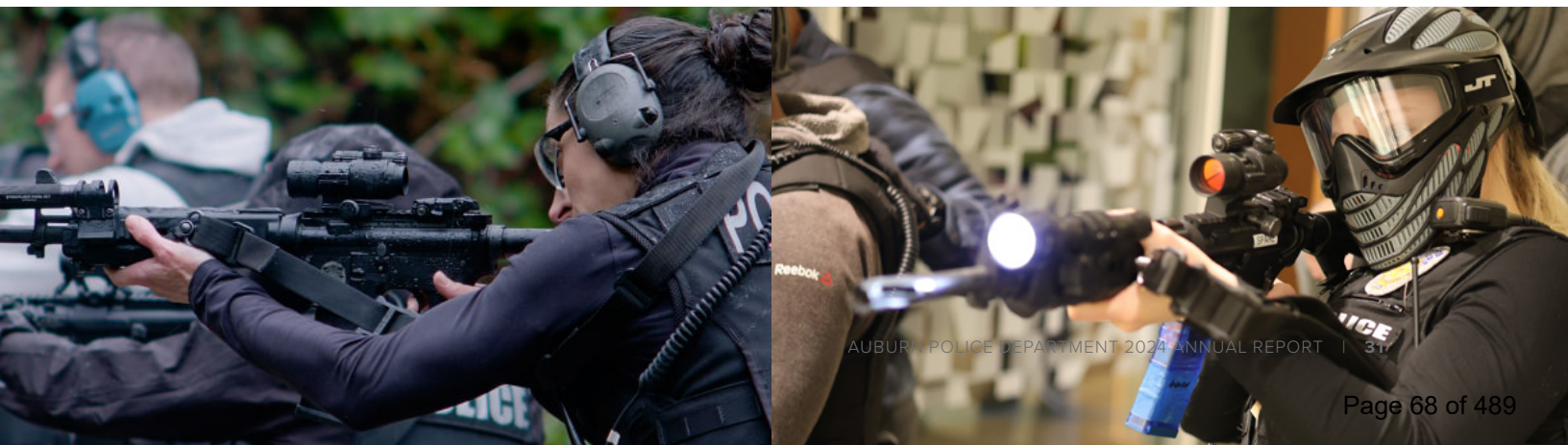
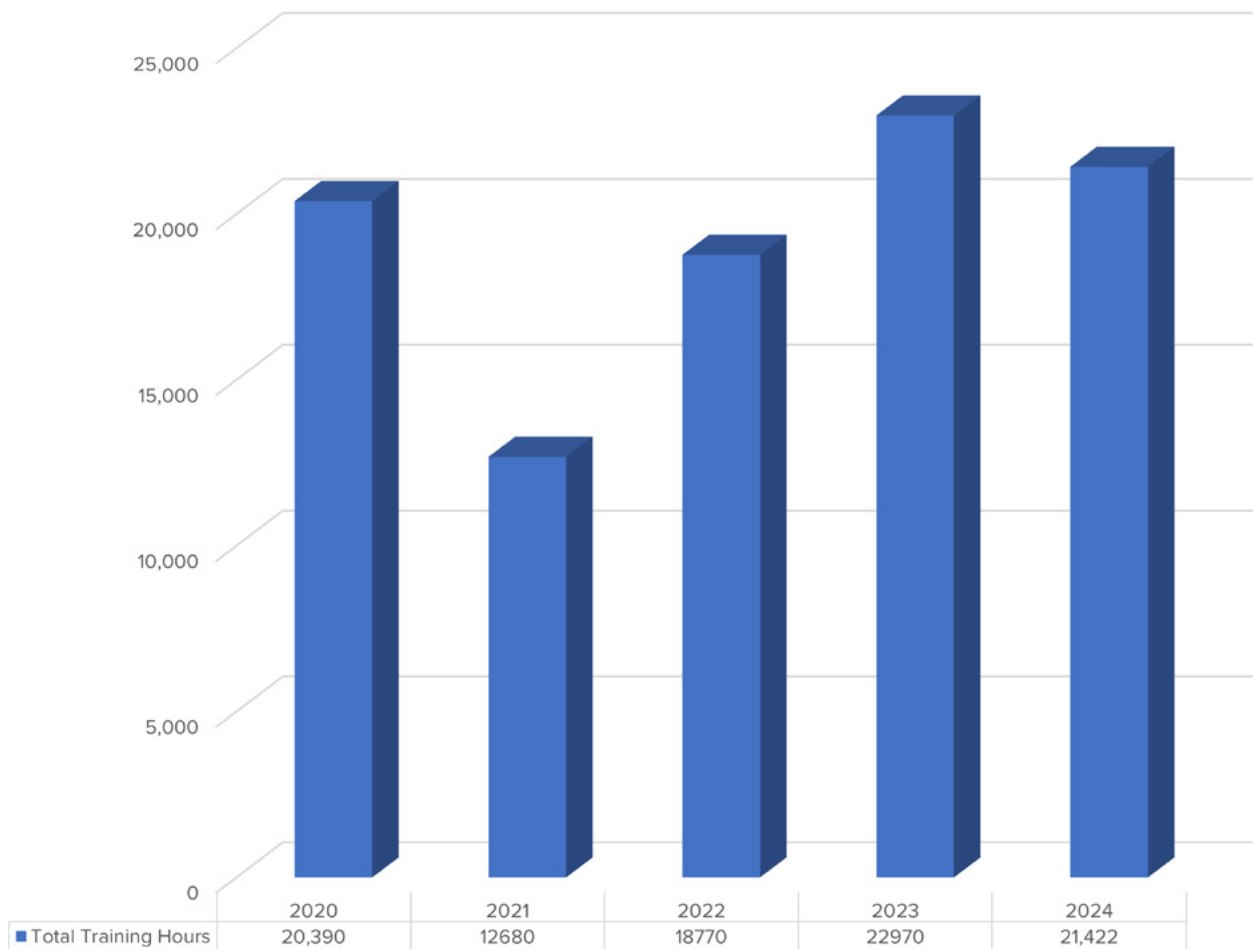
TRAINING ACCREDITATION OFFICER **DOUG KOCH**

Officer Koch began his law enforcement career with the Auburn Police Department in 1989 and has over 35 years of law enforcement experience. Officer Koch has served as a Patrol Officer, Field Training Officer, Firearms Instructor and Armorer. He holds a Bachelor's Degree in Criminal Justice from Washington State University. In his current assignment as the Community Services Officer and Accreditations Manager he maintains the accreditations files with WASPC, oversees the police volunteer program, attends career and recruitment fairs, assists with the Citizen's Academy and organizes police department events held outside of the department.

TRAINING HOURS

Training by the different divisions in 2024 was comprehensive. All commissioned staff are tasked to achieve a minimum of 30 training hours per year. Non-commissioned staff receive a minimum of 20 hours per year. The patrol hours also include training provided to new recruits at the State Basic Law Enforcement Academy and post academy training.

TOTAL TRAINING HOURS





CRT OFFICER
STEPHANIE BENNETT



CRT OFFICER
CHRIS MAST



CRT OFFICER
AARON WILLIAMS

CRT

The Community Response Team is a significant resource within the police department to problem solve issues that arise within the city. Problem solving and reducing crime is addressed through tracking all rental properties throughout the city and taking an active role in enforcing the Multi-housing ordinance. CRT Officers review police activity through reports and crime analysis to identify ongoing difficulties and coordinate efforts utilizing all city, county and state resources. CRT Officers make every effort to initiate contacts in the city through community meetings and Blockwatch efforts.

CRT Officers perform a slightly different role from officers in the Patrol Division, as they are able to be more pro-active in their duties. They are, however, in uniforms and assigned patrol vehicles. CRT Officers are visible in the community and take an enforcement role to address problems that are identified and will work with the Patrol Division in a collaborative effort.



RECORDS UNIT



The Records Unit is in the Administrative Services Division and is comprised of a commander, 2 supervisors, and 8 specialists. The Records Unit processed over 17,864 police reports in 2024 and is responsible for records retention along with providing statistical data for the National Incident-Based Reporting System (NIBRS). In addition, they processed 2,530 warrants, 2,620 court mandated orders, and 4,486 records requests. They administered 1,195 concealed pistol licenses, and 10 dealer licenses.



RECORDS SUPERVISOR
STEPHANIE JENKINS



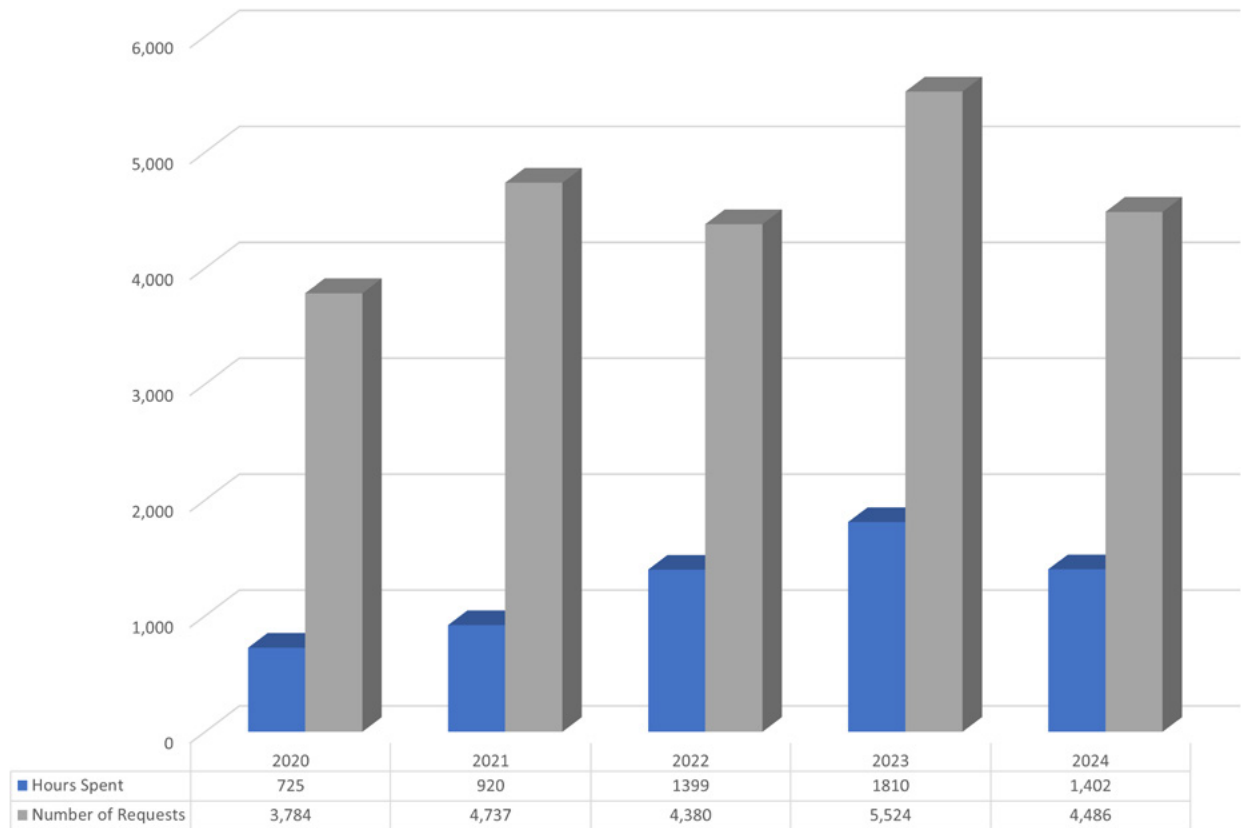
RECORDS SUPERVISOR
TRACEY CARTER

2,530
Processed Warrants

4,486
Records Requests

PUBLIC RECORDS REQUESTS

Gathering information for Public record requests has become a large part of the Records Unit duties.



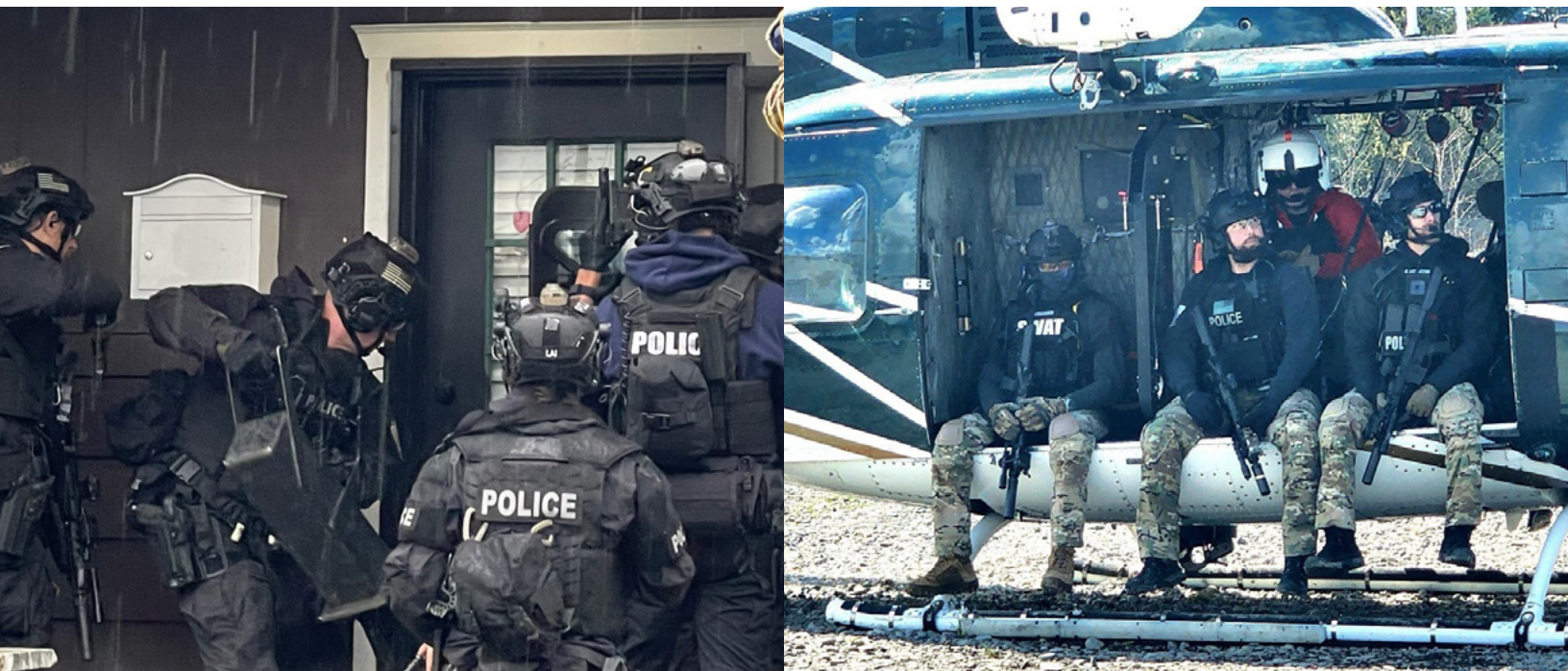
SPECIALTY UNITS

The Auburn Police Department supported the City and greater law enforcement community with a variety of well trained and equipped specialty units. They include, but are not limited to, the following:

- SWAT team
- Crime Scene Response Team
- Bicycle Unit
- Crisis Communications Unit (CCU – Hostage Negotiator)
- Civil Disturbance Unit (CDU – Riot Control)
- Honor Guard
- K-9 Officers
- VIT - Valley Investigations Team (Officer Involved Incident)

SWAT TEAM

The SWAT team trains three times a month and completes a team training week every year. The team was called out to execute 78 actual missions during 2024. Auburn is part of Valley SWAT, comprised of the cities of Auburn, Kent, Renton, Tukwila, Federal Way, Des Moines, and the Port of Seattle.



HONOR GUARD

The Auburn Police Honor Guard performs in numerous community events such as :

- Auburn Days Parade
- Veterans Day Parade
- Officer's Funerals



K-9 UNITS

The Auburn Police Department has three K-9 Units. All are generalists (tracking dogs).



CIVIL DISTURBANCE UNIT (CDU)

The Auburn Police Department is part of the Valley Civil Disturbance Unit (VCDU). Auburn partners with the other valley agencies; Federal Way, Renton, Kent, Tukwila and the Port of Seattle. As a team we provide a well trained and equipped civil disturbance/civil disobedience response for South King County.





ANIMAL CONTROL OFFICER
RAY PECKHAM



ANIMAL CONTROL OFFICER
NICHOLACE SORENSON

ANIMAL CONTROL

Animal services in the City of Auburn are provided by the Auburn Police Department's Animal Control officers. If you are experiencing a life-threatening animal-related emergency, call 911. For non-emergency animal control service, please call 253-931-3062 or the non-emergency police line at 253-288-2121. The Animal Control Officers respond to the following requests:

- Vicious animal complaints
- Animal complaints/bites
- Disruptive animals
- Injured wildlife
- Injured animal rescues
- Dead-on-arrival livestock/cats/dogs
- Police department calls for assistance
- Loose livestock on roadways
- Aggressive or sick animal pickup
- Animal cruelty investigations
- Wildlife in the living area of a home

2,064
Calls

Calls include impounds, self-initiated contacts, citations & infractions, and warnings.



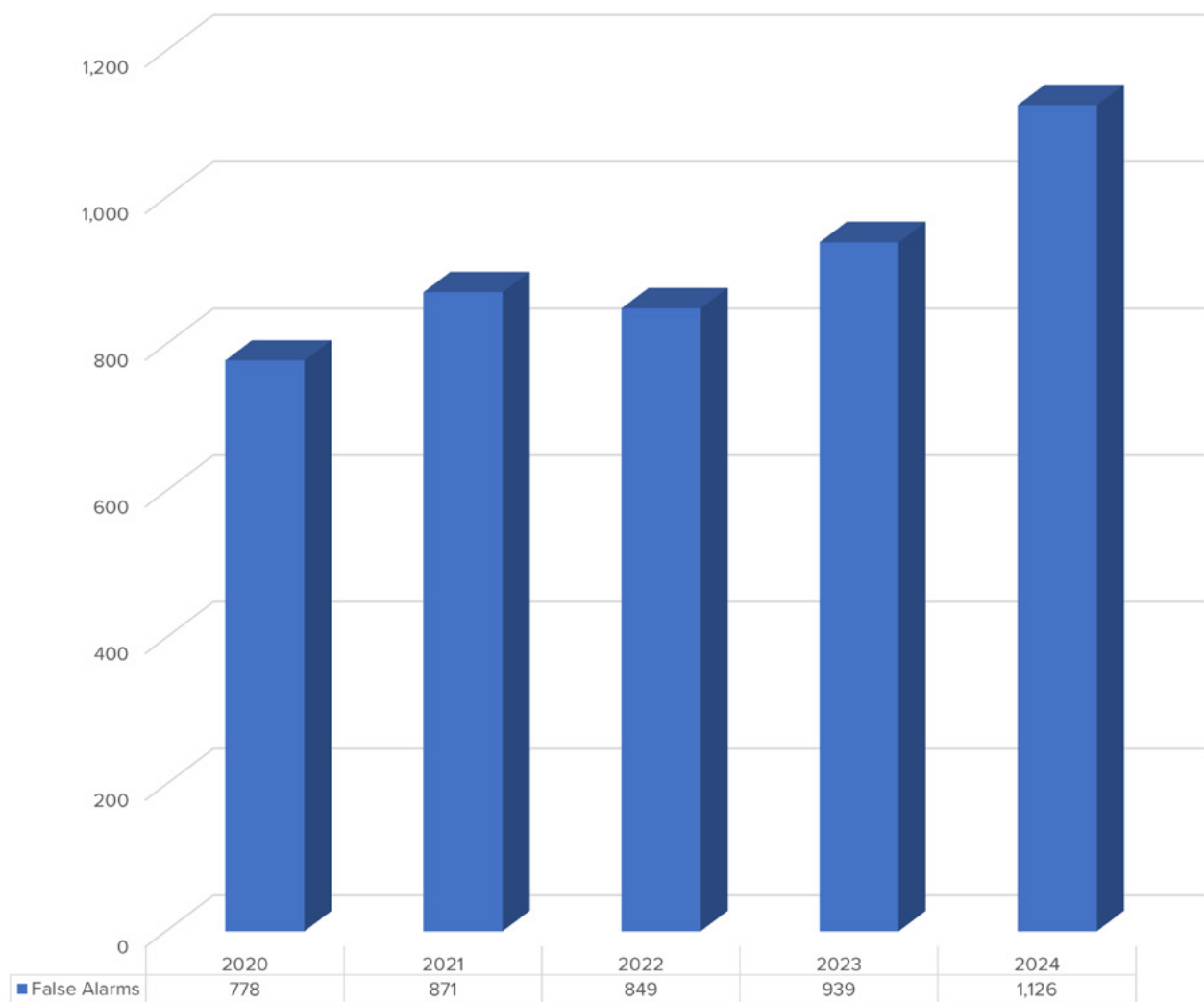
MIT OFFICER
RYAN BUSH

MUCKLESHOOT OFFICER

Ofc Bush was born in Tacoma and grew up in Puyallup. After high school Ofc Bush attended the University of Washington and was a member of the of the Husky Football Team. Ofc Bush is married and has two daughters and a son. Ofc Bush was hired in July of 2014 and following his training was first assigned to the Patrol Division, working swing shift primarily in south Auburn. Following several years in the Patrol Division Ofc Bush became a School Resource Officer working out of Riverside High School. Ofc Bush now works as the Muckleshoot Tribal Liaison Officer and has been in his current role for roughly a year and a half. Ofc Bush is also a member of the Civil Disturbance Unit. In his free time Ofc Bush enjoys spending time with his family, working around the house and watching football.

FALSE ALARMS

Scarce resources combined with an increased demand for services make responding to false alarms an extreme burden for public safety agencies. Non-critical calls for service, such as false alarms, decrease the amount of time officers spend responding to true emergencies and reduce the number of staff available for crime prevention. Without effectively managing false alarms, the number of false alarms continues to increase every year. With the comprehensive false alarm ordinance in place by the City of Auburn, our officers are freed to spend more time proactively patrolling their districts.





THE AUBURN POLICE DEPARTMENT IS A STATE ACCREDITED AGENCY

The Auburn Police Department is actively looking for volunteers.
If you are interested in being a part of our volunteer program
please visit our website at www.auburnwa.gov/police

AUBURN POLICE DEPARTMENT

340 East Main Street, Suite 201
Auburn, Washington 98002

LOBBY

Services 24 hours a day

BUSINESS OFFICE

Monday-Friday | 9am-5pm
Saturday | 9am-12pm
Sunday & Holidays | Closed

KING COUNTY DISTRICT COURT

South Division
340 E Main Street, Suite 101
Auburn, Washington 98002
206-477-0480



AUBURN POLICE DEPARTMENT 2024 ANNUAL CIA REVIEW



THE AUBURN POLICE
DEPARTMENT IS A
STATE ACCREDITED AGENCY



Report prepared by Commander Shaun Feero

This annual analysis of the CIA (Commendations, Inquiries, and Allegations) investigations provides the administration of the agency and the public we serve a review of agency personnel conduct from an analytical perspective and possibly through the eyes of our community. As outlined in the Auburn Police Department Manual of Standards, the CIA system provides a standardized means of reporting, investigating, and documenting Commendations, Inquiries, Internal Investigations and Collision Reviews.

Our **Vision Statement** calls for us to be a premier agency that is trusted, supported, and respected. Our **Mission Statement** requires that our department will “provide professional Law Enforcement services to our community.” To meet these demands, we must be a disciplined and a well-regulated organization. One method by which to determine our success is to evaluate our CIA process. This report illustrates how well the Auburn Police Department is perceived to be following our Vision and Mission statements, as well as our Manual of Standards.

Summary of 2024

In 2024, Auburn Police Officers responded to 64,422 CAD incidents (68,026 in 2023) and completed 13,624 case reports (14,820 in 2023). Officers made 2,779 arrests (2,683 in 2023) with 2,351 of those arrestees being booked into SCORE (2,087 in 2023) and issued 3,801 infractions/citations (5,885 in 2023). All this activity accounts for only a portion of the personal contacts with our community members that are made by our police officers throughout the year.

Commendations

A **Commendation** is used to recognize actions or performance by members of the police department who act or perform in a manner that is outstanding or beyond what is normally expected. The Commendation process recognizes employees for Professionalism, Exemplary Job, Exemplary Actions, Life Saving and Heroism.

Most of our commendations come from citizens who took the time to recognize one or more officers due to their exemplary and professional work. Other commendations come from supervisors recognizing officers for a job well done, known as Supervisor Comments. These commendations range from officers conducting school speeches, helping someone change a tire or going above and beyond to investigate someone’s case.

Letter of Commendation

A **Letter of Commendation** is used when department personnel perform a commendable act that rises above the level of a commendation but does not meet the criteria for an award. Examples include an officer going above and beyond to exemplify our Core Values of Courage, Honor, Integrity, and Professionalism. These letters range from officers volunteering to work an alternative assignment to assist with

staffing, to effectively communicating with a suicidal subject in crisis that leads to a safe resolution.

Awards

The **Medal of Valor** will be awarded to department personnel for acts that meet all of the following conditions.

1. When the act conspicuously displays extreme courage, beyond the normal demands for police service.
2. When failure to take such action would not justify official censure.
3. When substantial risk to their physical safety actually existed and the individual was unquestionably conscious of this imminent threat.
4. When the objective was logically believed to be of sufficient importance to justify the risk taken.

The **Medal of Distinction** will be awarded to department personnel for acts which meet all of the following criteria.

1. When personnel manifest courage in the performance of duty under circumstances less than those required for the Medal of Valor.
2. When a risk to the individual's physical safety actually existed, or when there was reason to believe that such a risk was present.
3. When the act indicated that the individual was conscious of the imminent danger to their personal safety, or when a reasonable and prudent person would normally assume such a danger was present.
4. When the objective was reasonably believed to be of sufficient importance to justify the risk taken.
5. When the individual accomplished the objective or was prevented from doing so by circumstances beyond his/her control.

The **Lifesaving Medal** shall be awarded to department personnel for acts that meet all the following criteria.

1. When the acts were personally performed by the officer.
2. When affirmed by competent medical authority, an individual saved a human life or prolonged life beyond the day of extraordinary circumstances.

The **Merit Medal** shall be awarded to department personnel for acts that meet all the following criteria.

1. When individuals who distinguish themselves by excellence in events which involve tactical action.
2. When the event involves some risk to the individual.

The **Honorable Tactical De-escalation Medal** shall be awarded to department personnel for acts that meet all the following criteria.

1. When the acts were personally performed by the department member.
2. When the department member utilized exceptional tactical skills or verbal approaches and techniques to de-escalate any deadly force situation resulting in the saving or sustaining of a human life.
3. When the deadly force and de-escalation factors can be independently verified.

Year	Total Commendations	Letter of Commendation	Medal of Distinction	Life Saving	Medal of Merit	Tactical Medal
2021	124	2	0	7	2	1
2022	44	6	0	3	0	1
2023	67	8	0	2	0	2
2024	66	2	1	1	0	0

Employee Investigations

There are three ways a complaint can be categorized and investigated: Supervisor Inquiry, Supervisory Investigation and Internal Investigation.

A Supervisor Inquiry involves a complaint that is informal and typically does not arise to discipline. Generally, the involved individual's immediate supervisor will inquire into these complaints as directed and will have 10 calendar days to complete the inquiry. The two categories of disposition involving a supervisor inquiry are acceptable or unacceptable performance. If the inquiry determines there was unacceptable performance, the supervisor will meet with the employee and provide coaching & counseling.

A Supervisory Investigation involves a complaint made regarding the quality-of-service delivery. These complaints vary in degree from complaints regarding an employee's demeanor, tardiness, complaints related to customer service, or the nature of a department practice. This may also be a complaint of a minor policy violation. The employee's immediate supervisor typically handles this type of complaint, but a commander might also take charge of it.

An Internal Investigation involves a complaint of a possible violation of department standards, written directives, City policies or applicable Civil Service Rules. These

allegations include, but are not limited to, complaints of bias-based policing, excessive force, alleged corruption, insubordination, breach of civil rights, false arrest, and other types of allegations of serious misconduct. If an allegation of criminal misconduct is reported and appears to have merit, a simultaneous **criminal investigation** will be initiated.

Internal Investigations

Year	CAD Incidents	Internal Investigations	Inv. With Misconduct	Total Employees
2021	72,944	6 (.008%)	5	7
2022	69,072	6 (.009%)	4	4
2023	68,026	4 (.005%)	2	5
2024	64,422	8 (.012%)	6	10

Internal Investigations generated by internal and external sources

	External Sources	Internal Sources	Total Combined
Total Investigations	3	5	8
Sustained Misconduct	2	4	6

In examining the above tables, Internal Investigations generated internally usually resulted in a finding of actual misconduct. The above table shows that four Investigations received from internal sources resulted in a finding of misconduct. During these types of investigations, statements, photographs, videos, police reports, and any other potential documentation are examined. The investigation is then forwarded to a supervisory review board to determine findings.

Supervisory Investigations

These numbers continue to be very low compared to the number of contacts with the public. This would appear to indicate that our officers conduct themselves most of the time in a professional manner because these are complaints regarding an officer's demeanor, tardiness, and customer service. (These were labeled as Supervisory Inquiries prior to 2021).

Year	CAD Incidents	Supervisory Investigations	Investigations with Actual Misconduct	Involved Employees
2021	72,994	10 (.01%)	2	14
2022	69,072	9 (.01%)	4	11
2023	68,026	4 (.005%)	2	13
2024	64,422	7 (.01%)	7	11

Allegations

The following table depicts the total combined allegations by category for all Supervisor Investigations and Internal Investigations for 2024. It should be noted that Supervisory Investigations and Internal Investigations can result in findings of Misconduct or No Misconduct.

Allegation	Total	No Misconduct/ Acceptable Performance	Misconduct/ Unacceptable performance	No Conclusion/ Pending
Violation of General Policy	17	0	17	0
Discourtesy	1	0	1	0
Code of Conduct	5	1	5	0
False Arrest	0	0	0	0
Excessive Force	3	0	0	3
ACCESS Violation	1	0	1	0
Conduct Unbecoming	1	0	1	0
Core Values	4	0	4	0
Fail to Meet Job Expectations	3	0	3	0
Foot Pursuit Policy	0	0	0	0
Vehicle Pursuit Policy	4	0	4	0
Totals	39	1	36	3

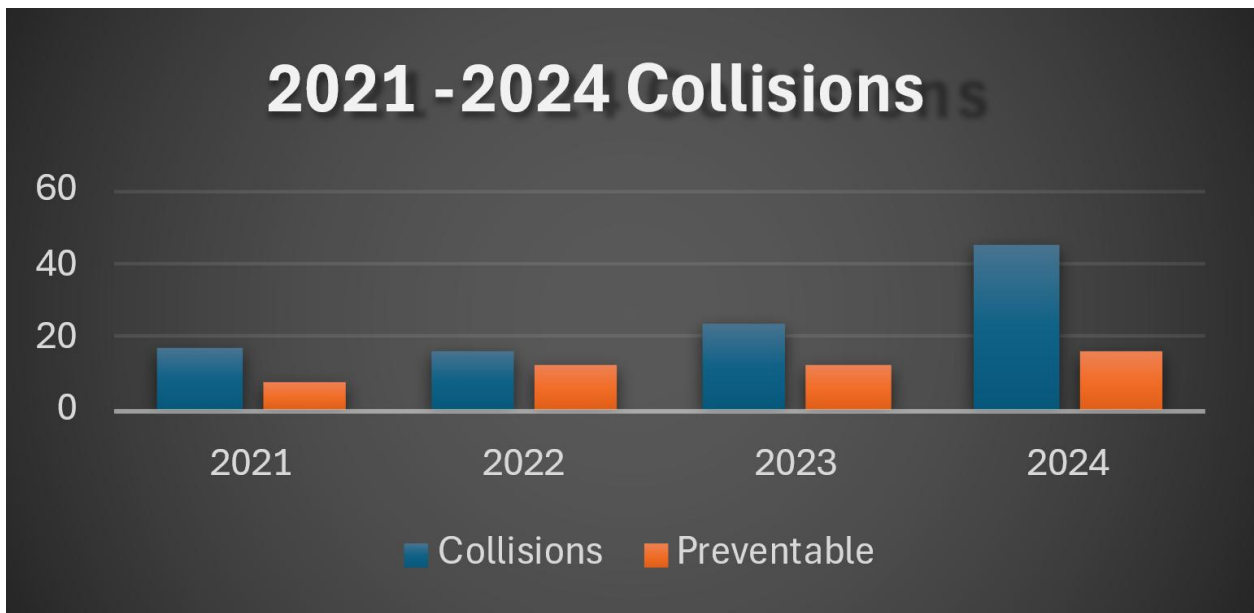
Collisions

In 2024, there were 45 collisions involving APD employees. Sixteen of the 45 collisions were determined to be preventable on the part of the officer. The median years of service of the officers involved in collisions is 2. Thirty-three of the collisions that occurred were officers who have 5 years or less of service with Auburn PD. The preventable collisions were attributed to officers with a median of 3 years of service. In examining the number of collisions, it is important to note that the department determines a collision to be any time an employee in control of a department vehicle has any contact with another vehicle, object, or person. Damage caused by a specific maneuver (PIT, intentional

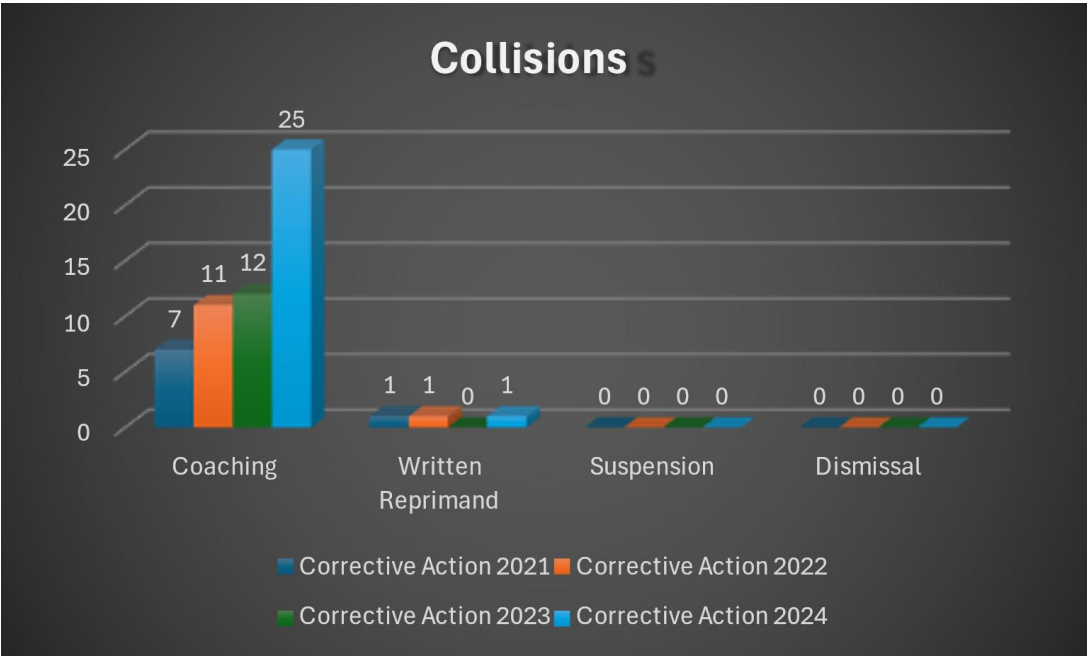
strike, etc.) is not considered a collision under our department policy. Most of these collisions did not meet the state definition of a reportable collision.

In reviewing the 16 collisions which were determined by a Collision Review Board to be preventable, “driver inattention” was apparent in most cases, by either watching for suspects or looking at vehicle equipment inside the car. If the drivers had been more attentive, they would not have collided with another vehicle, curb, tree, etc. All 2024 collisions (preventable and non-preventable) are categorized as follows:

- 17 - Driver Inattention
- 6 - Improper Backing
- 2 - Other
- 17 - Other driver at fault
- 1 – Poor Tactics
- 2 – Fail to clear intersection

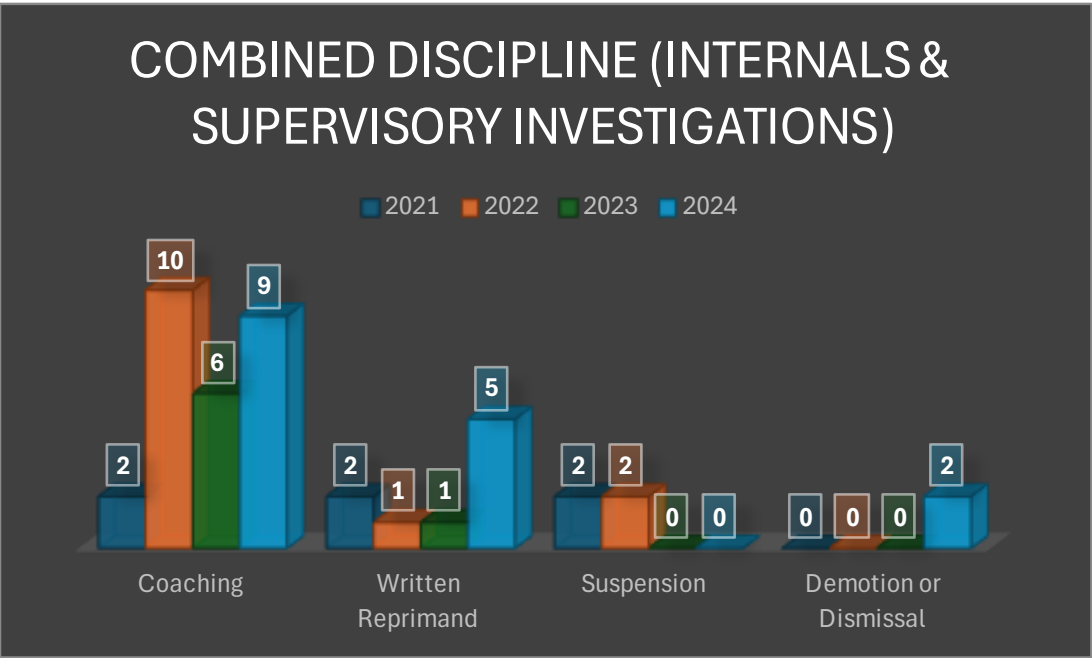


The below chart depicts the corrective action dispensed to the employees in preventable collisions. Some officers also received additional training where it was appropriate.



Actions Taken Internal Investigations

The following chart depicts action taken for misconduct, whether from an Internal Investigation or Supervisory Investigation, for each employee involved.



Outside Agency Investigations

To ensure that our investigations are unbiased, there are times when an outside agency may be asked to investigate serious allegations of misconduct made against agency staff, especially those that may be of a criminal nature. This provides Auburn citizens with confidence and allows for unbiased transparency into actions, activities, and decisions made by the Auburn Police Department. In 2024 there were no allegations of criminal misconduct.

Grievances

One of the Internal Investigations that concluded during 2024 was grieved to a level 3, which is reviewed by the mayor. One of the Internal Investigations that concluded during 2024 was grieved to a level 2, which is reviewed by the Chief of Police. These Investigations involved findings of Actual Misconduct. The grievances are still ongoing.

Conclusion

A review of the frequency of incidents for 2024 regarding alleged misconduct by employees of the Auburn Police Department does not appear to raise any specific concerns. The number of allegations and found misconduct when compared to the actual number of contacts Auburn Police Officers encounter each year is extremely low. This illustrates and confirms that we take all complaints seriously and train our employees regularly, and when necessary, use corrective action depending on the severity of the allegation.



AUBURN POLICE DEPARTMENT 2024 ANNUAL USE OF FORCE REVIEW



**THE AUBURN POLICE
DEPARTMENT IS A
STATE ACCREDITED AGENCY**



Report prepared by Commander Shaun Feero

The purpose of this annual report is to document and summarize all Uses of Force that were completed by Auburn Officers during the 2024 calendar year. This report compares statistics from previous years through 2024, which adds context and helps us identify trends that we can address in future training. The report will compare Use of Force incidents vs. Use of Force Allegations; types of injuries sustained by both suspect and officer; and force used when presented with different scenarios (i.e. officer about to be assaulted, suspect fled, etc.).

In 2024, Auburn Police Officers responded to 64,422 CAD incidents (68,026 in 2023) and completed 13,624 case reports (14,820 in 2023). Officers made 2,779 arrests (2,683 in 2023) with 2,351 of those arrestees being booked into SCORE (2,087 in 2023) and issued 3,801 infractions/citations (5,885 in 2023).

There were 249 incidents where officers were required to use force. Of the 249 incidents there were 246 Use of Force reports completed by officers in 2023 compared to 161 in 2023. Force reports exceed incidents because at times multiple officers used force on one suspect. Of the 249 incidents, there were 103 reported injuries by the suspect. All injuries were photographed and noted, and most were minor scrapes, bruises, small lacerations, K-9 contacts, and complaints of pain with no visible injury.

It is important to understand that there are times when it takes two or more officers using force on one suspect in order to gain compliance and get the suspect in custody. When that occurs, each officer is required to complete a force report which then generates multiple force reports for one incident. Table #1 below depicts the ratios in comparison to the force incidents.

Only .39% of subjects contacted resulted in force being used.

	2023	2023 Ratio 168 UoF Incidents	2024	2024 Ratio 249 UoF Incidents
CAD	68,026	1/417 (.24%)	64,422	1/259 (.39%)
Cases	14,820	1/90 (1.08%)	13,624	1/55 (1.83%)
Arrests	2,683	1/16 (5.73%)	2,779	1/11 (8.96%)
Bookings	2,087	1/12 (7.24%)	2,351	1/9 (10.5%)

The above table effectively shows that our officers use de-escalation techniques well. As you can see only 249 subjects out of 64,422 who were contacted, compelled the officer to use force.

Table #2 below shows the ratio comparison from 2023 regarding force reports completed.

Only .38% of contacts resulted in a use of force report being completed.

	2023	2023 Ratio 161 Reports	2024	2024 Ratio 246 Reports
CAD	68,026	1/422 (.23%)	64,422	1/261 (.38%)
Cases	14,820	1/92 (1.07%)	13,624	1/55 (1.8%)
Arrests	2,683	1/16 (5.66%)	2,779	1/11 (8.85%)

USE OF FORCE COMPARISON

The Auburn Police Department reports uses of force using an electronic reporting system. If there is any allegation of excessive force, by policy an internal investigation may be ordered by the Chief of Police. The following chart is a snapshot comparison of total excessive force allegations for each year compared to the number of force reports.

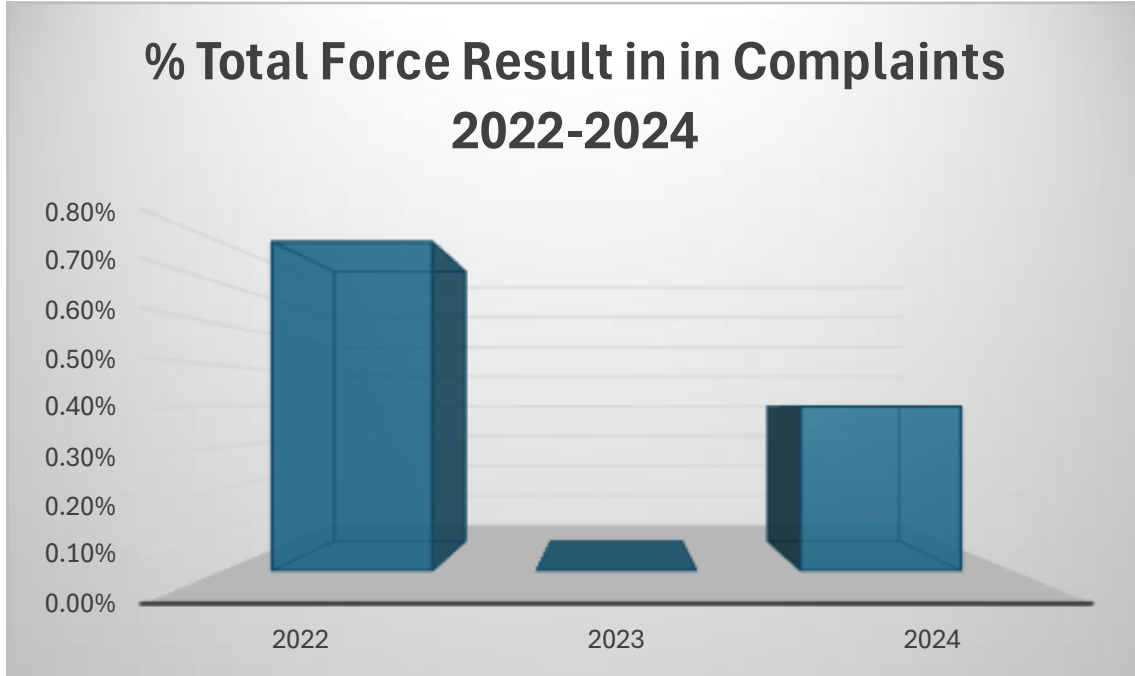
Force Report Comparison 2022-2024

In 2024, we received (1) allegation of inappropriate and/or excessive applications of force. All use of force incidents were reviewed, and there is currently an ongoing internal investigation involving the allegation of excessive force. Table #3 shows there was 1 incident that resulted in allegations of excessive force. Table #4 then reflects these same numbers in a percentage of allegations which is 0.40% in 2024.

Table 3

Year	Use of force reports	Excessive Force Allegations	Sustained Allegations
2022	133	1	1
2023	161	0	0
2024	246	1	Internal Ongoing

Table 4



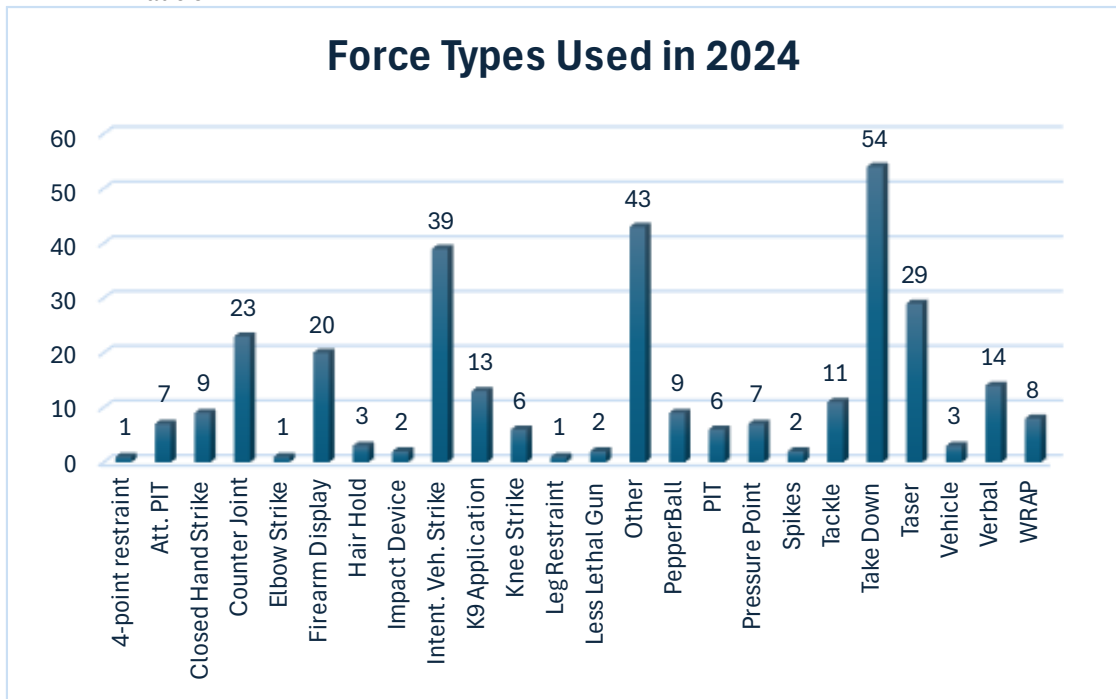
Types of Force Used

The use of force types listed below are techniques that the officers are trained to use depending on the type of resistance the subjects are exhibiting. Take Down is the most used type of force our officers use which is also the least invasive type of force. **PIT** is Pursuit Immobilization Technique which is used during pursuits to end the pursuit as quickly as possible in order to reduce potential injury and take the suspect into custody. An **Intentional Vehicle Strike** is authorized by policy in certain situations which entails the officer striking a suspect vehicle with his/her patrol car at slow speed to pin the vehicle so that it cannot continue to flee. There was a total of 320 force types documented in 2024.

Force Types Used in 2024

Table #5 below shows each force type that can be used by an officer and shows the number of times that force was used in 2024.

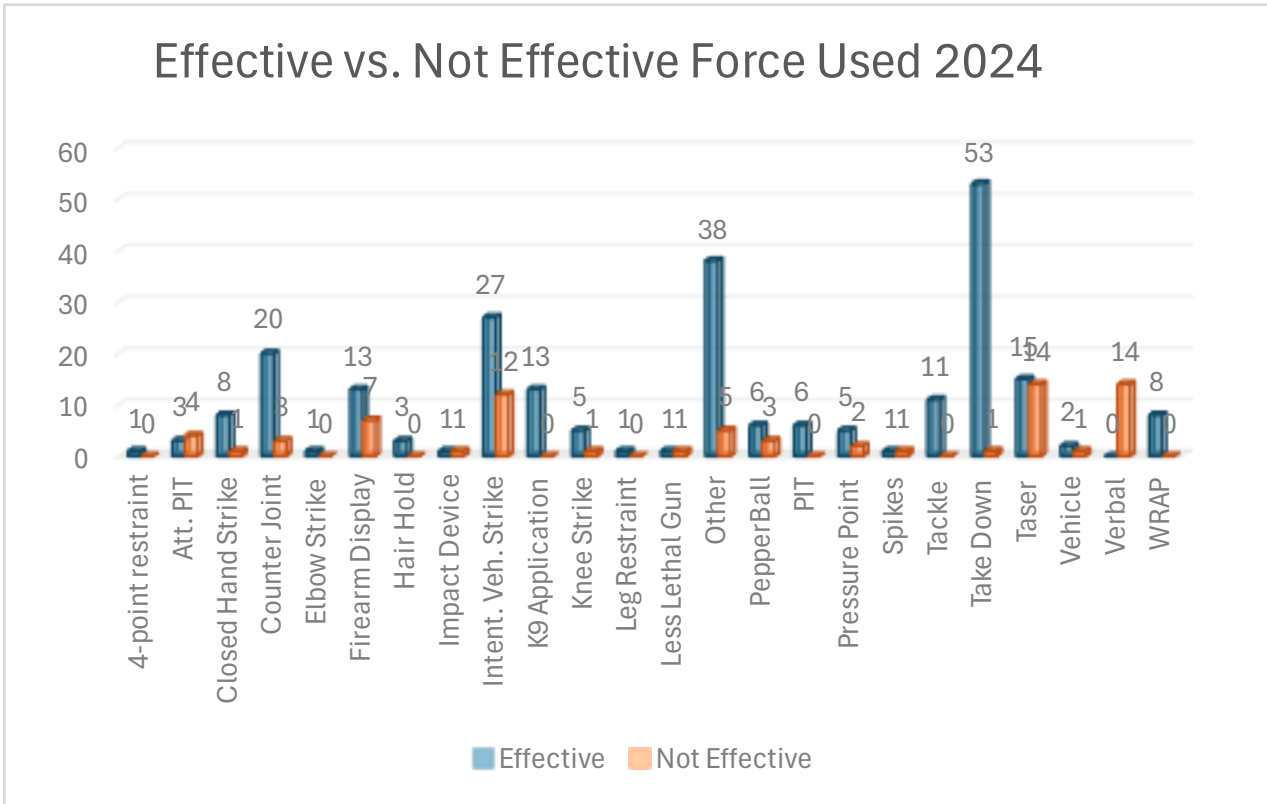
Table 5



Effective vs. Not Effective

Not every type of force is always effective, and at times multiple types of force are used on one person during the same incident. Table #6 shows the effectiveness of the types of force and shows when a force type is ineffective. As you can see officers use verbal skills first quite often, and when that is ineffective the officer is then compelled to use a different type of force.

Table 6



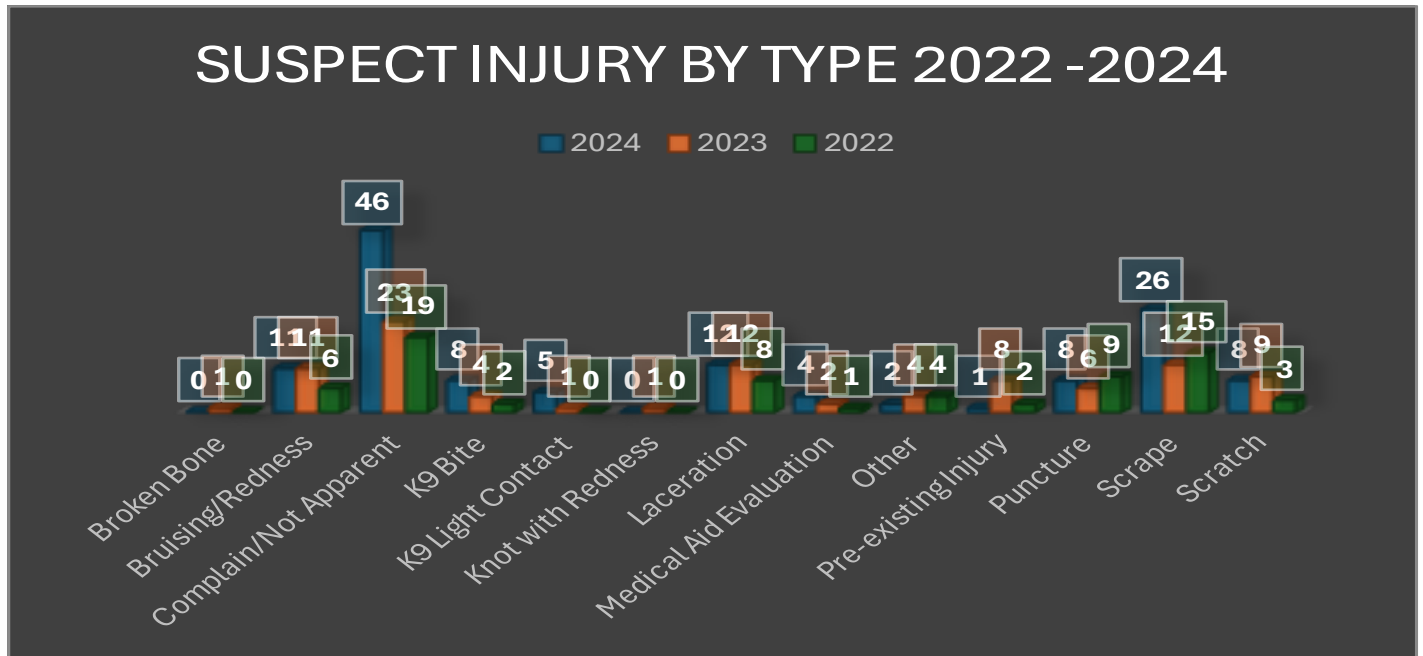
Force Used Resulting in Injuries

In 2024, injuries were reported by the suspect in 42% of all uses of force. Officers received minor injuries in 12% of the incidents. Injuries to suspects can include abrasions, contact from K9's, or general complaints of pain. All complaints of injuries are required to be documented and photographed. Officer injuries included bruising, minor punctures, scrapes and scratches. Table #7 and #8 compare these numbers to previous years. There were no fatal injuries or injuries resulting in serious bodily injury due to use of force.

Table 7

	Total Force Reports	Suspects Injured	Officers Injured	% of total of suspects injured
2022	133	62	18	47%
2023	163	94	23	57%
2024	246	104	30	42%

Table 8



Time of Day

The below tables depict the Auburn Police Departments use of force incidents by time of day. As in previous years documented, the majority of the occasions that officers are compelled to use force occur between the hours of 6:00 PM and midnight. Table #9 focuses on the year 2024 only and Table #10 compares the times to previous years.

Table 9

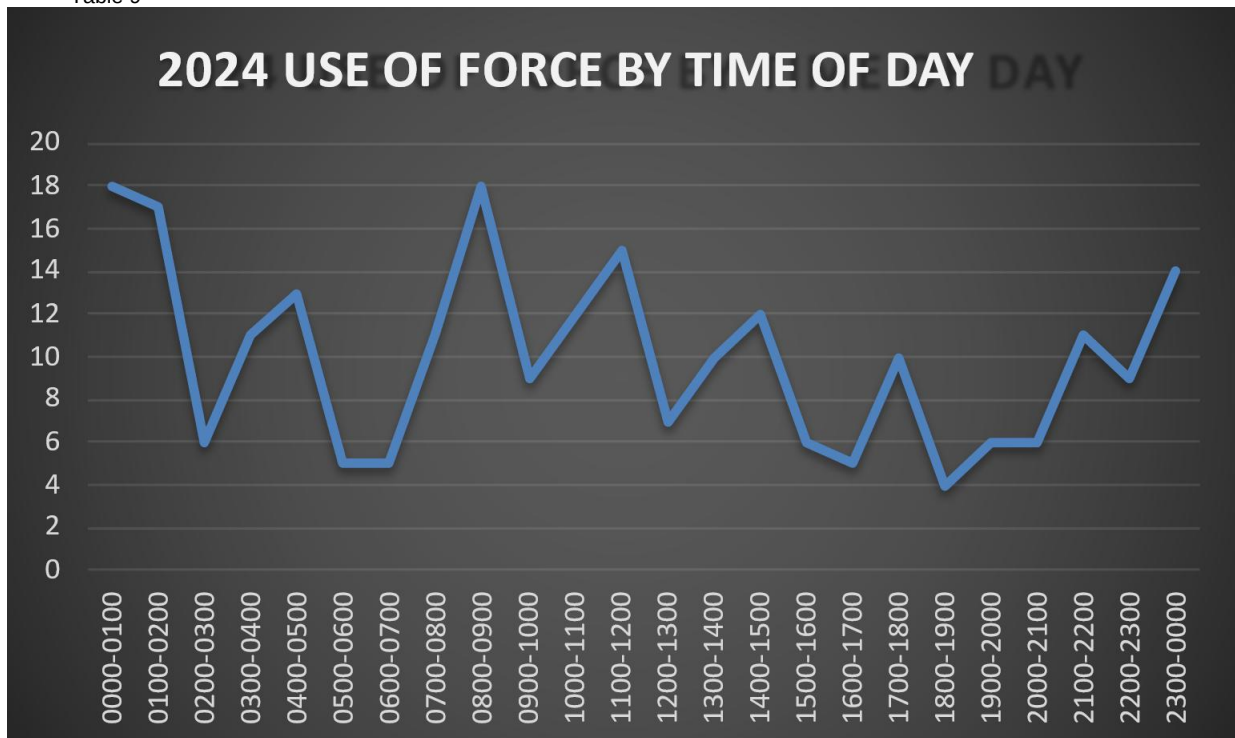
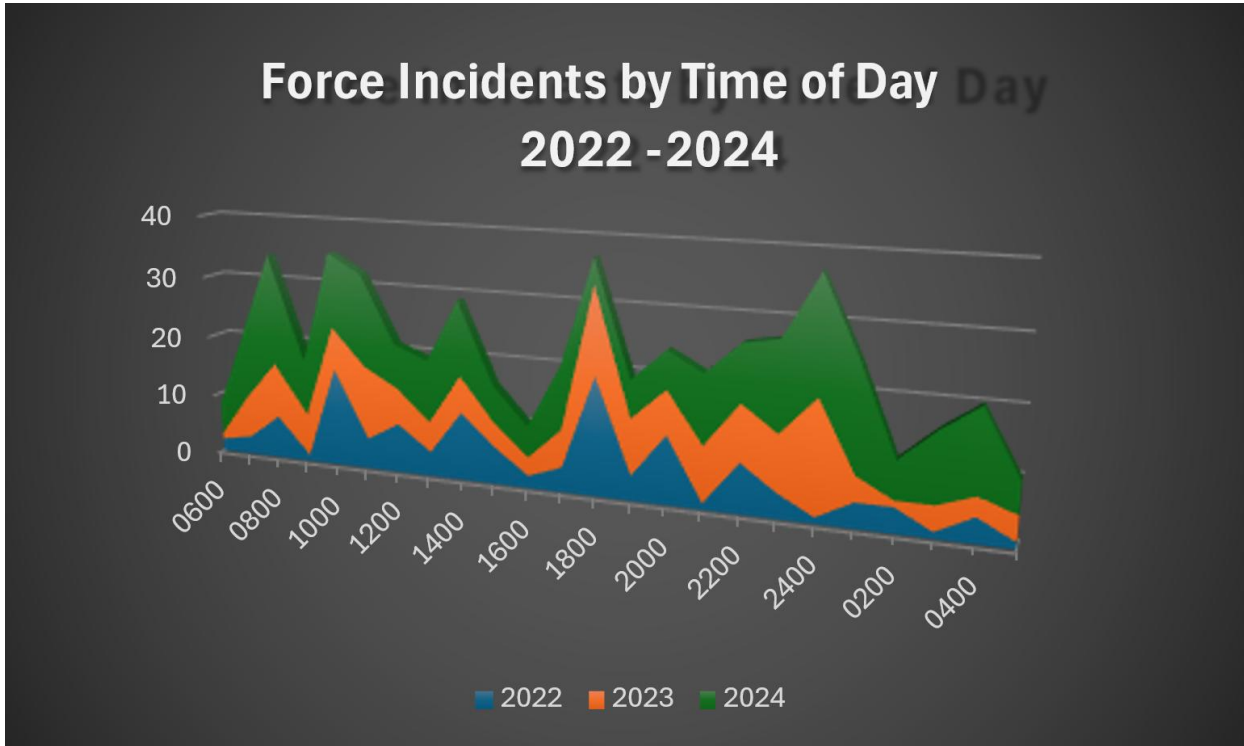


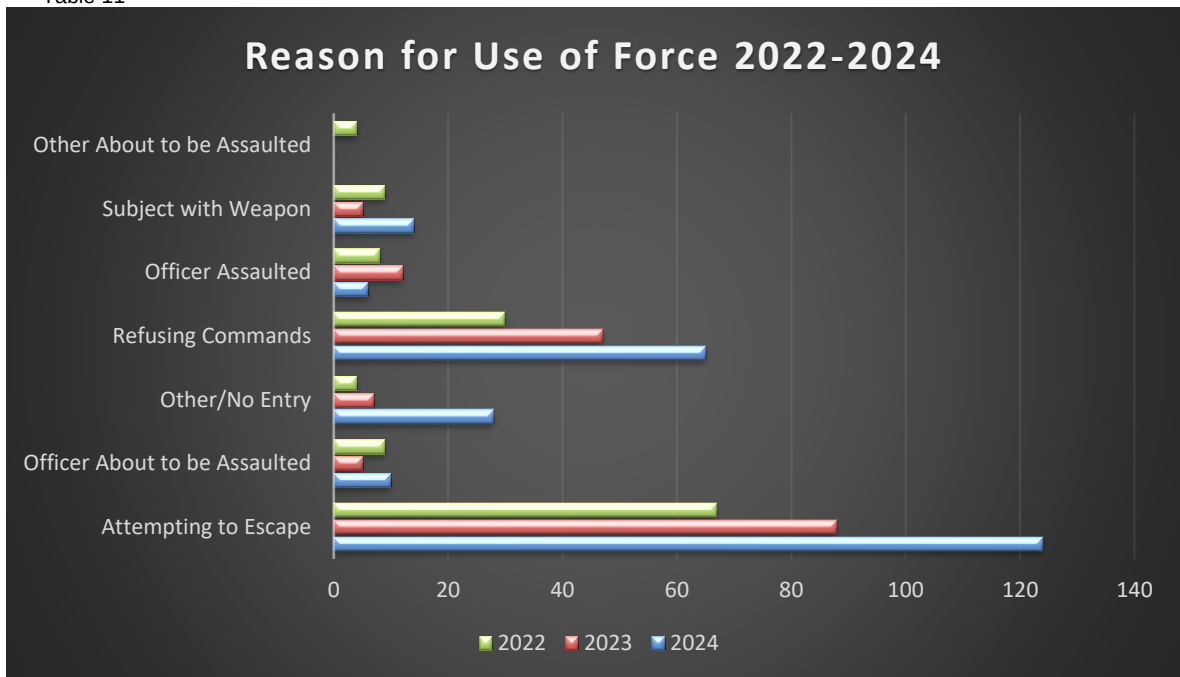
Table 10



Reason for Use of Force

Table #11 below shows the reasons that officer(s) were compelled to begin to use force resulting in the 246 force reports.

Table 11



Citizen Resistance During Force Encounter

Table #12 below shows the different resistance citizens were giving to an officer during a use of force encounter. Most of the time there are multiple types of resistance provided by a subject during a force encounter. In 2024, there were 649 documented forms of resistance during force encounters.

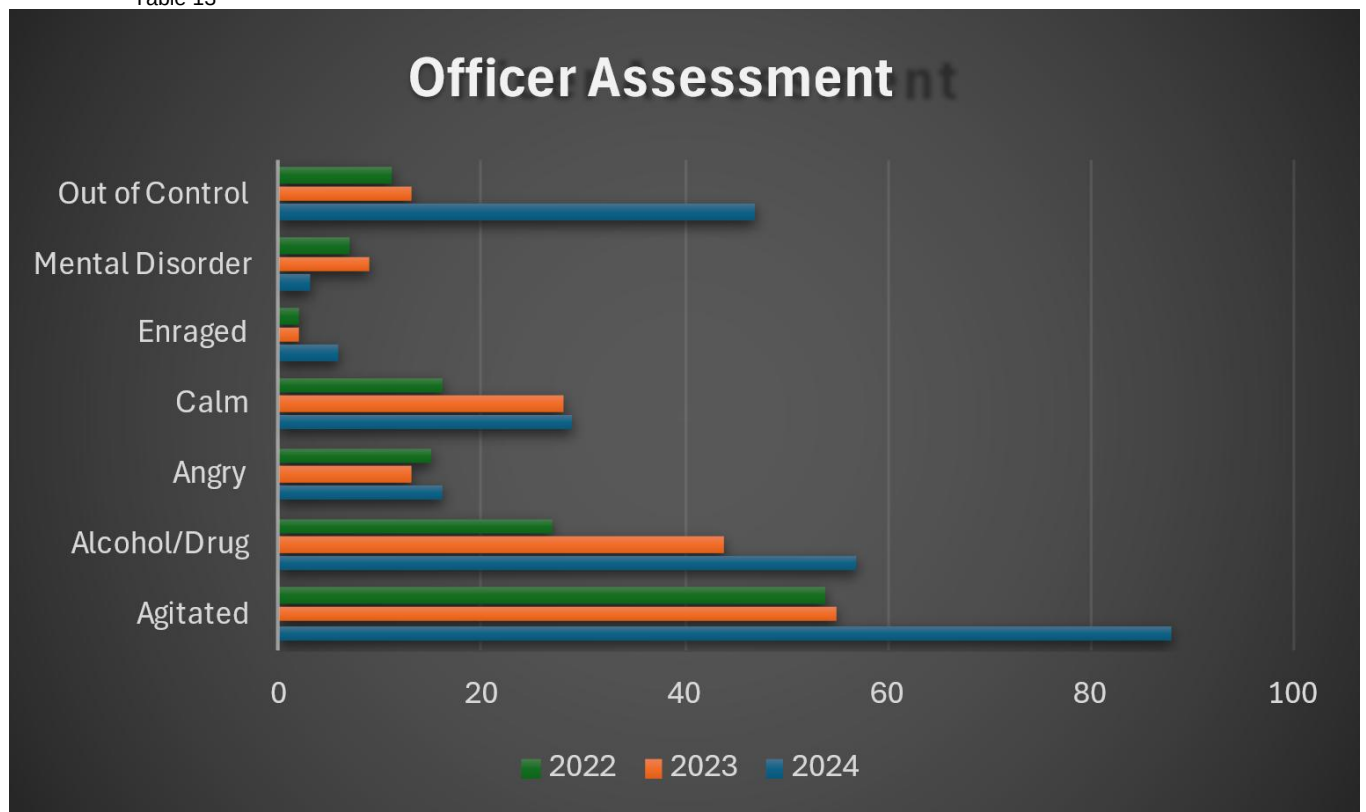
Table 12

	2024	2023	2022
Officer Assaulted/Threat to be Assaulted	37	23	31
Assaulted Other/Other About to be Assaulted	9	6	17
Fighting Stance	26	12	23
Subject Trying to Flee	111	83	64
Muscular Tension/Pulled Away	201	145	135
Other	59	45	29

Officer Assessment of Citizen Prior to Force Being Used

The below table is what the officer was observing or perceiving of the citizen prior to being compelled to use force.

Table 13



Use of Force Demographics

Table 14 depicts the race of the citizen the officer(s) were compelled to use force on. These numbers are in relation to 64,422 contacts our officers had in 2024 which resulted in only 246 incidents of force.

Table 14

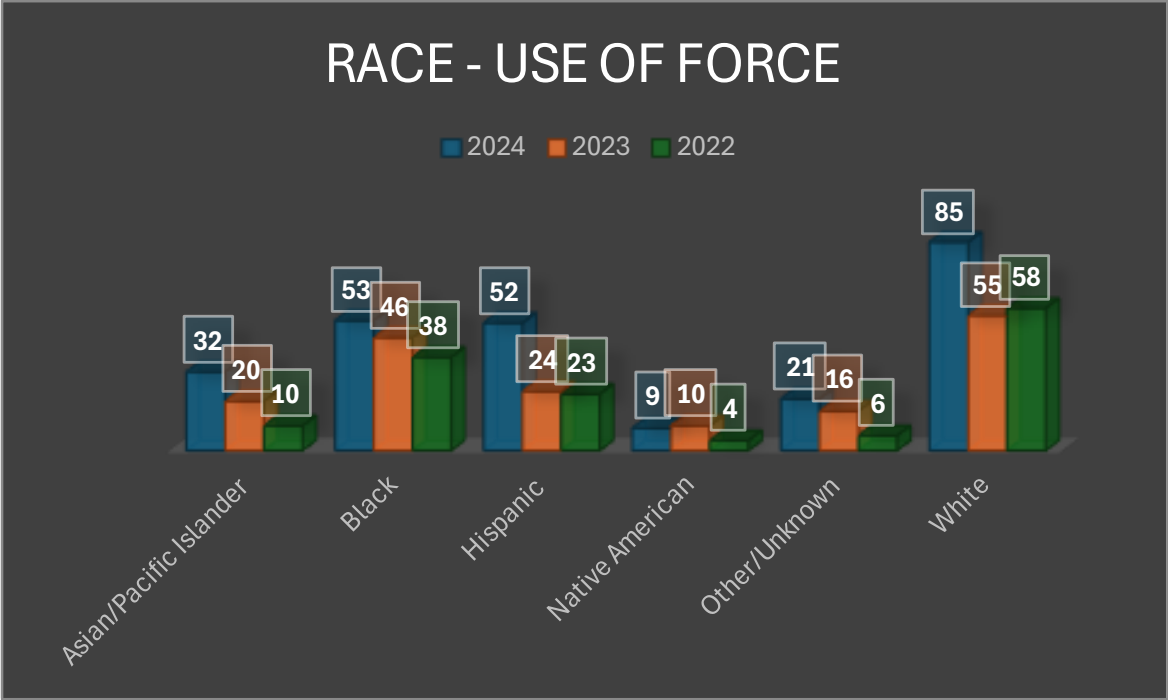
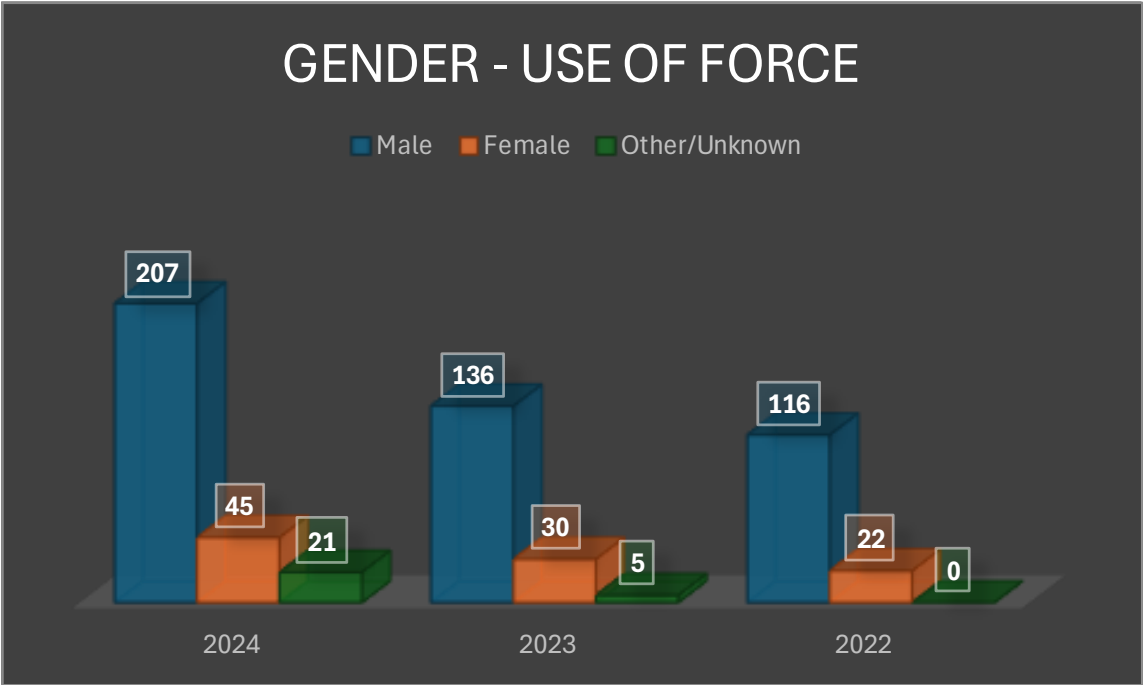


Table 15 depicts the gender of the citizen the officer(s) were compelled to use force on.

Table 15



Summary

It is clear from the report that Auburn Officers contact many subjects throughout the year and make many arrests. Calls for service were down by over 4,000. Subsequently, force incidents continue to be low compared to the number of contacts our officers make each year. New police legislation in 2021 significantly impacted/limited circumstances in which officers were allowed to contact and detain subjects. These restrictions were loosened and updated a bit, allowing for more subjects beginning to be detained in 2022 and continuing into 2023-2024.

The most compelling statistics in this report are that the calls for service, arrests, and bookings are high numbers and by percentage the use of force does not occur often. In 2024, only .39% of CAD incidents required force to be used on a subject. Officers continue to receive annual defensive tactics/use of force training, as well as training on de-escalation techniques. This training encompasses classroom, hands-on, and scenario-based training. Each Officer has completed the 40-hour Crisis Intervention Training as well as completing yearly refresher training as required. Auburn PD has a cadre of Patrol Tactics Instructors (PTI) that allow for additional de-escalation tactics training.

At the start of 2021 we created a Use of Force Committee which is comprised of Commanders, Sergeants, and officers who are highly trained in police use of force encounters. We also are now part of the Department of Justice FBI Use of Force database. Uses of force that result in serious bodily injury (as defined by the Department of Justice) or death will be reported in the FBI database. Any use of force that results in great bodily harm (as defined by the Revised Code of Washington), death, or appears to be out of policy, will be reviewed by the Use of Force Committee and is required to be reported to the Washington State Criminal Justice Training Commission (CJTC). After the Use of Force Committee reviews the incident involving force, a representative from the committee provides a report to the Chief. The goal of the Use of Force Committee is to provide a more detailed analysis than is already done and to analyze force trends to enhance training, reduce injuries and ensure our citizens remain protected.



AUBURN POLICE DEPARTMENT 2024 ANNUAL USE OF FORCE REVIEW

Auburn Police Department

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W E L L N E S S

C E L E B R A T I O N

AUBURN VALUES

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Contacts vs. Use of Force Incidents

It is important to understand that there are times when it takes two or more officers using force on one suspect to gain compliance and get the suspect into custody. When that occurs, each officer is required to complete a force report which then generates multiple force reports for one incident. Table #1 depicts the ratios in comparison to the force incidents.

Only .39% of subjects contacted resulted in force being used.

		2023 Ratio		2024 Ratio
	2023	168 UoF Incidents	2024	249 UoF Incidents
CAD	68,026	1/417 (.24%)	64,422	1/259 (.39%)
Cases	14,820	1/90 (1.08%)	13,624	1/55 (1.83%)
Arrests	2,683	1/16 (5.73%)	2,779	1/11 (8.96%)
Bookings	2,087	1/12 (7.24%)	2,351	1/9 (10.5%)

Contacts vs. Use of Force Incidents

Table #2 below shows the ratio comparison from 2023 regarding force reports completed.

Only .38% of contacts resulted in a use of force report being completed.

	2023	2023 Ratio	2024	2024 Ratio
		161 Reports		246 Reports
CAD	68,026	1/422 (.23%)	64,422	1/261 (.38%)
Cases	14,820	1/92 (1.07%)	13,624	1/55 (1.8%)
Arrests	2,683	1/16 (5.66%)	2,779	1/11 (8.85%)

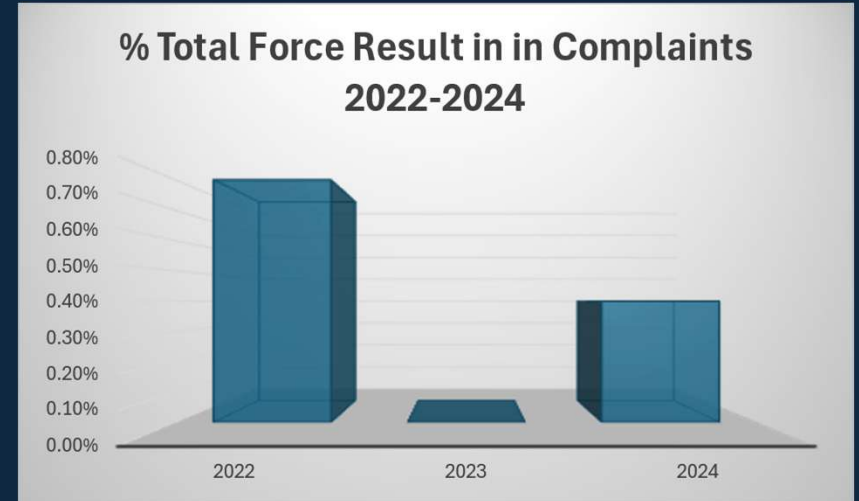
Force Complaints

In 2024, we received (1) allegation of inappropriate and/or excessive applications of force. All use of force incidents were reviewed, and none were determined to be excessive or outside of policy. Table #3 shows there was 1 incident that resulted in allegations of excessive force. Table #4 then reflects these same numbers in a percentage of allegations which is 0.40% in 2024.

Table #3

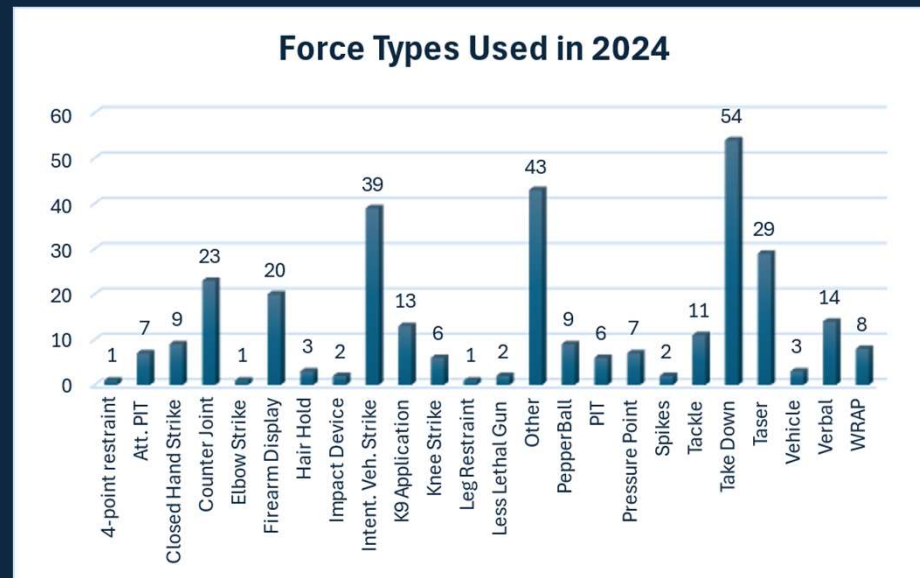
Year	Use of force reports	Excessive Force Allegations	Sustained Allegations
2022	133	1	1
2023	161	0	0
2024	246	1	0

Table #4



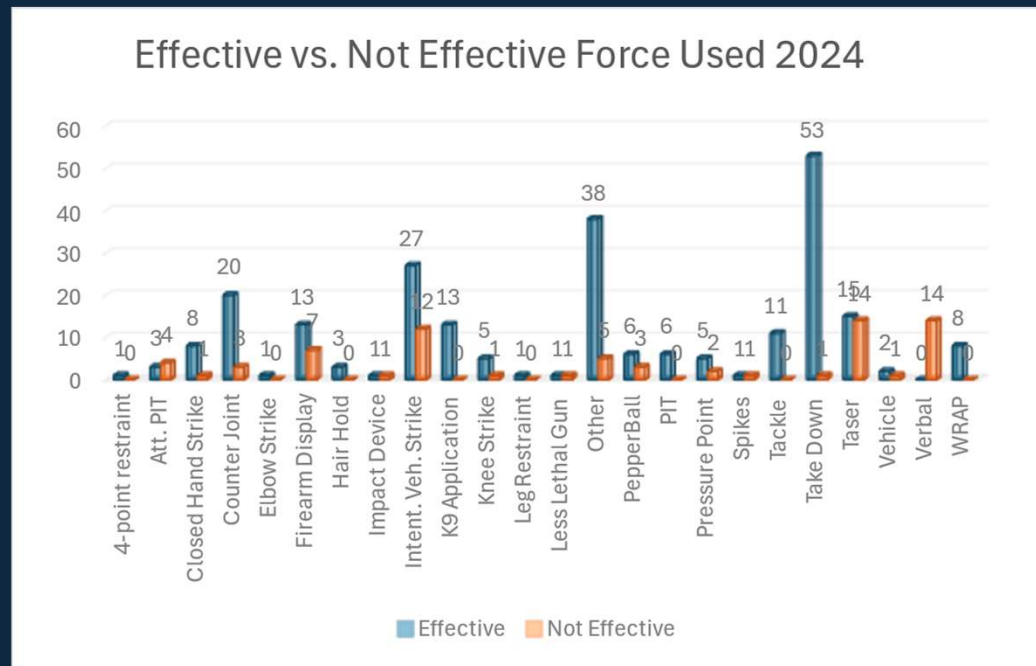
Force Types

The below chart shows each force type that can be used by an officer and shows the number of times that force was used in 2024.



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Effective vs. Not Effective



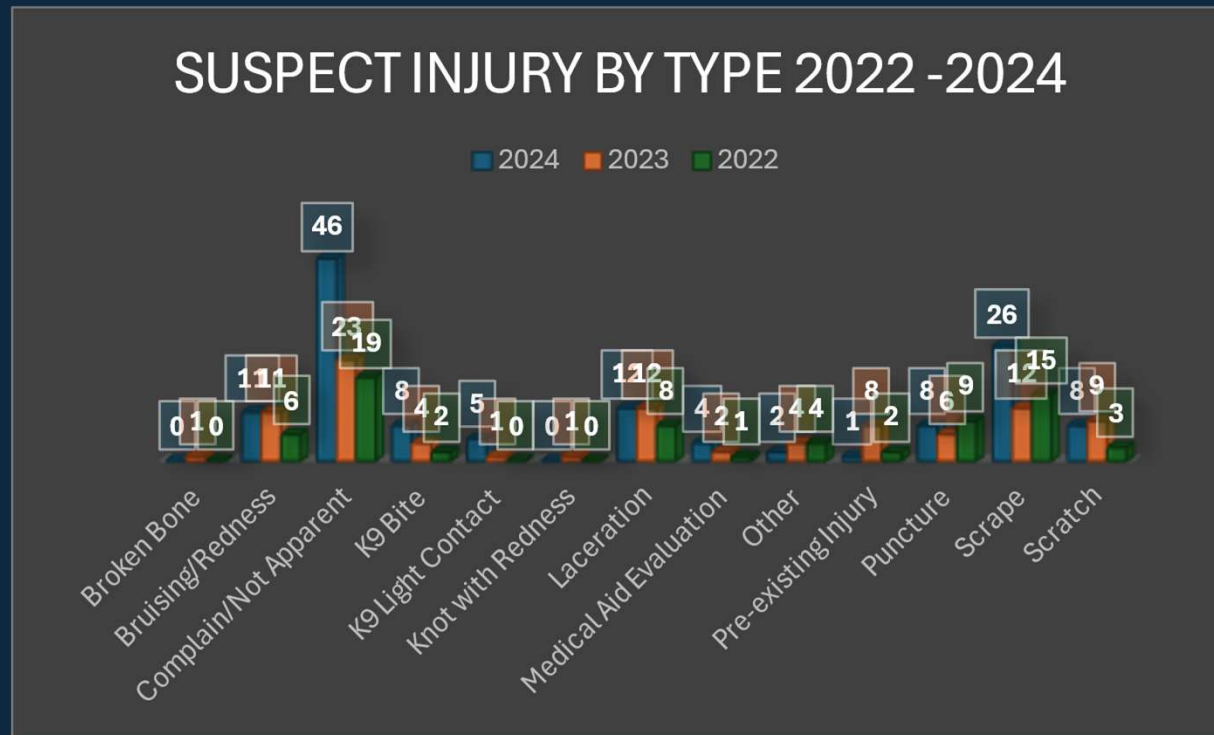
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Force Resulting in Injury

	Total Force Reports	Suspects Injured	Officers Injured	% of total of suspects injured
2022	133	62	18	47%
2023	163	94	23	57%
2024	246	104	30	42%

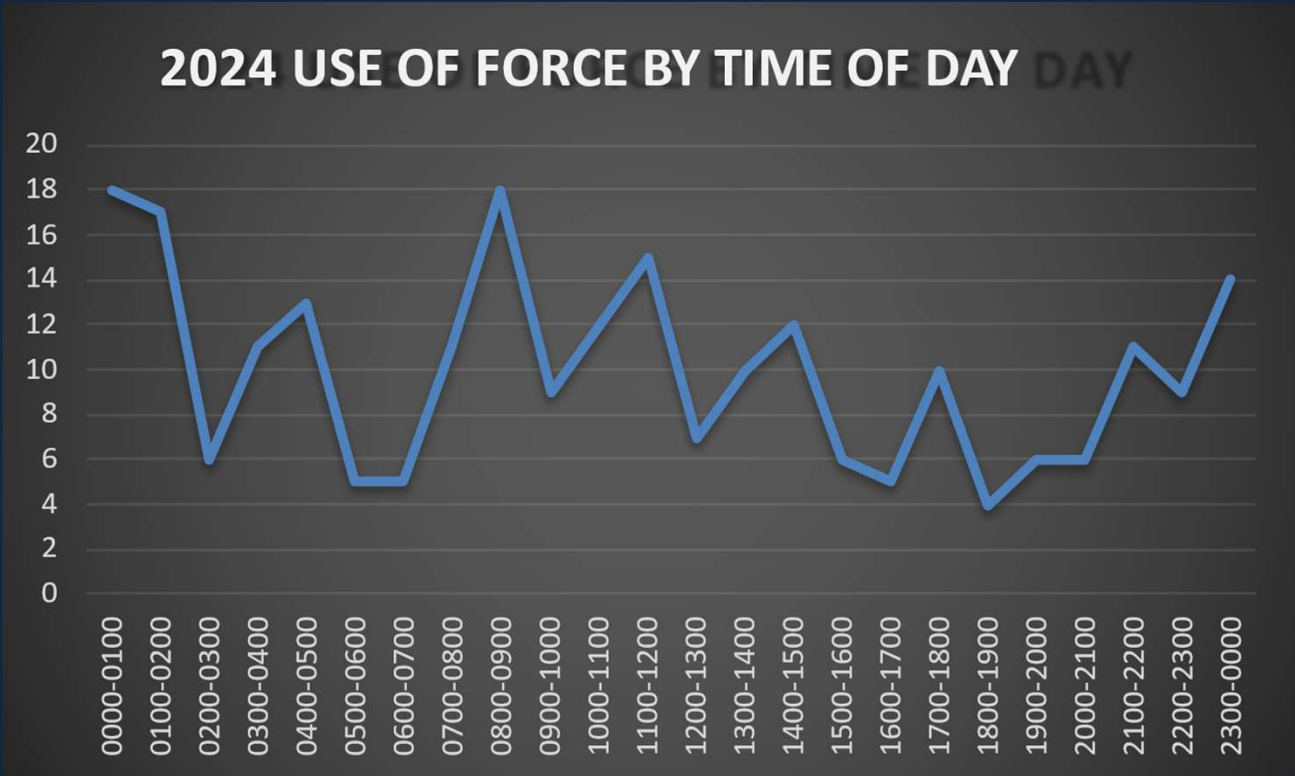
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Force Resulting in Injury cont.



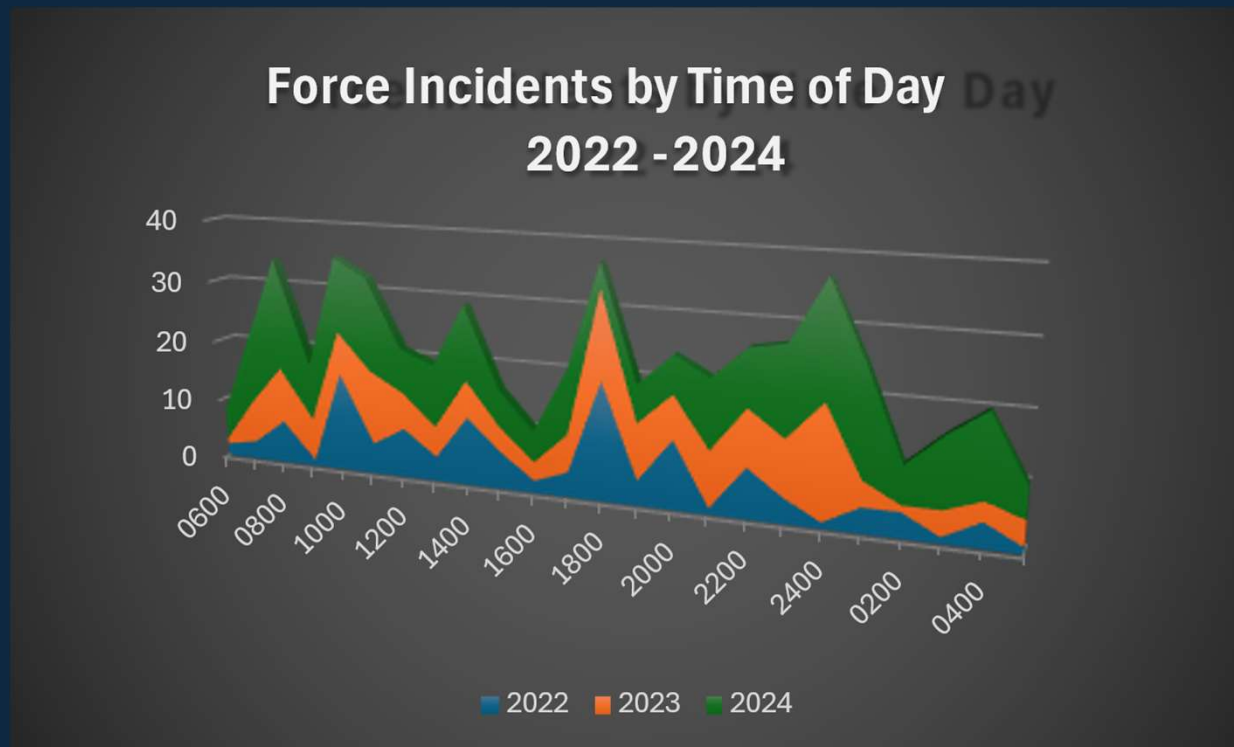
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Time of Day



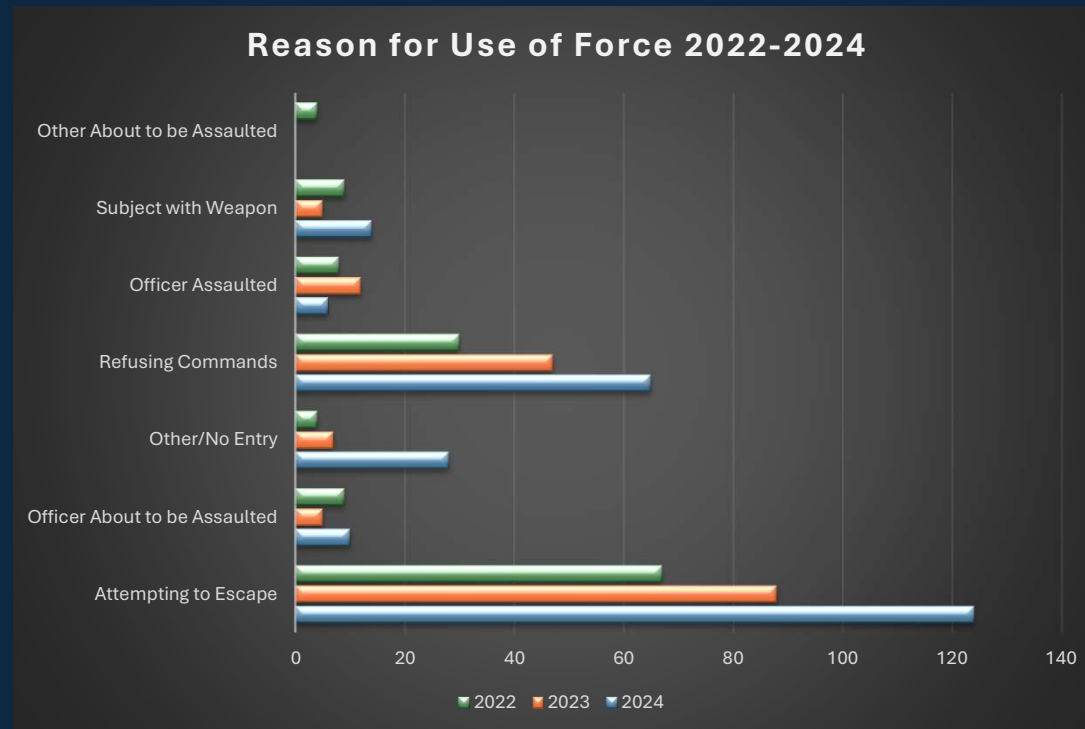
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Time of Day cont.



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Reason for Force



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Resistance During Force Encounter

	2024	2023	2022
Officer Assaulted/Threat to be Assaulted	37	23	31
Assaulted Other/Other About to be Assaulted	9	6	17
Fighting Stance	26	12	23
Subject Trying to Flee	111	83	64
Muscular Tension/Pulled Away	201	145	135
Other	59	45	29

Officer Assessment Prior to Force

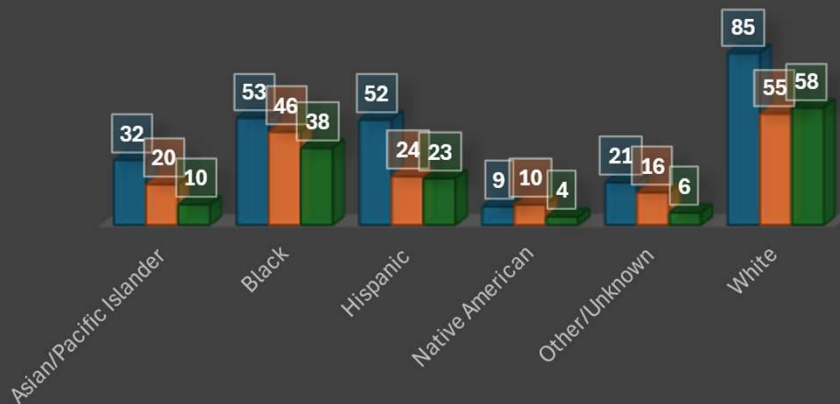


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Use of Force Demographics

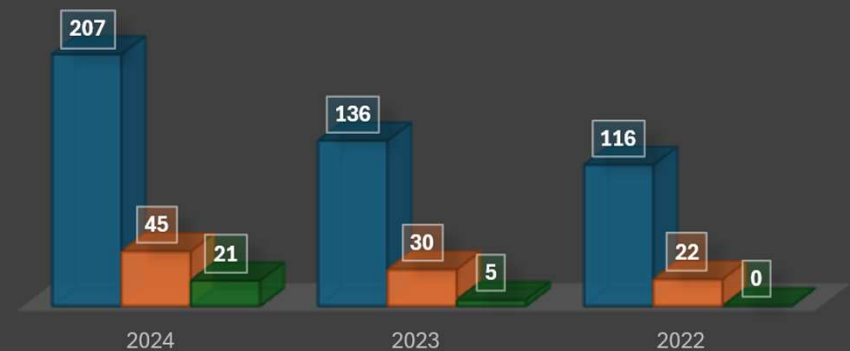
RACE - USE OF FORCE

■ 2024 ■ 2023 ■ 2022



GENDER - USE OF FORCE

■ Male ■ Female ■ Other/Unknown



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AUBURN POLICE DEPARTMENT 2024 ANNUAL CIA REVIEW

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Commendations

<i>Year</i>	<i>Total Commendations</i>	<i>Letter of Commendation</i>	<i>Medal of Distinction</i>	<i>Life Saving</i>	<i>Medal of Merit</i>	<i>Tactical Medal</i>
2021	124	2	0	7	2	1
2022	44	6	0	3	0	1
2023	67	8	0	2	0	2
2024	66	2	1	1	0	0

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Internal Investigations

Year	CAD Incidents	Internal Investigations	Inv. With Misconduct	Total Employees
2021	72,944	6 (.008%)	5	7
2022	69,072	6 (.009%)	4	4
2023	68,026	4 (.005%)	2	5
2024	64,422	8 (.012%)	6	10

Internal Investigations

	External Sources	Internal Sources	Total Combined
Total Investigations	3	5	8
Sustained Misconduct	2	4	6

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Supervisory Investigations

Year	CAD Incidents	Supervisory Investigations	Investigations with Actual Misconduct	Involved Employees
2021	72,994	10 (.01%)	2	14
2022	69,072	9 (.01%)	4	11
2023	68,026	4 (.005%)	2	13
2024	64,422	7 (.01%)	7	11

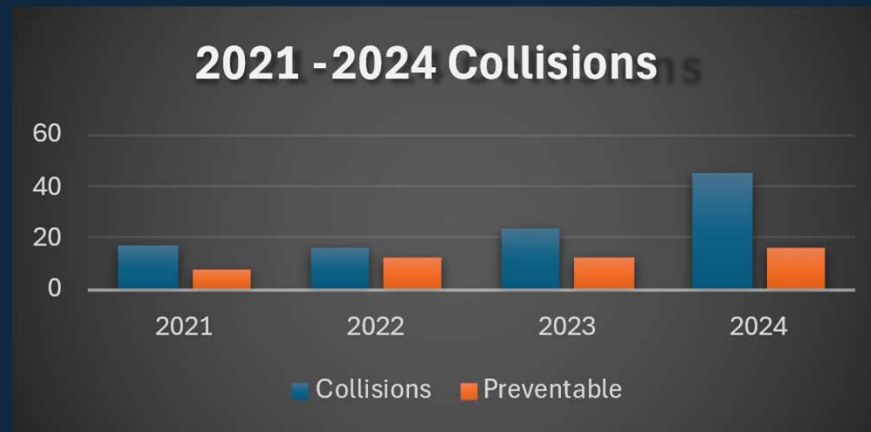
Allegations

Allegation	Total	No Misconduct/	Misconduct/	No Conclusion/ Pending
		Acceptable	Unacceptable	
		Performance	performance	
Violation of General Policy	17	0	17	0
Discourtesy	1	0	1	0
Code of Conduct	5	1	5	0
False Arrest	0	0	0	0
Excessive Force	3	0	0	3
ACCESS Violation	1	0	1	0
Conduct Unbecoming	1	0	1	0
Core Values	4	0	4	0
Fail to Meet Job Expectations	3	0	3	0
Foot Pursuit Policy	0	0	0	0
Vehicle Pursuit Policy	4	0	4	0
Totals	39	1	36	3

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Collisions

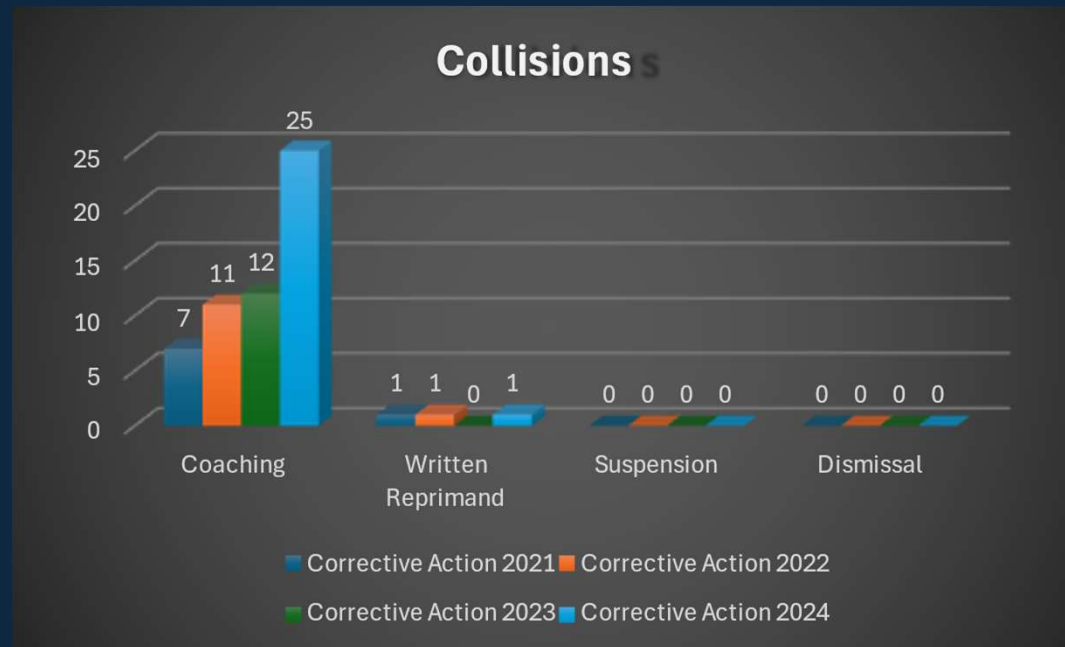
17 - Driver Inattention
6 - Improper Backing
2 - Other
17 - Other driver at fault
1 - Poor Tactics
2 - Fail to clear intersection



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Collisions cont.

The below chart depicts the corrective action dispensed to the employees in preventable collisions. Some officers also received additional training where it was appropriate.



Combined Discipline

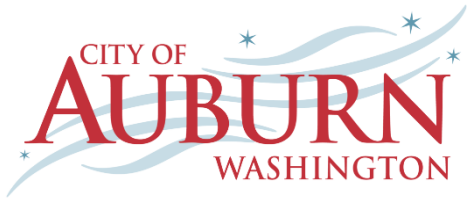
The following chart depicts action taken for misconduct, whether from an Internal Investigation or Supervisory Investigation, for each employee involved.



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Outside Agency Investigations

To ensure that our investigations are unbiased, there are times when an outside agency may be asked to investigate serious allegations of misconduct made against agency staff, especially those that may be of a criminal nature. This provides Auburn citizens with confidence and allows for unbiased transparency into actions, activities, and decisions made by the Auburn Police Department. In 2024 there were no allegations of criminal misconduct.



AGENDA BILL APPROVAL FORM

Agenda Subject:

Consolidated Annual Performance Evaluation Report (CAPER) for 2024
(Hay) (20 Minutes)

Meeting Date:

April 28, 2025

Department:

Human Services

Attachments:

2024 CAPER Presentation to
Council, 2024 CAPER - FINAL

Budget Impact:**Administrative Recommendation:**

For discussion only.

Background for Motion:**Background Summary:**

The City of Auburn's use of the Community Block Grant (CDBG) Funds is guided by a 5-year Consolidated Plan and Annual Action Plan. Every year the City is required to submit a Consolidated Annual Performance Evaluation Report (CAPER) to the Department of Housing and Urban Development (HUD), reporting on the progress the City has made in carrying out its Plan(s) during the prior program year. Auburn's most recent CAPER reported on progress toward goals and objectives during the January 1, 2024 – December 31, 2024, program year.

This presentation will describe the major components of the 2024 CAPER, and provide an overview of how funds were spent and what targets were achieved during the 2024 program year.

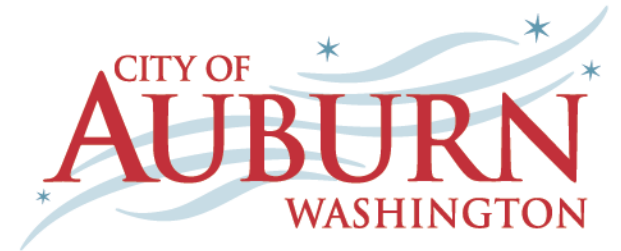
Councilmember: Yolanda Trout-Manuel

Staff: Kent Hay

2024 Consolidated & Action Performance Evaluation Report (CAPER)

April 2025

Kent Hay & Jody Davison



What is the Consolidated Action Performance Evaluation Report (CAPER)

- Report that outlines the City's progress and accomplishments in meeting the annual goals set for in the Consolidated and Action Plans.



What did CDBG & City Funding Support in 2024

- Goal: Affordable Housing
 - Home Repair
- Goal: Community & Economic Development
 - Sidewalk Improvements
- Housing Stability/Rental Assistance
 - Solid Ground
- Planning & Administration



Programs we supported in 2024 with CDBG \$

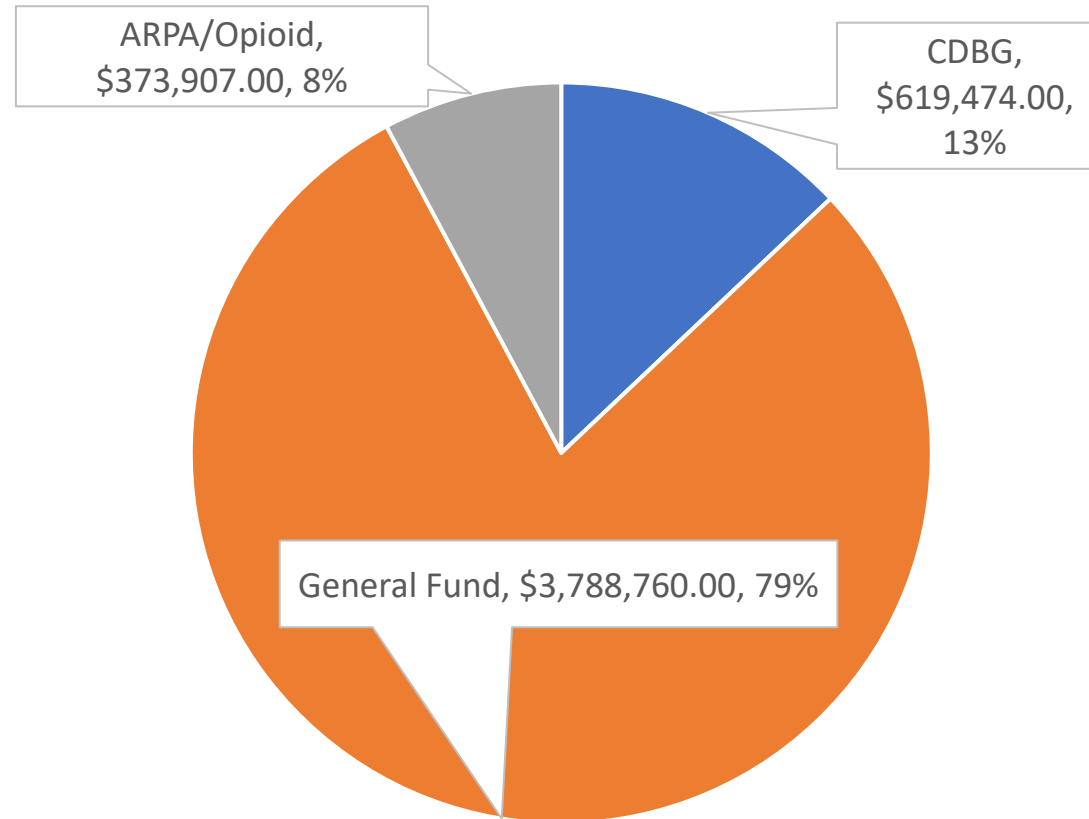


Solid Ground - Housing Stability Program

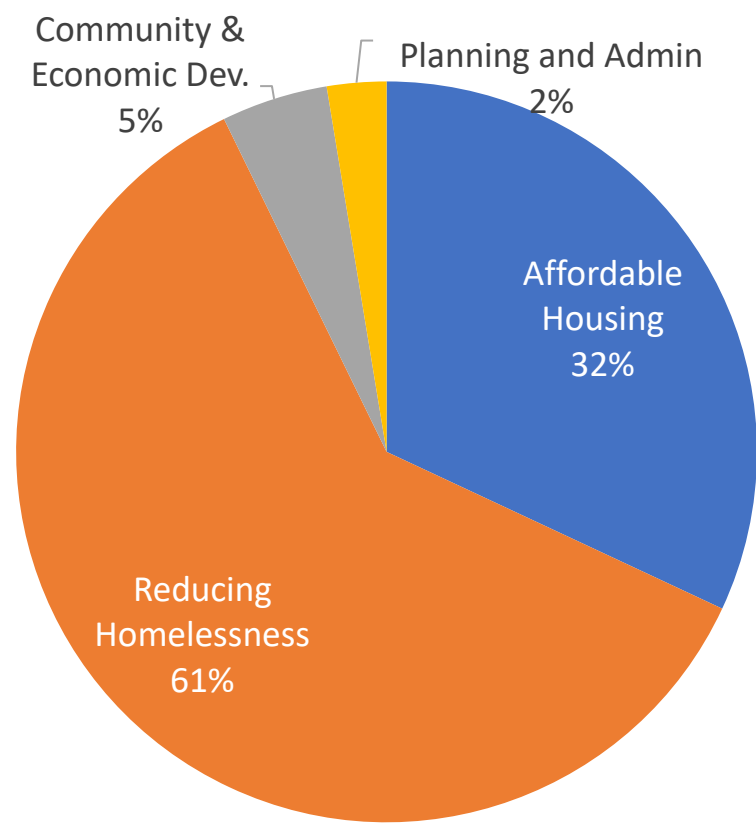
- Provided \$66,373 in direct client financial assistance
- 43 Extremely Low-Income Families (less than 30% of the median family income)
- 48 Very Low-Income Families (less than 50% of the median family income)

Household Size	30% Median (Extremely Low)	50% Median (Very Low)
1 Person	\$31,650/yr. or \$2,637/mo.	\$52,700/yr. or \$4,391/mo.
2 Persons	\$36,200/yr. or \$3,016/mo.	\$60,250/yr. or \$5,020/mo.
3 Person	\$40,700/yr. or \$3,391/mo.	\$67,800/yr. or \$5,650/mo.
4 Persons	\$45,200/yr. or \$3,541/mo.	\$75,350/yr. or \$6,270/mo.

Funding Available



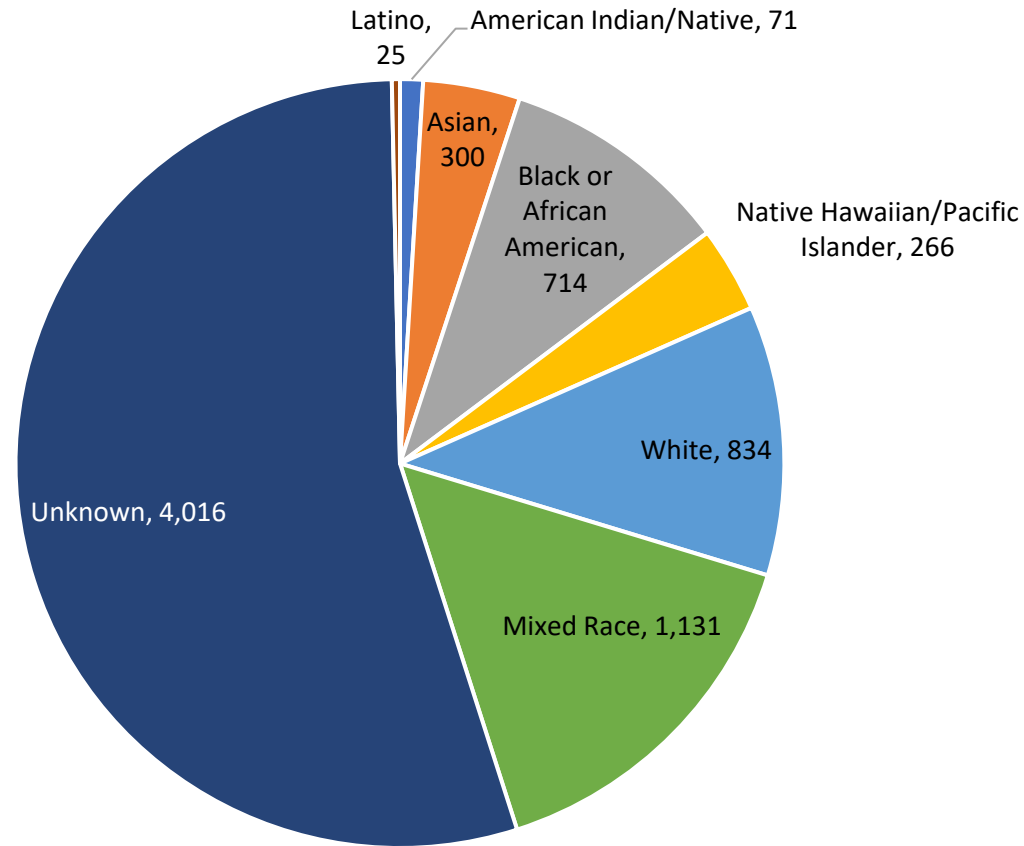
Allocation of Funding



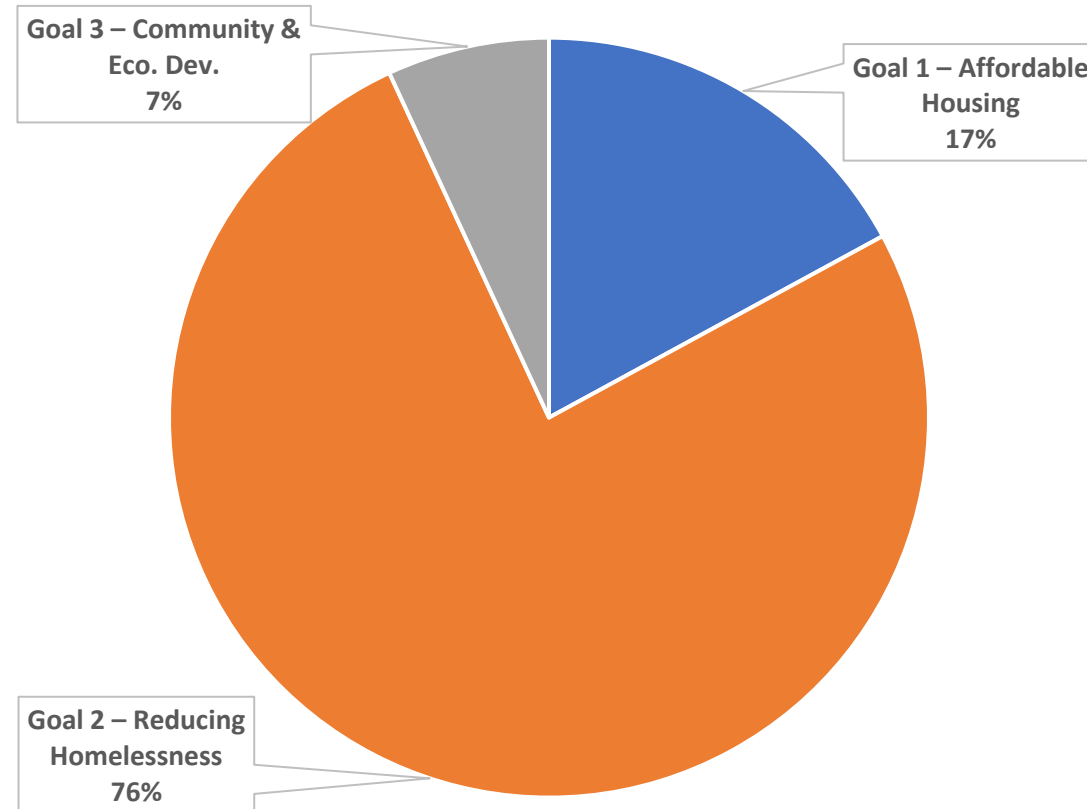
People Served

Demographics							Total by Funding Source		
	GOAL 1 Affordable Housing (CDBG)	GOAL 1 Affordable Housing (General Funds)	GOAL 2 Addressing Homelessness (CDBG)	GOAL 2 Addressing Homelessness (General Funds)	GOAL 3 Community & Economic Development (CDBG)	GOAL 3 Community & Economic Development (General Funds)	Genera l Funds	CDBG Funds	Total
American Indian/Native	0	13	3	55	0	0	68	3	71
Asian	0	58	3	238	1	0	296	4	300
Black or African American	0	63	37	607	7	0	670	44	714
Native Hawaiian/Pac. Isl.	0	12	28	226	0	0	238	28	266
White	0	164	59	611	0	0	775	59	834
Mixed Race	0	751	17	363	0	0	1,114	17	1,131
Unknown	0	180	43	3293	500	0	3,473	543	4,016
Latino	0	15	3	7	0	0	22	3	25
Total	0	1,256	193	5400	508	0	6,656	701	7,357

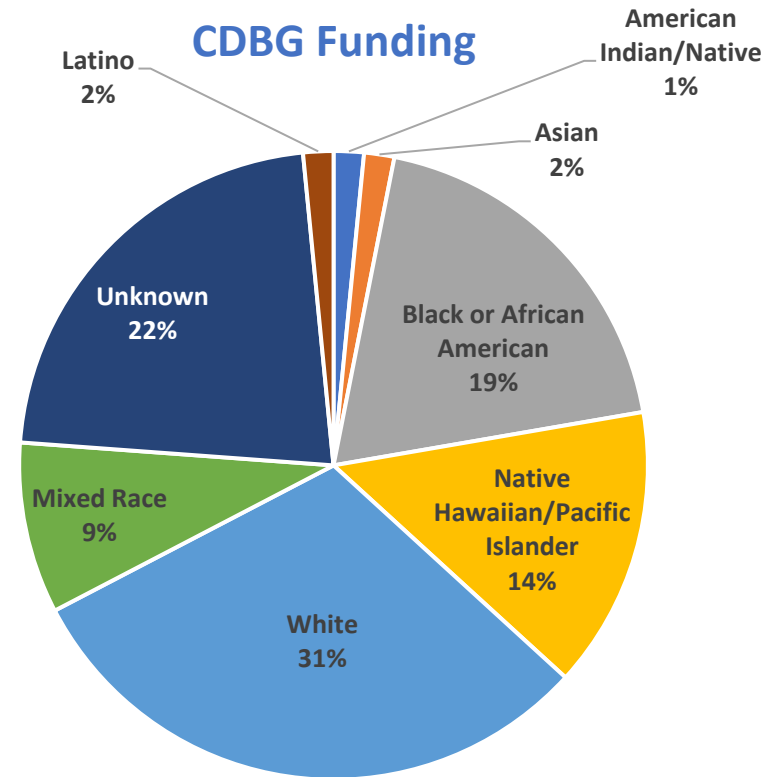
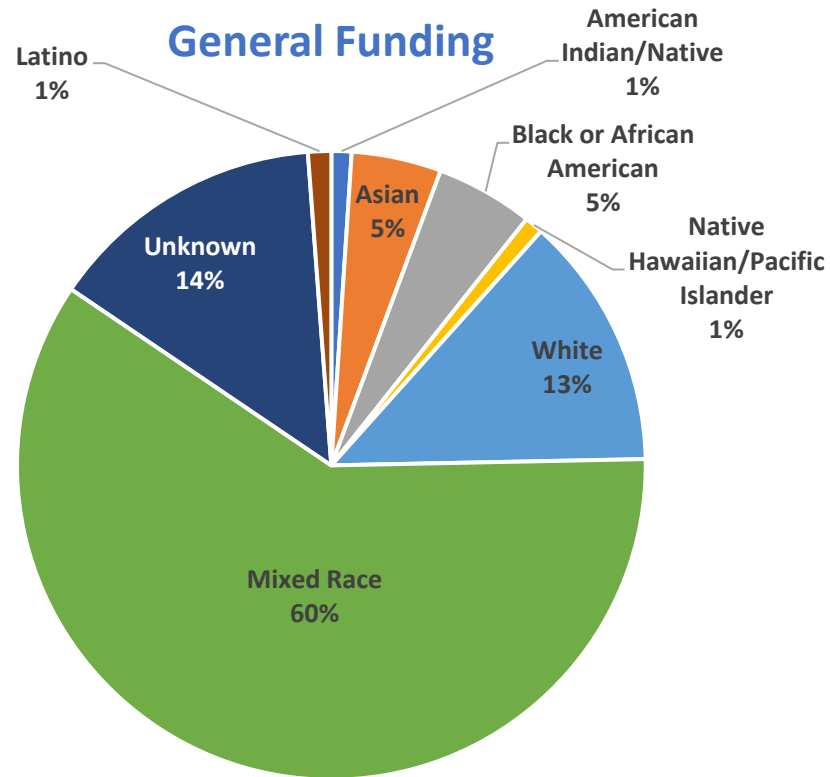
Demographic Breakdown (all funding sources)



Population Served by Goal



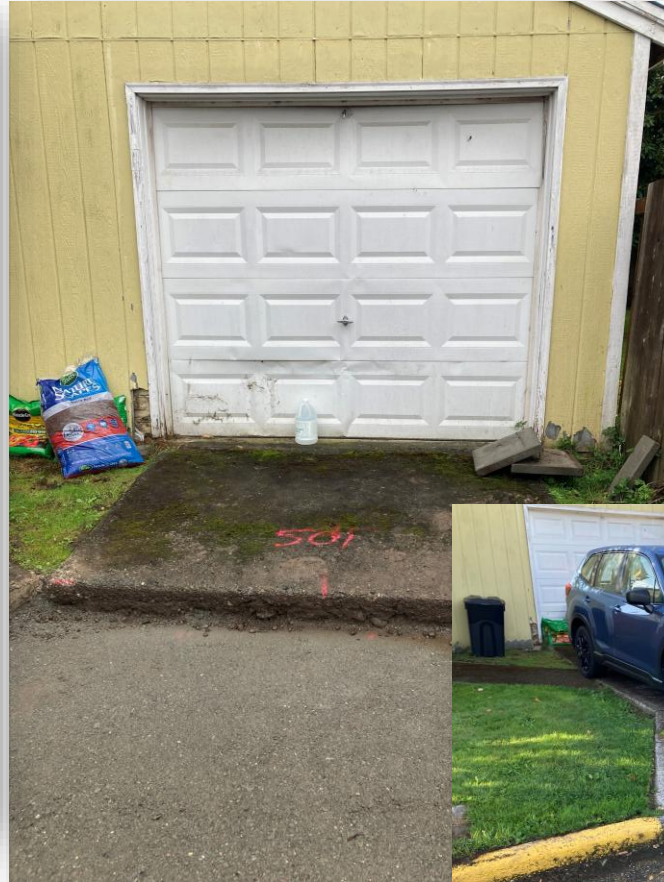
Populations Served by Funding Source



5th Street ADA Sidewalk Improvements



5th Street Sidewalk Improvements

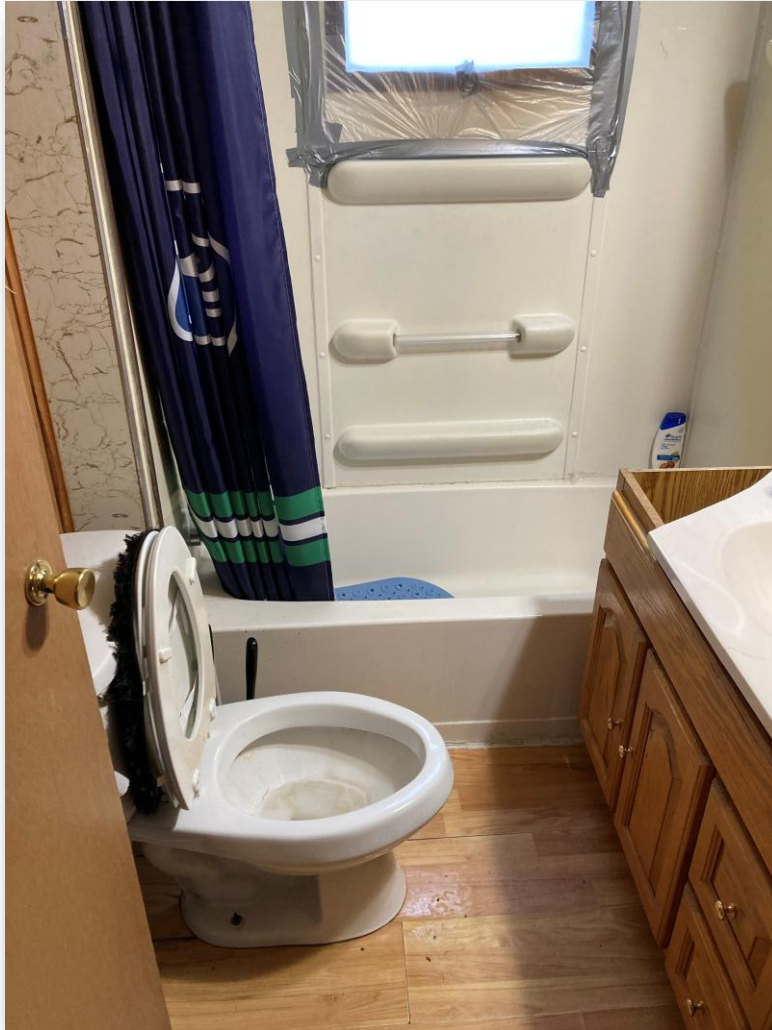


Home Repair Program

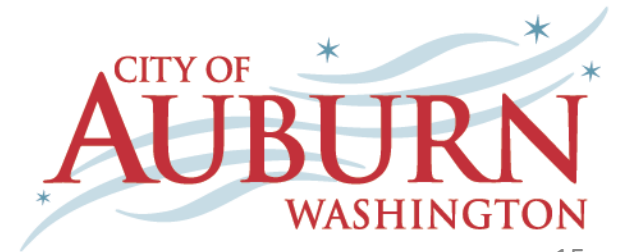


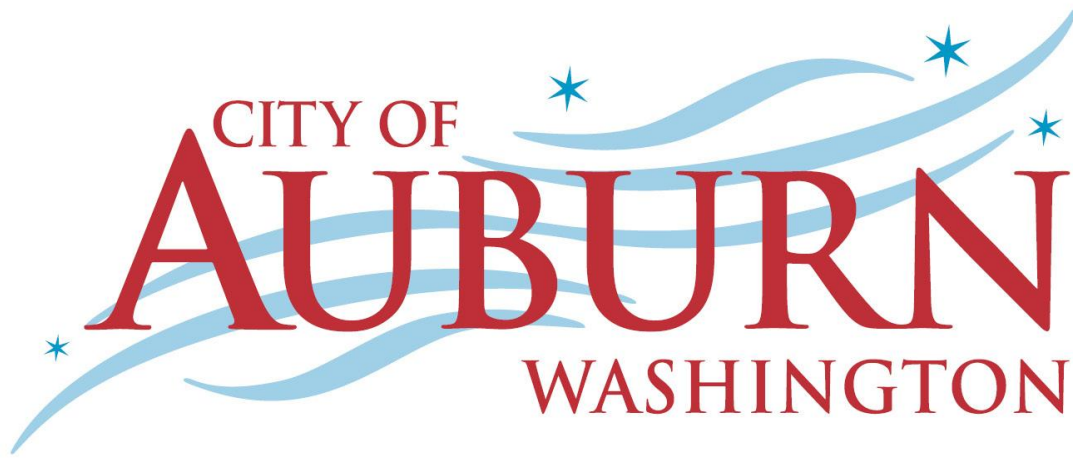
Home Repair Program

Created additional accessibility for mobility challenged residents of Auburn



Questions?





City of Auburn
2024 Consolidated Annual Performance
and
Evaluation Report

Contents

CR-05 - Goals and Outcomes	3
CR-10 - Racial and Ethnic composition of families assisted	6
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CR-20 - Affordable Housing 91.520(b).....	9
CR-25 - Homeless and Other Special Needs 91.220(d, e); 91.320(d, e); 91.520(c).....	11
CR-30 - Public Housing 91.220(h); 91.320(j)	13
CR-35 - Other Actions 91.220(j)-(k); 91.320(i)-(j)	14
CR-40 - Monitoring 91.220 and 91.230.....	17
CR-45 - CDBG 91.520(c)	18

CR-05 - Goals and Outcomes

Progress the jurisdiction has made in carrying out its strategic plan and its action plan. 91.520(a)

This report discusses program outcomes for the City of Auburn 2024 program year utilizing Community Development Block Grant (CDBG) Entitlement funds. The city has continued to pursue the objectives laid out in the Consolidated Plan by supporting efforts to prevent homelessness, expand affordable housing opportunities, and to provide enhanced economic development initiatives. The data provided below discusses public services, supporting decent homelessness prevention and microenterprise business assistance.

Comparison of the proposed versus actual outcomes for each outcome measure submitted with the consolidated plan and explain, if applicable, why progress was not made toward meeting goals and objectives. 91.520(g)

Categories, priority levels, funding sources and amounts, outcomes/objectives, goal outcome indicators, units of measure, targets, actual outcomes/outputs, and percentage completed for each of the grantee's program year goals.

Goal	Category	Source and Amount	Indicator	Unit of Measure	Expected in Strategic Plan	Actual in Strategic Plan	Percent Complete	Expected in Program Year	Actual in Program Year	Percent Complete
Goal #1 Affordable Housing	Affordable Housing Public Housing Homeless Non-Homeless Special Needs	CDBG General Fund	Public Facility or Infrastructure Activities for Low/Moderate Income Housing Benefit	Households Assisted	5	109	2180%	0	109	2180%

Goal #1 Affordable Housing	Affordable Housing Public Housing Homeless Non-Homeless Special Needs	CDBG General Funding	Homeowner Housing Rehabilitated Home Repair	Household Housing Unit	325 (houses)	319 (houses)	98.15%	65 (houses)	66 (houses)	101.54% (houses)
Goal #2 Addressing Homelessness	Homeless	CDBG	Homelessness Prevention	Persons Assisted	0	91	0	0	109	100%
Goal #3 Community and Economic Development ADA Sidewalk(s)	Non-Homeless Special Needs Non-Housing Community Development	CDBG & General Funding	Public Facility or Infrastructure Activities other than Low/ Mod. Income Housing Benefit	Persons Assisted	1,000 (persons)	2,500 (persons)	250%	500 (persons)	500 (persons)	100%
Goal #3 Community & Economic Development	Non-Homeless Special Needs Non-Housing Community Development	CDBG	Public Service activities other than Low/Moderate Income Housing Benefit	Persons Assisted	200 (persons)	0	0.00%	0	0	0.00%
Goal #3 Community and Economic Development	Non-Homeless Special Needs Non-Housing community Development	CDBG	Businesses Assisted	Businesses Assisted	0	20	0	20	20	100%
Planning and Administration		CDBG	Other	Other	0	0	N/A	N/A	N/A	N/A

Table 1 - Accomplishments – Program Year & Strategic Plan to Date ¹

¹ See attachment 1 for detailed information on additional City funded accomplishments

Assess how the jurisdiction’s use of funds, particularly CDBG, addresses the priorities and specific objectives identified in the plan, giving special attention to the highest priority activities identified.

Consistent with the priorities and specific objectives outlined in the 2024 Annual Action Plan, the City allocated the largest share of its 2024 HUD funds to its homeowner housing rehabilitation program. As the city's largest ongoing homeless prevention program, the activity is consistent with the focus of the CDBG housing and homeless prevention programs. The program typically provides support to over 60 low-income homeowners each year. The majority of program applicants are seniors, individuals with disabilities, or Veterans. For many residents, these repairs allow them to affordably stay in their homes, live in safe and dignified living conditions, and age in the community where they have established support systems.

The City will continue to work towards our housing goals identified in the Analysis of Impediments contained in the 2025-2029 Consolidated Plan. With the additional resources made available during the 2024 program year, the City far exceeded multiple Strategic Plan targets. This trend is expected to continue in 2025.

CR-10 - Racial and Ethnic composition of families assisted

Describe the families assisted (including the racial and ethnic status of families assisted). 91.520(a) with both CDBG Funds and City Resources

Demographics							Total by Funding Source		
	GOAL 1 Affordable Housing (CDBG)	GOAL 1 Affordable Housing (General Funds)	GOAL 2 Addressing Homelessness (CDBG)	GOAL 2 Addressing Homelessness (General Funds)	GOAL 3 Community & Economic Development (CDBG)	GOAL 3 Community & Economic Development (General Funds)	General Funds	CDBG Funds	Total
American Indian/Native	0	13	3	55	0	0	68	3	71
Asian	0	58	3	238	1	0	296	4	300
Black or African American	0	63	37	607	7	0	670	44	714
Native Hawaiian/Pac. Isl.	0	12	28	226	0	0	238	28	266
White	0	164	59	611	0	0	775	59	834
Mixed Race	0	751	17	363	0	0	1,114	17	1,131
Unknown	0	180	43	3293	500	0	3,473	543	4,016
Latino	0	15	3	7	0	0	22	3	25
Total	0	1,256	193	5400	508	0	6,656	701	7,357

Table 2 – Table of assistance to racial and ethnic populations by source of funds

Narrative

This chart provides a partial racial and ethnic breakdown, based on HUD categories, of individuals served during the 2024 program year with CDBG funds and City resources. Services provided to Auburn residents include minor housing rehabilitation, emergency subsistence payments, behavioral health services, fair housing services, emergency shelter, food and access and coordination with additional resources.

CR-15 - Resources and Investments 91.520(a)

Identify the resources made available

Source of Funds	Source	Resources Made Available	Amount Expended During Program Year
CDBG	public - federal	\$619,474	\$316,016 ²
General Fund	public - local	\$3,788,760	\$3,788,760
Other	public – federal ³	\$373,907	\$373,907
Total		\$4,782,141	\$4,162,667

Table 3 - Resources Made Available

Narrative

While the City of Auburn did not undertake any Target Area improvements during the 2024 program year, there was one LMI area benefit activity that was completed in 2024. The 5th Street NW/NE sidewalk project improved pedestrian accessibility and safety by installing new and/or improved pedestrian curb ramps at the following locations: 1) SW corners at the intersection of A St NE; and 2) SW side of 5th Street to N. Division Street. This project benefitted approximately 500 low to moderate income Auburn residents in the vicinity of the project location.

The City purchased a strip mall on Auburn Way north that had been renting and using for a day and night shelter, resource center and community court. The 6M purchase will allow the City to better provide direct connections for vulnerable populations with a range of services that support addressing causes of homelessness and housing instability.

The City used ARPA and Opioid settlement dollars to fund two Clean and Sober Housing programs during 2024. The program provided up to 12 months of stable housing for program participants who meet established goals and improvements during participation.

While CDBG funds critical programs within the City it is important to note that the City makes a substantial political and taxpayer investment in fulfilling affordable housing and homelessness objectives within the community. The City invested 3.7M in Affordable Housing, Reducing Homelessness and Economic Development. Of the 3.7M, 1.2M of the funds were spent on affordable housing, 2.4M was dedicated to homelessness preventions and approximately \$115K was spent on job training and education programs. **97.60%** of the 3.7M funded city owned and operated programs while **2.4%** of these funds were directed to partner service providers who deliver valuable housing and homeless services within the community.

² Unspent balance rolled over to 2025

³ ARPA and Opioid Funds

Leveraging

Explain how federal funds leveraged additional resources (private, state and local funds), including a description of how matching requirements were satisfied, as well as how any publicly owned land or property located within the jurisdiction that were used to address the needs identified in the plan.

Proposals to use CDBG funds with other leveraged funds can improve the feasibility of programs and projects since available funds are often insufficient to fully support most Community Development or Economic Development projects and programs. CDBG is generally used in conjunction with other grant funds to our local providers. Providers are encouraged to obtain private support in addition to CDBG funds in proposed activities.

During the 2024 program year, the City awarded public service dollars as detailed in the 2024 Annual Action Plan. Investing in emergency housing specifically supports affordable housing goal by creating stronger housing stability and efforts to promote fair housing.

To support these goals in 2024 the City invested 3.7M local general fund tax dollars in basic needs and housing stability, homelessness intervention providers, housing stability providers, and in job training & education programs and the City's home repair program. The City also invested in its own day/night shelter that is managed by the Auburn Food Bank.

In addition to the investments above, the city purchased a strip mall for 6M on Auburn Way N that houses the foodbank, shelter(s) and the night/day center and the city resource center, with the intent to make additional financial investments to modify the structure to better serve the vulnerable populations of Auburn through access to resource providers and community court.

The City of Auburn does not have matching requirements for 2024 projects and activities.

CR-20 - Affordable Housing 91.520(b)

Evaluation of the jurisdiction's progress in providing affordable housing, including the number and types of families served, the number of extremely low-income, low-income, moderate-income, and middle-income persons served.

	One-Year Goal	Actual
Number of homeless households to be provided affordable housing units	0	221
Number of non-homeless households to be provided with affordable housing units	0	Unable to determine
Number of special-needs households to be provided with affordable housing units	0	0
Total	0	221

Table 4 – Number of Households (supported by City funds and efforts)

As mentioned earlier, the City of Auburn funds a street outreach team that makes direct contact with individuals who are either homeless or at risk of becoming homeless. The team works with the residents to identify barriers to self-sufficiency and affordable houses as well as basic services. In 2024 the outreach team successfully assisted 221 individuals through the process of obtaining permanent housing.

	One-Year Goal	Actual
Number of households supported through rental assistance (Solid Ground)	60	91
Number of households supported through the production of new units (General Funding)	0	406
Number of households supported through the rehab of existing units (Repair program - CDBG)	65	66
Number of households supported through the acquisition of existing units	0	0
Total	125	563

Table 5 – Number of Households Supported (using CDBG funds)

Discuss the difference between goals and outcomes and problems encountered in meeting these goals.

The City's Annual Action Plan did not have any goals of providing direct housing, rental assistance, production of new units or acquisition of existing units in 2024. The City provided 66 households with minor housing repair services. The program is the City's largest homeless prevention program which helps low-income residents maintain their housing rather than be forced into homelessness due to high costs associated with home repair. Many program applicants are seniors, individuals with disabilities, or Veterans living on a fixed income. In addition to helping residents remain housed in safer and more accessible housing, the program also helps applicants connect to other supportive programs in the area.

The City contracted with Solid Ground, who provided 91 families with emergency rental assistance.

The City also contributed to the South King Housing and Homelessness Partners (SKHHP) for the purpose of acquiring affordable housing units. SKHHP is an organization comprised of 11 South King County cities and King County whose mission is to acquire and/or preserve affordable housing units in the region.

Discuss how these outcomes will impact future annual action plans.

The Housing Repair program has been fully operational since the end of the second quarter, 2021. Future service targets are not expected to change. The city plans to fund the home repair program with local Community Development funds and target CDBG funds to other programs in the City. This planned change will allow the city to continue to meet the increased demand for home repair requests and continue to project the vulnerable housed individuals while redirecting CDBG funds to new or more vulnerable programs that are needed to support homelessness services and affordable housing.

Include the number of extremely low-income, low-income, and moderate-income persons served by each activity where information on income by family size is required to determine the eligibility of the activity.

Number of Households Served	CDBG Actual	HOME Actual
Extremely Low-income	74	0
Low-income	83	0
Moderate-income	0	0
Total	157	0

Table 6 – Number of Households Served

Narrative Information

Consistent with the priorities and specific objectives outlined in the 2024 Annual Action Plan, the City allocated a significant portion of its CDBG funds to its homeowner housing rehabilitation program. As the city's largest homeless prevention program, the activity is consistent with the focus of the CDBG housing and homeless prevention programs. In 2024, the funding years, the program provided support to 66 low- and extremely low-income households. The figures above reflect both the home repair program and Solid Ground counts.

CR-25 - Homeless and Other Special Needs 91.220(d, e); 91.320(d, e); 91.520(c)

Evaluate the jurisdiction's progress in meeting its specific objectives for reducing and ending homelessness through:

Reaching out to homeless persons (especially unsheltered persons) and assessing their individual needs

The City of Auburn does not receive ESG funds. The City is implementing several strategies on the local and regional level to address the issue of homelessness and funds several homeless prevention and intervention programs with its general funds.

In addition, the City of Auburn co-facilitates a monthly group with the Seattle-King County Coalition on Homelessness called the South King County Forum on Homelessness. This group brings together providers that serve individuals experiencing homelessness to support networking and coordination, skill building, and regular information sharing. In addition to formal consultation with providers during AAP planning times, these meetings allow for informal consultation monthly on a variety of topics. One of the areas the city has focused on, with the support of the King County Library System staff, is internet access and addressing the digital divide for individuals in our community experiencing homelessness. While we have not used our CDBG funds to support broadband access directly, City staff actively engage in information, referral, and planning work to help address the digital divide.

In 2024, the King County Regional Homelessness Authority (KCRHA) conducted the region's Point In Time county using a methodology called Respondent Driven Sampling. This methodology incorporated a robust qualitative interview process. We continue to partner with KCRHA in their strategic planning efforts for the region and locally.

Additionally, the City is an active participant in SKHHP which is comprised of 11 cities and King County that are charged with making investments in regional solutions to homelessness and affordable housing. Auburn provides financial, political and staff support to SKHHP. Using local tax dollars, Auburn contributes to SKHHP's operational budget and capital budget, Auburn's Mayor is the Chair of the Executive Board that leads SKHHP, and Auburn staff provide technical and administrative support to SKHHP functions. While formed relatively recently, SKHHP is already making regional investments to acquire and preserve existing affordable housing units. SKHHP views affordable housing supply as a key solution to solving homelessness and reducing the likelihood of currently housed individuals becoming homeless.

Addressing the emergency shelter and transitional housing needs of homeless persons

The City of Auburn does not receive ESG funds for an emergency shelter.

To address the emergency shelter and transitional housing needs of individuals experiencing homelessness, the City uses its general funds to support several transitional housing and emergency housing programs throughout the South King County region, including within the City of Auburn. Using general fund dollars, the City supports, a family shelter, diversion program (community court), two shelters in neighboring jurisdictions that serve Auburn residents, a Day Center and Overnight Shelter located within Auburn City limits for individuals experiencing homelessness and drop-in services for homeless youth as well as a food

bank. Additionally, the City owns two single family homes that it provides local nonprofits to make available as transitional housing for formerly homeless families. Per our regional Coordinated Entry process, the city directs families to the coordinated family shelter entry system in King County. The City has also been instrumental in partnering with King County to buy and activate Don's Place, which is a hotel that has been converted to permanent supportive housing.

Helping low-income individuals and families avoid becoming homeless, especially extremely low-income individuals and families and those who are: likely to become homeless after being discharged from publicly funded institutions and systems of care (such as health care facilities, mental health facilities, foster care and other youth facilities, and corrections programs and institutions); and, receiving assistance from public or private agencies that address housing, health, social services, employment, education, or youth needs

The City of Auburn's homeless prevention programs include its housing repair program and its public service programs which are funded through CDBG. One of the public service programs prioritized in 2024 for CDBG-EN funds was Solid Ground's Housing Stability Program, which supports this goal directly.

The housing repair program is the City's largest continuing homeless prevention program which provides minor home repairs to low-income residents in Auburn. The program makes it possible for low-income residents to stay in their homes and avoid financial crisis from paying for costly home repairs that they normally would not be able to afford.

In addition to programs supported by CDBG funds, the City of Auburn also supports homeless prevention programs using general fund dollars. These include robust employment training and pre-apprenticeship programs, eviction prevention programs that provide financial support and other household assistance, domestic violence advocacy and supports, legal assistance programs, and those supporting increased food security and access.

Helping homeless persons (especially chronically homeless individuals and families, families with children, veterans and their families, and unaccompanied youth) make the transition to permanent housing and independent living, including shortening the period of time that individuals and families experience homelessness, facilitating access for homeless individuals and families to affordable housing units, and preventing individuals and families who were recently homeless from becoming homeless again

The City of Auburn does not receive ESG funds for programs to help homeless persons. The City of Auburn does invest a significant amount of its general funds to help individuals experiencing homelessness including adults, families, veterans and unaccompanied youth. Funded programs include, transitional housing, emergency shelters, family support programs, drop-in centers, and behavioral health services.

CR-30 - Public Housing 91.220(h); 91.320(j)

Actions taken to address the needs of public housing

The City of Auburn does not currently own or operate any public housing. In Auburn, public housing is administered directly through the King County Housing Authority (KCHA). There are more than 20 multifamily properties in Auburn that are owned and operated by KCHA. As previously stated, King County owns and operates a permanent supportive housing facility in Auburn.

The City does advocate and support public housing in Auburn as well as helping residents understand the application process to gain access to it.

Actions taken to encourage public housing residents to become more involved in management and participate in homeownership

Since the City does not administer public housing funds, or have any oversight over public housing tenants, it has no actions directed specifically to public housing residents.

The City does support its residents to become more involved and participate in homeownership. The City gathers information on agencies that provide first time homeowner workshops and communicates information on programs providing support to residents seeking a pathway to homeownership, including those living in public housing.

Actions taken to provide assistance to troubled PHAs

Since the City does not administer public housing funds it does not evaluate the status or condition of public housing authorities.

The City's code enforcement officers have a good relationship with our public housing facilities and try to connect the residents and management with resources in supportive services as well as services the City provides.

CR-35 - Other Actions 91.220(j)-(k); 91.320(i)-(j)

Actions taken to remove or ameliorate the negative effects of public policies that serve as barriers to affordable housing such as land use controls, tax policies affecting land, zoning ordinances, building codes, fees and charges, growth limitations, and policies affecting the return on residential investment. 91.220 (j); 91.320 (i)

In 2019, Washington State made grant funding available to cities who are working on assessing their affordable housing inventory and developing strategies to meet those needs. The City of Auburn applied and was successful in receiving a \$100,000 planning grant. The City is part of a unique collaboration with the cities of Burien, Federal Way, Kent, Renton, and Tukwila who all pooled a portion of these grant funds in order to jointly fund a Sub-Regional Housing Needs Assessment. In 2020, that subregional assessment was completed, and in 2021, the City worked with partners to finalize a Housing Action Plan for Auburn that informs these needs in the immediate future and for the next Housing Element update of the Comprehensive Plan. In 2024, the City continued its planning efforts in this area, working with internal staff, external partners, and consultants, to inform the development of the City's Comprehensive Plan. City Planning staff participate regularly in a South King County Housing group to share data, best practices and build stronger regional data infrastructure.

In 2017-2018, the City of Auburn developed a Climate Action Plan, intended to provide a roadmap for the City to reduce its environmental impacts while strengthening its local economy and increasing community resilience. The Plan identified both operational and community-level strategies for the City to take, many of which the City has made significant progress on. In anticipation of incorporating robust climate change planning into its Comprehensive Plan, the City has hired a consultant to tailor insights and recommendations to the City of Auburn, including the development of a Climate Change Policy Framework which was adopted in Q4 of 2024.

Actions taken to address obstacles to meeting underserved needs. 91.220(k); 91.320(j)

The City continues to provide funds to address housing, infrastructure, homeless prevention, economic development and public facility needs. In Auburn and the surrounding South King County area, these continue to be underserved needs so the City will explore ways to leverage additional resources towards addressing these.

The City continues to support partnerships with and amongst our providers, faith community and schools. City staff attend regular provider networking meetings and are responsible for facilitating the South King County Forum on Homelessness.

As mentioned in the previous section, the City's work on developing a Climate Action Plan helped to identify both hazards and mitigation opportunities related to climate change. Our Plan highlighted the tangible effects on public health and quality of life that climate change will have on Auburn's residents and visitors, including heat stress, air quality, flooding risk, and others. The City has undertaken and continues to advance multiple strategic planning efforts designed to respond to the effects of climate change and increase resiliency in our community. In our Housing Repair program, we have begun to explore how CDBG funds could support these efforts by increasing our availability of air filtration systems to respond to smoke events and expanding our prioritization of repairing/replacing heating systems to cooling systems as well. According to data from the National Weather Service, our region experienced an average of 3.4 days annually with temperatures at or above 90 degrees. Between 2000 and 2010, however, we have seen a startling increase in recent years, with an average of 7.8 days annually between 2012 and 2023 with temperatures well above 90 degrees. Our program aims to be responsive to the dangers that excessive heat can cause, especially for vulnerable community members. We worked to revise our program procedures

during 2024 to ensure that we are better able to support increased resiliency for community members who are facing greater climate hazards.

Actions taken to reduce lead-based paint hazards. 91.220(k); 91.320(j)

The City of Auburn includes language in its CDBG contracts that require agencies to comply with HUD Lead-Based Paint Regulations (24 CFR Part 35) issued pursuant to the Lead-Based Paint Poisoning Prevention Act (42 U.S.C. Sections 4831, et seq.) requiring prohibition of the use of lead-based paint whenever CDBG funds are used. In addition, the City notifies residents of potential lead-based paint hazards when it is awarded a Housing Repair grant. A copy of the pamphlet – "Protect Your Family from Lead In Your Home" is provided to each Housing Repair client when the City conducts the initial inspection of their home.

The City takes additional measures when the age of the home indicates a possible presence of lead-based paint. Before housing repair work commences, the city contracts with a certified provider to undertake lead paint testing. When work is undertaken in homes with positively identified lead hazards, the city only contracts with RRP-certified contractors who will implement the necessary mitigation and safety strategies. Auburn's Housing Repair Program staff are also RRP-certified.

Actions taken to reduce the number of poverty-level families. 91.220(k); 91.320(j)

In 2024, the City of Auburn awarded \$680,000 to human service agencies through its competitive grant funding process.

These human services funds were awarded to program across the spectrum of services that support poverty reduction strategies for low-income Auburn residents. Programs include transitional housing, employment training, legal aid and emergency financial support. Most of these programs are partnered with other valuable programs in Auburn that address the needs of poverty level families. These programs help meet community needs with behavioral health services, domestic violence services and early childhood services, among others.

With the 6M purchase of the Auburn Resource Center, the City will be better able to create a service hub for residents looking to access services in Auburn. The Resource center currently operates one day per week and provides assistance to approximately 45 people per week (2,340/year).

Actions taken to develop institutional structure. 91.220(k); 91.320(j)

The City of Auburn continues to participate actively in our region's Continuum of Care and has remained involved in the ongoing regional efforts to develop stronger institutional structure county-wide to prevent and address homelessness through the King County Regional Homelessness Authority. The City also participates in the Affordable Housing Committee of the Growth Management Planning Council, which serves as a regional advisory body. The Committee functions as a point in coordinating and owning accountability for affordable housing efforts across King County.

In 2024, the City continued working in partnership with the municipalities of Burien, Covington, Des Moines, Federal Way, Kent, Maple Valley, Normandy Park, Renton, Tukwila, and King County under the South King Housing and Homelessness Partners (SKHHP). SKHHP jurisdictions are working together and sharing resources in order to effectively address affordable housing and homelessness. This collaborative model is based on similar approaches used in Snohomish County, East King County, and other areas of the country. The purpose of the coalition is to increase the available options for South King County residents

to access affordable housing and to preserve the existing affordable housing stock.

Actions taken to enhance coordination between public and private housing and social service agencies. 91.220(k); 91.320(j)

The City of Auburn has heavily contributed to and intends to continue cultivating relationships between public and private housing and social service agencies. In addition, the City will continue to participate in collaborations with the South King County Forum on Homelessness, the Seattle-King County Coalition on Homelessness, Seattle-King County Housing Development Consortium and the South King Housing and Homelessness Partners.

Identify actions taken to overcome the effects of any impediments identified in the jurisdictions analysis of impediments to fair housing choice. 91.520(a)

The City of Auburn continues to take actions to overcome identified impediments to fair housing based on King County's Analysis of Impediments to Fair Housing. The City included funding in the 2024 Annual Action Plan to support Fair Housing Public Service activities. In mid-2022, the City was able to award funds to a nonprofit agency to carry out these services for Auburn residents. This funding specifically supported Fair Housing Goals 1 and 2; Invest in programs that provide education and enforcement of fair housing laws; and Engage underrepresented communities in ongoing efforts to understand barriers and increase access to opportunity. The City will continue to work towards our 10 Fair Housing Goals identified in the AI. This includes working with regional partners to take local action and utilize local and regional data as guidance to support local policies and make recommendations to our city councils.

CR-40 - Monitoring 91.220 and 91.230

Describe the standards and procedures used to monitor activities carried out in furtherance of the plan and used to ensure long-term compliance with requirements of the programs involved, including minority business outreach and the comprehensive planning requirements.

Monitoring activities include onsite and desk monitoring through review of analysis and progress reports and invoice back up details, technical assistance calls and emails. In 2024, the City performed robust remote monitoring and scheduled regular conversations with grantees to support greater ongoing communication and relationship building.

Subrecipients of City of Auburn CDBG funds are generally monitored annually. Notification and required materials for the monitoring are sent two weeks in advance of the monitoring date. A detailed monitoring tool is used to assess the program's progress, timeliness and adherence to HUD guidelines. After each annual monitoring a formal letter is sent to the subrecipient detailing the findings or concerns of their monitoring. Each subrecipient is given 30 days to respond to the letter.

The City monitors agency compliance with its CDBG contract by requiring the agency to submit quarterly reports that include data on the number of service units provided along with demographic information about their clients. Quarterly reports are cross referenced to the requirements in their contract to ensure the subrecipient is on track to complete contract goals.

Citizen Participation Plan 91.105(d); 91.115(d)

Describe the efforts to provide citizens with reasonable notice and an opportunity to comment on performance reports.

The City's Citizen Participation Plan, available on the City's website as well as in paper copy upon request, lays out the timelines and opportunities for public comment on all aspects of CDBG planning and reporting.

The City provides adequate notice at the opening of the 15-day comment period on the CAPER. The notice is provided by wide distribution utilizing the city's vehicles of communication, including posting in the City's paper(s) of record, the Seattle Times and the Auburn Reporter. The draft CAPER is also made available on the City's website and SpeakUpAuburn for electronic access and review. This CAPER was made available for public comment beginning February 21, 2025. A public hearing was held on March 24th, 2024, to seek public feedback on the City's reported performance.

The City accepts public comments in any form convenient to the public, including written responses, facsimile and email. The City considers all comments and views received in writing or orally at in preparing the CAPER. In 2024, the City continued to use our online outreach tool to support greater online engagement with community members. The website, www.speakupauburn.org, provides an accessible format where community members can submit questions and comments directly. The City created a page devoted to CDBG, which provides an overview of the funding, timeline, and city priorities. It also details the ways in which the City creates opportunities for public participation.

CR-45 - CDBG 91.520(c)

Specify the nature of, and reasons for, any changes in the jurisdiction's program objectives and indications of how the jurisdiction would change its programs as a result of its experiences.

The City has not experienced any significant changes in its program objectives. The City continues to improve processes and procedures to bring the program into alignment with its current objectives. The City will maintain focus on preserving affordable housing, addressing and preventing homelessness, and public services.

Does this Jurisdiction have any open Brownfields Economic Development Initiative (BEDI) grants?

No

[BEDI grantees] Describe accomplishments and program outcomes during the last year.

Not applicable

CR – 58 Section 3

Identify the number of individuals assisted and the types of assistance provided

Total Labor Hours	CDB G	HOM E	ESG	HOPW A	HTF
Total Number of Activities	3				
Total Labor Hours	3,600				
Total Section 3 Worker Hours	0				
Total Targeted Section 3 Worker Hours	0				

Table 7 – Total Labor Hours

Qualitative Efforts - Number of Activities by Program	CDBG	HOME	ES G	HOPW A	HTF
Outreach efforts to generate job applicants who are Public Housing Targeted Workers	0				
Outreach efforts to generate job applicants who are Other Funding Targeted Workers.	0				
Direct, on-the job training (including apprenticeships).	0				
Indirect training such as arranging for, contracting for, or paying tuition for, off-site training.	0				
Technical assistance to help Section 3 workers compete for jobs (e.g., resume assistance, coaching).	0				
Outreach efforts to identify and secure bids from Section 3 business concerns.	0				
Technical assistance to help Section 3 business concerns understand and bid on contracts.	0				
Division of contracts into smaller jobs to facilitate participation by Section 3 business concerns.	0				
Provided or connected residents with assistance in seeking employment including drafting resumes, preparing for interviews, finding job opportunities, connecting residents to job placement services.	0				
Held one or more job fairs	0				
Provided or connected residents with supportive services that can provide direct services or referrals.	2				
Provided or connected residents with supportive services that provide one or more of the following: work readiness health screenings, interview clothing, uniforms, test fees, transportation.	0				
Assisted residents with finding childcare.	0				
Assisted residents to apply for or attend community college or a four year educational institution.	0				
Assisted residents to apply for or attend vocational/technical training.	0				
Assisted residents to obtain financial literacy training and/or coaching.	0				
Bonding assistance, guaranties, or other efforts to support viable bids from Section 3 business concerns.	0				
Provided or connected residents with training on computer use or online technologies.	0				
Promoting the use of a business registry designed to create opportunities for disadvantaged and small businesses.	0				
Outreach, engagement, or referrals with the state one-stop system, as designed in Section 121(e)(2) of the Workforce Innovation and Opportunity Act.	0				
Other	0				

Table 8 – Qualitative Efforts - Number of Activities by Program

Narrative

CAPER

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Using CDBG funds the City supported an organization that provided direct financial services to those who were either homeless or at risk of becoming homeless. Both organizations provided supportive services that also provided direct service referrals.

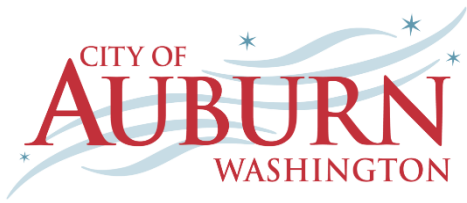
Attachment 1

Additional Accomplishments by the City in reference to CR-05

Goal	Category	Source and Amount	Indicator	Unit of Measure	Expected Strategic Plan	Actual in Strategic Plan	Percent Complete	Expected in Program Year	Actual in Program Year	Percent Complete
Goal #1 Affordable Housing Services Providers City offered tax deferment to support affordable housing SKIIP	Affordable Housing Public Housing Non-Homeless Special Needs	General Funding	Individuals Assisted	People				0	1,147	1,147%
Goal #2 Ending Homelessness City Outreach Team	Homelessness	General Funding	Public service activities other than Low /Moderate Income Hsng. Benefit	Persons Assisted				0 (people)	221 (people)	221%
Goal #2 Ending Homelessness Service Providers Shelter Foodbank	Homelessness	General Funding	Public service activities other than low/ Mod. Income Housing Benefit	Persons Assisted				0 (people)	5,746(people) Apx.	5,746%
Total(s)									Persons 7,114	

CAPER

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AGENDA BILL APPROVAL FORM

Agenda Subject:

Resolution No. 5825 (Hay) (20 Minutes)
A Resolution adopting the 2025-2029 Consolidated Plan and the 2025
Annual Action Plan

Meeting Date:

April 28, 2025

Department:

Human Services

Attachments:

2025-2029 Consolidated Plan
(Final), 2025-2029 Con. and
Action Plan (Final), Resolution
No. 5825

Budget Impact:**Administrative Recommendation:**

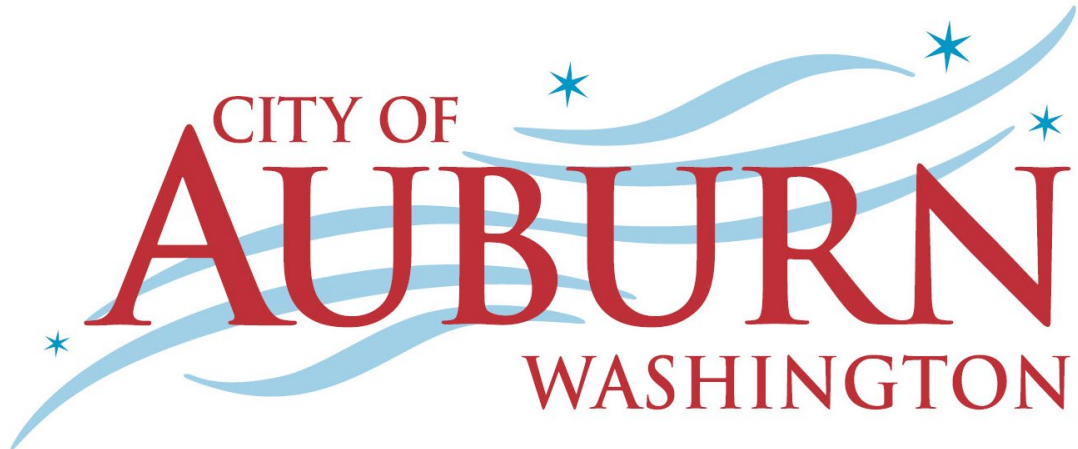
For discussion only.

Background for Motion:**Background Summary:**

Every five years, the City of Auburn is required to submit an updated Consolidated Plan to the Department of Housing and Urban Development to guide the investment of Community Development Block Grant (CDBG) Funds. Auburn's current Consolidated Plan ended in December 2024. This presentation is intended to provide an overview of the initial public comments, with information for the Council on what we learned and next steps. This presentation will describe the community outreach efforts, review the survey data and focus on next steps in the process of development of the major components of the Consolidated Plan that spans from 1/2025 to 12/2029.

Councilmember: Yolanda Trout-Manuel

Staff: Kent Hay



City of Auburn
Community Development Block Grant
Consolidated Plan
2025 – 2029

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Acronym List

ACS	American Community Survey
AMI	Area median income
CDBG	Community Development Block Grant
CEDS	Comprehensive Economic Development Strategy
CHAS	Comprehensive Housing Affordability Strategy
FMR	Fair market rent
HAMFI	Household area median family income
HMIS	Homeless Management Information System
HOME	HOME Investment Partnerships Program
HUD	U.S. Department of Housing and Urban Development
KCHA	King County Housing Authority
KCRHA	King County Regional Homelessness Authority
LEHD	Longitudinal Employer-Household Dynamics
PIT	Point-in-Time
WDC	Workforce Development Council
WIOA	Workforce Innovation and Opportunity Act

Executive Summary

ES-05 Executive Summary – 24 CFR 91.200(c), 91.220(b)

Introduction

The purpose of the City of Auburn's contribution to the King County Consortium Consolidated Plan¹ is to provide guidance for the investment of certain Community Development Block Grant (CDBG) funds in the City and within the surrounding region as well as setting forth goals and performance measures. The Consolidated Plan has been prepared on behalf of and with the assistance of participating groups, the public, past recipients of services, agencies and organizations. The City of Auburn is committed to finding effective, coordinated approaches to address the unmet needs of its low- and moderate-income residents, and has aligned the goals of the Consolidated Plan with the City's Needs Assessment and in partnership with our Urban County Consortium.

The City of Auburn anticipates receiving approximately **\$600,000** per year in CDBG funds during the five-year period of the Consolidated Plan for program years 2025-2029. Based on the feedback provided by our City Council, the community and with the guidance from the City's Human Services Committee, these funds will be used to support a variety of programs and strategies focused on affordable housing and addressing homelessness.

Data in this Consolidated Plan is based upon a combination of sources that include the 2018-2022 American Community Survey (ACS) five-year data set, which is the most current ACS data available at time of publishing and a collection of other local data sources. The ACS data provides the most detailed information available on income, poverty, housing, and housing cost burden. The ACS data has been supplemented in this Plan with more recent data from community surveys, public meetings, and other available data sets pertaining to housing and community development. The Consolidated Plan follows the Department of Housing and Urban Development's (HUD) standardized template, and each section contains questions framed by HUD.

Summary of the findings identified in the Needs Assessment

In 2024 the City conducted/updated its local Needs Assessment. The Needs Assessment is intended to analyze various data sources to best aid in the determination of where CDBG investments should be directed within the City.

The Needs Assessment identified a broad range of findings that are likely similar to other nearby communities within South King County, however, the following findings are unique to Auburn and deserving of additional emphasis:

- Housing affordability (cost burden) in Auburn impacts approximately half of the households in the City.
- The length of time an individual experiences homelessness in Auburn is longer than local, regional or national averages.

¹ The Consortium cities include: Auburn, Bellevue, Federal Way, Kent and King County

Based on the findings of the needs assessment, the market analysis, citizen and agency input, evaluation of regional and local data, evaluation of existing programs and investments, the Consolidated Plan identifies the following two priority areas for CDBG investments.

- Affordable Housing – Ensure access to healthy, affordable housing for low- and moderate-income households throughout the region through investment in the full range of housing type, by assisting vulnerable populations such as seniors and veterans, by partnering with for profit and non-profit owners, operators and developers, and through efforts to secure financial stability for individuals who are at risk of losing housing
- Homelessness – Address homelessness through greater investment in sheltering, mental health and addiction support, access to food, access to educational opportunities, enhancing financial stability for people who are exiting homelessness, and for keeping people who are housed from entering homelessness.

Summary of citizen participation process, citizen findings, and consultation process

The City of Auburn held multiple public meetings prior to the development of the Consolidated Plan to receive public input on community needs, barriers to housing, priorities, and potential strategies.

The City intentionally chose to involve both the Human Services Committee and the City Council to cast a broader net of public engagement within the community, knowing there are different audiences that follow the Human Services Committee vs those that follow the City Council. Notices for these meetings were posted in the Seattle Times, posted on the City's website, on SpeakUpAuburn, emailed to agencies, and community stakeholders and citizens via a dedicated and self-subscribed distribution list. The city was canvased with flyers that provided detailed information regarding these priorities and included a survey link to seek input on spending priorities. Engagement was also conducted at several community events such as the National Night Out and the Farmers Market and through other methods such as weekly Mayor emails. The City received 120 responses to its survey.

In addition to soliciting direct input from community members, the City also worked with a consultant to complete a 2024 Community Needs Assessment and Market Analysis. The report synthesized data and community feedback from stakeholder interviews, and a community-wide online survey. This data and input went into the development of the Needs Assessment and Market Analysis sections of the Consolidated Plan.

The City of Auburn routinely consults with the Consortium, surrounding cities, multiple public and private agencies, citizens, and internal service providers throughout the development of CDBG required plans as well as a range of other locally funded programs and plans. Examples of such agencies include: the King County Housing Authority, King County Regional Homelessness Authority, cities of Federal Way and Kent, the Auburn Food Bank, and other government human service providers and nonprofit agencies delivering services in Auburn and the subregion.

In addition to conducting consultations during the development of the plan, the City of Auburn collaborates and works closely with numerous coalitions, committees and government entities throughout the duration of the plan in efforts to enhance strategies and systems to meet established goals and objectives on the plan.

Summary of public comments

In response to the meetings, hearings, surveys and other engagement efforts described above, community members shared feedback with the City on what they would like to see prioritized when determining how to invest CDBG funds. Below is a summary of key feedback topic areas received from public stakeholders.

Prioritization of Investment Areas

- Investing in affordable housing solutions.
- Addressing homelessness.
- Assisting seniors, veterans and disabled populations.
- Pursuing economic development opportunities.
- Enhancing neighborhoods.

Recommended Actions Identified During Citizen Input

- Programs that support low-income homeowners with energy efficiency improvements to reduce overall housing cost.
- Programs or policies that address the increasing rental costs in the community.
- Support pre-apprenticeship programs that provide job training and build skills in repair and manufacturing trades.
- Programs to address Economic Development, specifically focused in the Child Care sector.

Summary of comments or views not accepted and the reasons for not accepting them

All comments and views provided were taken into consideration during the Consolidated Plan process. Any comments not accepted were deemed as offensive, inappropriate or had no relation to issues related to Auburn or the Consolidated Plan.

- No comments were rejected

Evaluation of past performance

During the first four years of the 2020-2024 Consolidated Plan, Auburn worked with the community, nonprofit agencies, HUD, and our partners in the King County Consortium to make progress towards our Consolidated Plan goals.

Each year, the City of Auburn prepares a Consolidated Annual Performance Evaluation Report (CAPER) and submits it to HUD. The CAPER reports on the specific accomplishments and activities for that year.

From 2020 to 2024, the City of Auburn achieved the following with CDBG funds:

- 287 households received home repairs
- 549 individuals benefited from home repairs
- 28 residents received job training and placement
- 11 small businesses received assistance

- 3,148 residents received medical/dental services
- 1,830 residents received assistance with homelessness
- A house was rehabbed to accommodate a transitional housing program which has served multiple families in the community
- Four separate capital projects were funded that retrofitted sidewalks and intersection ramps in order to meet ADA standards.
- 6,177 people and 40 businesses benefited from sidewalk improvements
- 4,189 people benefitted from services to end homelessness including subsistence payments
- 1750* individuals received emergency shelter (apx.)

Summary

Auburn residents along with stakeholders, community partners, service providers and others were consulted during the development of the Consolidated Plan. They provided valuable input that supported to the development of the outcomes and objectives listed in the Consolidated Plan. To accomplish these outcomes and objectives, the City invests in programs that meet the community basic needs, increase self-sufficiency, provide economic opportunity and develop a safe community. The remainder of the plan will provide further detail on how Auburn intends to employ its investment.

The Process

PR-05 Lead & Responsible Agencies - 91.200(b)

Describe agency/entity responsible for preparing the Consolidated Plan and those responsible for administration of each grant program and funding source.

The following are the agencies/entities responsible for preparing the Consolidated Plan and those responsible for administration of each grant program and funding source.

Agency Role	Name	Department/Agency
Lead Agency	Auburn	Human Services Department
CDBG Administrator	Auburn	Human Services Department
HOME Administrator	King County	Department of Community and Human Services
ESG Administrator	King County	Department of Community and Human Services

Table 1– Responsible Agencies

Narrative

The City of Auburn, as a member of the King County Consortium, administers its own CDBG funds and prepares its own Consolidated Plan for the administration of those funds. However, it also contributes to sections of the King County Consolidated Plan relating to the HOME program.

As a member of the King County Consortium, the City works closely with numerous nonprofit organizations in the region that implement programs funded by the City of Auburn CDBG program. A detailed list of agencies responsible for administering funded programs by CDBG can be found in the Action Plan section of this document.

Consolidated Plan Public Contact Information

Human Services Manager	CDBG/Human Services Program Coordinator
Kent Hay	Jody Davison
25 West Main Street	25 West Main Street
Auburn, WA 98001	Auburn, WA 98001
khay@auburnwa.gov	jdavison@auburnwa.gov

PR-10 Consultation - 91.100, 91.200(b), 91.215(I)

Introduction

This section describes the community consultation process followed by the City of Auburn in updating the Consolidated Plan and the coordination with other local governments, the Continuum of Care, service agencies, and community stakeholders. The City of Auburn consulted with multiple public and private agencies as well as community members during the development of the Consolidated Plan.

In addition to conducting consultations during the development of the plan, the City of Auburn collaborates and works closely with numerous coalitions, committees, and government entities throughout the duration of the plan in efforts to enhance strategies and systems to meet established goals and objectives of the plan.

Provide a concise summary of the jurisdiction's activities to enhance coordination between public and assisted housing providers and private and governmental health, mental health and service agencies (91.215(I)).

The City of Auburn works closely with partnering King County jurisdictions, public housing authorities and health providers to develop systems to improve the quality of service and access for low-income residents as well as the community within the city and throughout the region.

The City of Auburn participates in a variety of regional efforts designed to collaborate and address housing and homelessness in King County. This includes participating in the King and Pierce County Opioid Abatement Councils, South King Housing and Homelessness Partners (SKHHP), the King County Affordable Housing Committee (AHC), the Human Service Joint Planners Forum, South King County Mobility Management, the Auburn Roundtable, and South King County Regional Homelessness Committee. Additionally, the City of Auburn elected officials (Mayor and City Council) hold board positions on SKHHP as well as the King County Regional Homelessness Authority and the Affordable Housing Committee. These regular commitments result in numerous monthly convenings of policy makers and technical experts who are continuously working together to solve problems, share examples of success and pool resources.

The City also regularly participates in meetings with staff from King County Department of Community and Human Services, Public Health King County, the Housing Development Consortium, Valley Cities, the Multi-Service Center, and the King County Housing Authority to review program progress and delivery of services funded through regional efforts. This regional collaboration work is supported by the South King Housing and Homelessness Partnership, which Auburn and other South King County Cities contribute to build additional capacity to address issues related to housing and homelessness in the South King County region.

The above-described ongoing commitments to regional participation ensures that the City of Auburn is aware of emerging issues, priorities, strategies, legislation, and funding opportunities as they evolve in real time. These commitments to participation occur within the period of time that the Consolidated Plan is developed as well as the intervening years of implementation of the strategic plan.

Describe coordination with the Continuum of Care and efforts to address the needs of homeless persons (particularly chronically homeless individuals and families, families with children, veterans, and unaccompanied youth) and persons at risk of homelessness

In 2019 the City of Auburn entered an interlocal agreement with 9 other South King County cities as well as King County itself called South King County Housing and Homelessness Partners (SKHHP). SKHHP's main purpose is to pool resources to address housing and homelessness issues in South King County. Each member pays into SKHHP which provides an operating budget that fund SKHHP staff and their program needs. Additionally, most members, including Auburn, have made a commitment to direct a portion of annual sales tax revenues to SKHHP to help build a capital fund that can be directed into acquisition and perseveration of affordable housing. The Mayor of Auburn serves as the Chair of the Executive Board, the City of Auburn serves as SKHHP administering agency (SKHHP staff are Auburn employees), and Auburn staff serve on SKHHP technical advisory group.

The City of Auburn is in the process of acquiring a property and building for the purposes of providing a day shelter, overnight shelter, food bank, community court and human service hub. Operations of the Auburn Consolidated Resource Center will be fully funded by the City of Auburn using 100% local funds, yet it provides services to individuals who are in need of housing, shelter and other services that do not reside in Auburn.

In 2021, the newly created King County Regional Homelessness Authority (KCRHA) became our CoC lead agency and has worked to consolidate structures and contracts across King County and Seattle to create greater efficiency and maximize impact.

In 2023, this work continued, and Auburn remained a partner in the work of the KCRHA. Auburn's mayor currently sits on the Governance Board of the Regional Homelessness Authority, and staff participate in bi-weekly meetings with KCRHA to collaborate and inform the work they are overseeing, particularly regarding subregional planning.

Describe consultation with the Continuum(s) of Care that serves the jurisdiction's area in determining how to allocate ESG funds, develop performance standards and evaluate outcomes, and develop funding, policies and procedures for the administration of HMIS

The ESG program focuses on assisting people to quickly regain stability in permanent housing after experiencing homelessness or a housing crisis. The City of Auburn does not receive ESG funds directly.

The City of Auburn partners with King County who agreed via an ILA that it is mutually desirable and beneficial to enter a consortium arrangement pursuant to and authorized by the Homeless Emergency Assistance and Rapid Transition to Housing Act of 2009, for purposes of the ESG and to cooperate in undertaking ESG activities. The County and the City are committed to targeting ESG and HOME Program funds to ensure benefit for very low to moderate-income persons as

defined by HUD; and recognize that needs of very low to moderate-income persons may cross jurisdictional boundaries.

As part of the ILA, staff attend (and in alternating years maintain a voting seat) on the Joint Recommendations Committee. The JRC has the responsibility to review and recommend to the King County Executive all policy matters concerning the ESG program. McKinney-Vento funding for the ESG is allocated through a competitive process and administered by King County. They also review and recommend to the King County Executive the projects and programs to be undertaken with ESG funds. They monitor and ensure that for all geographic areas and participating jurisdictions that benefit from ESG programs funded activities over time, so far as is feasible considering eligible applications submitted within the goals, objectives, and strategies of the Consolidated Plan. Additionally, they monitor to ensure that equity in distribution of funds is pursuant to proportion of the region's low to moderate-income population and that equity is achieved over time pursuant to Consortium Guidelines adopted by the JRC.

The Homeless Emergency Assistance and Rapid Transition to Housing Act (HEARTH Act) revised the Emergency Shelter Grants Program and renamed it the Emergency Solutions Grants (ESG) Program. The new name reflects the change in the program's focus from addressing the needs of homeless people in emergency shelters to assisting people to quickly regain stability in permanent housing after experiencing homelessness and/or a housing crisis.

Describe Agencies, groups, organizations and others who participated in the process and describe the jurisdictions consultations with housing, social service agencies and other entities

Table 2– Agencies, groups, organizations who participated

1	Agency/Group/Organization	KING COUNTY
	Agency/Group/Organization Type	Other government - County
	What section of the Plan was addressed by Consultation?	Housing Need Assessment / Homelessness Strategy / Homeless Needs - Chronically homeless / Homeless Needs - Families with children / Homelessness Needs – Veterans / Homelessness Needs - Unaccompanied youth / Non-Homeless Special Needs / Market Analysis
	How was the Agency/Group/Organization consulted and what are the anticipated outcomes of the consultation or areas for improved coordination?	As a member of the King County Housing Consortium for the purpose of HOME funds, Auburn works with King County in the development of the City's and the County's Consolidated Plan. Because the two entities have a cardinal role in each other's program delivery there is active participation from both parties in the development of the plan.
2	Agency/Group/Organization	KENT
	Agency/Group/Organization Type	Other government - Local
	What section of the Plan was addressed by Consultation?	Housing Need Assessment / Lead-based Paint Strategy / Homelessness Strategy / Homeless Needs - Chronically homeless / Homeless Needs - Families with children / Homelessness Needs – Veterans / Homelessness Needs - Unaccompanied youth / Non-Homeless Special Needs / Market Analysis / Anti-poverty Strategy
	How was the Agency/Group/Organization consulted and what are the anticipated outcomes of the consultation or areas for improved coordination?	As members of the Urban County Consortium, Auburn and Kent staff worked closely together during the development of the Consolidated Plan. Staff from both cities attend monthly meetings to discuss human services and housing trends, needs, and progress on ongoing initiatives.
3	Agency/Group/Organization	2025-2029 King County Consortium Consolidated Plan King County
	Agency/Group/Organization Type	Government
	2025-2029 King County Consortium Consolidated Plan	The plan prioritizes affordable housing and homelessness prevention

4	Agency/Group/Organization	South King Housing and Homelessness Partners
	Agency/Group/Organization Type	Government
	What section of the Plan was addressed by Consultation?	Housing Need Assessment / Public Housing Needs Homelessness Needs - Chronically homeless / Homelessness Needs - Families with children / Homelessness Needs – Veterans / Homelessness Needs - Unaccompanied youth / Homelessness Strategy
	Briefly describe how the Agency/Group/Organization was consulted. What are the anticipated outcomes of the consultation or areas for improved coordination?	South King Housing and Homelessness Partners (SKHHP) is a coalition formed by an interlocal agreement between the jurisdictions of Auburn, Burien, Covington, Des Moines, Federal Way, Kent, Maple Valley, Normandy Park, Renton, Tukwila, and King County. The agreement allows for South King County jurisdictions to work together and share resources to effectively address affordable housing and homelessness. This collaborative model is based on similar approaches used in Snohomish County, East King County, and other areas of the country. The purpose of the coalition is to increase the available options for South King County residents to access affordable housing and to preserve the existing affordable housing stock.

Identify any Agency Types not consulted and provide rationale for not consulting

A wide range of groups and organizations participated in the process including public funders from Washington State and King County partner jurisdictions, public housing authorities, members from the Seattle-King County Housing Development Consortium, stakeholders, housing providers for low-and-moderate income persons, agencies who serve persons who are homeless, and Seattle-King County Public Health. In addition to the consultations referenced above, Auburn, King County and Consortium partner staff coordinate closely with each other and fan out to participate and attend a wide range of standing meetings with city planners, housing and service providers.

The only types of organizations not consulted with were corrections facilities. The rationale for not consulting with these facilities is that the City does not host this type of organization.

Describe cooperation and coordination with other public entities, including the State and any adjacent units of general local government, in the implementation of the Consolidated Plan (91.215(l))

As a member of the King County Housing Consortium, Auburn works closely with King County in the development of the City's and the County's Consolidated Plan. Because the two entities have a cardinal role in each other's program delivery there is active participation from both parties in the development of the plan.

The City also actively participates in the South King County Human Services Planners Committee. The Committee is composed of neighboring South King County City's such as Kent, Federal Way and Burien as well as partnering funder organizations such as All Home and United Way. The monthly meetings are used to discuss current issues impacting the community as well as Consolidated Planning and other CDBG program management strategies.

Narrative

PR-15 Citizen Participation - 91.401, 91.105, 91.200(c)

Summary of citizen participation process/efforts made to broaden citizen participation
Citizen Participation Outreach

Sort Order	Mode of Outreach	Target of Outreach	Summary of response/attendance	Summary of comments	Summary of comments not accepted	URL (If applicable)
1	Online Survey	General Public, Stakeholders, Elected leaders and residents of the city of Auburn	From July 25, 2024, to August 23, 2024 the City conducted an online survey to seek input into spending priorities from the residents of Auburn	Survey responses identified community perceptions of increasing human service needs, particularly related to housing stability, domestic violence, and food and emergency sheltering. Respondents would like to see city prioritization of basic needs, homelessness prevention and housing stability, neighborhood safety and wellbeing, and health and dental care.	All accepted	CLOSED 2025-2029 Consolidated Plan Public Input Survey Speak Up Auburn
2	Public Notice	Non-targeted (30 Day Comment Period)	Seattle Times Publication July 24, 2024 (30 days)	No Responses	None	
3	Email Comm.	Subscribers of the City's email system	Email on August 8th, 2024	No Responses	None	

Sort Order	Mode of Outreach	Target of Outreach	Summary of response/attendance	Summary of comments	Summary of comments not accepted	URL (If applicable)
4	Distribution of Flyers	Marginalized Communities	July 25th, 2024	See Survey response above	None	
5	Online Content	Non-targeted	Speak up Auburn Content has been posted since June 1, 2024	See Survey responses above	None	Community Development Block Grant (CDBG) Speak Up Auburn Human Services - City of Auburn
6	Public Meeting (City Council)	Elected City Councilmembers and General Public.	On June 24, 2024 , the Auburn City Council held a public meeting for the purposes of introducing the process and schedule for updating the Consolidated Plan.	Comments were limited to high level feedback from the City Council. All City Council members provided input on their initial priorities. While all members had individual and unique priorities, affordable housing and homelessness were common amongst all members.	None	

Sort Order	Mode of Outreach	Target of Outreach	Summary of response/attendance	Summary of comments	Summary of comments not accepted	URL (If applicable)
7	Public Meeting (City Council)	Elected City Councilmembers and public	On October 28, 2024 , the Auburn City Council held an open public meeting for the purposes of receiving a briefing on the citizen input that has been received thus far and the themes that were emerging and that would influence the goals of the Consolidated Plan.	Limited to feedback from elected Councilmembers. During this public meeting affordable housing and homelessness were highlighted as recurring themes or priority.	None	
8	Public Hearing (Human Svc.)	Human Services Committee and General Public	On August 19, 2024 , October 28, 2024 , and January 27, 2025 , the Human Services Committee held public hearings to receive feedback in the development and draft of the Consolidated Plan	Citizen Comments received regarding the prioritization and spending of CDBG resources. The Council reviewed survey results and citizen spending priorities	None	
9	Email	Consortium Cities	Kent, Federal Way, Bellevue, King County – December 30th, 2024	None	None	
10	Public Notice	30-day comment period Draft Plan(s)	Seattle Times / Auburn Reporter January 1, 2025, to January 31, 2025	The Human Services committee received one comment from a service provider inquiring about whether Economic Development would be included as a priority	None	

Sort Order	Mode of Outreach	Target of Outreach	Summary of response/attendance	Summary of comments	Summary of comments not accepted	URL (If applicable)
11	Public Meeting (City Council)	Elected City Council Members and Public	On April 28th, 2025 , the Auburn City Council will hold an open public meeting for the purposes of receiving a briefing on draft Consolidated Plan and draft Annual Action Plan.	TBD	TBD	
12	Public Hearing (City Council)	Elected City Council Members and General Public	On May 5, 2025 , the Auburn City Council will hold a public hearing for the purpose of hearing citizen input on the draft Consolidated Plan and Annual Action Plan	TBD	TBD	

Table 3– Citizen Participation Outreach

Needs Assessment

NA-05 Overview

The City of Auburn is an entitlement community within the King County Consortium. As part of the King County Consortium, Auburn participates in an inter-jurisdictional partnership with nearly all the cities and unincorporated areas of King County, excluding Seattle and Milton. The Consortium coordinates investment for HOME Investment Partnerships Program (HOME), Emergency Solutions Grants, and CDBG) funds. However, Auburn, as an entitlement community, receives a separate allocation of CDBG funds from the King County Consortium. Auburn utilizes the Consolidated Plan to explore trends specific to the city and its CDBG allocation.

The Needs Assessment of the Consolidated Plan summarizes key housing and community development trends impacting the City of Auburn. Through analysis of federal, state, and local datasets, as well as a review of existing planning documents and reports, Auburn identified several major housing and human service needs of low- and moderate-income people in the city. The needs identified in this section help to inform the Strategic Plan, which outlines how the City of Auburn will use its CDBG funds over the next five years. As a member of the King County Consortium, King County's 2025–2029 Consolidated Plan outlines how the Consortium will use its HOME and Emergency Solutions Grants funds over this period.

The Consolidated Plan utilizes two primary data sources: the U.S. Census Bureau's American Community Survey (ACS) and the Comprehensive Housing Affordability Strategy (CHAS), which contains custom tabulations of ACS data. Auburn analyzed the 2016–2020 five-year CHAS estimates, 2018–2022 ACS five-year estimates, and information from other available sources such as local reports, plans, studies, dashboards, and datasets to better understand recent trends impacting the city.

Key Themes from the Needs Assessment

Forty-seven percent of Auburn households are considered low- to moderate-income. As seen in Auburn and throughout many cities in the United States, low- to moderate-income households have distinct housing and non-housing community development needs. Listed below are some key findings related to housing needs.

- Housing cost burden, defined as a household paying more than 30 percent of their income on housing, and severe housing cost burden, defined as a household paying more than 50 percent of their income on housing, constitute the greatest share of housing problems, with extremely low-income households experiencing the greatest share of severe housing cost burden as opposed to low- and moderate-income households.
- Fifty-two percent of renter households experienced at least one housing problem.
- Small families experience the greatest share of severe housing cost burden among renter households.
- Elderly households experience the greatest share of severe housing cost burden among owner households.

- Although the sample size is small, Pacific Islander households were disproportionately impacted by housing cost burden and other housing problems.
- Most public housing residents and voucher recipients are considered extremely low-income.
- Adults with children comprise the greatest share of households experiencing homelessness.
- The average time spent experiencing homelessness varies greatly depending on the family type, but the length of homelessness in Auburn tends to be longer than that in the King County Consortium, extending over two years for some categories.

Public Survey Process

In addition to analyzing ACS and CHAS data, the City of Auburn conducted a public survey regarding community needs and CDBG funding priorities from July 24 to August 23, 2024. One question asked respondents to identify Auburn's spending priorities for the CDBG Grant Funds, which included the following suggestions for the city:

- Prioritize families with fixed incomes in funding activities.
- Support affordable housing, particularly for low-income seniors.
- Increase funding for the Clean and Sober Housing Program for those completing substance abuse treatment.
- Help disabled senior homeowners facing increased costs to age in place.
- Assist with move-in costs and application fees for those experiencing housing instability.
- Support programs to assist with home improvement costs and permitting fees.

Needs Assessment Attachment 1 provides a greater analysis of the trends described above.

NA-50 Non-Housing Community Development Needs - 91.415, 91.215 (f)

The City of Auburn identified the jurisdiction's non-housing community development needs by analyzing information gathered through several methods, including:

- Public engagement efforts conducted for the Consolidated Plan from July 25 to August 23, 2024. These efforts included stakeholder engagement and a public survey, which received 120 responses.
- Needs identified through the City of Auburn's Comprehensive Plan update process, which includes a community poll, an open house, and data analysis.
- An analysis of 211 calls originating from the Auburn School District.

The needs of Auburn residents identified through the above sources are summarized below.

Describe the jurisdiction's need for Public Facilities. How were these needs determined?

Consolidated Plan Survey

The survey asked participants to rank the CDBG spending categories (housing, other real property activities, public facilities and improvement activities, economic development activities, and other activities) from 1–5, with 1 being the most important. Participants ranked public facilities and improvements as a 3.04, indicating a medium priority level. Participants to provide open-ended comments regarding what they believe would be beneficial to the City in determining its spending priorities for CDBG grant funds. Participants commonly reported a desire for more community centers and recreational facilities for teenagers and young adults.

Comprehensive Plan Update

The capital element of the Comprehensive Plan Update includes a list of facilities in which the level of service is expected to decrease because of changes made under the capital facilities plan. A decreasing level of service might lead to gaps in coverage or a need for greater services. These facilitates are:

- General municipal buildings.
- Open space.
- A senior center.
- Special use areas.

Additionally, the city held a kickoff open house for the Comprehensive Plan to collect public comments. The comments revealed a desire to have greater recreational facilities such as sports fields, outdoor recreation areas, and entertainment venues.

Describe the jurisdiction’s need for Public Improvements. How were these needs determined?

Consolidated Plan Survey

As stated above, survey participants ranked public facilities and improvement activities at an importance level of 3.04 (with 1 being the greatest priority). Participants spoke about the following community needs in the open-ended comment section of the survey:

- Greater investment in public safety measures and assistance.
- Development of safe paths for both walking and cycling.
- Street beautification, including litter control and neighborhood cleanup.
- Park improvements and acquisition of more park areas. Pickleball lines on tennis courts and outdoor basketball areas were specifically noted as desired park improvements.

Comprehensive Plan Update

The transportation element of the Comprehensive Plan update describes needs identified in the community relating to transportation improvements. These include:

- Creating new transit routes to connect Auburn’s West Hill region, which is not directly served by any transit services, to the Federal Way Transit Center or Auburn Station.
- Providing frequent and efficient transportation transit systems between Federal Way Transit Center and Auburn Station.
- Increasing access to transit, such as a commuter-oriented shuttle, to connect the Lee Hill region to greater transportation options.
- Providing greater service and routes in the Lakeland Hills region.
- Creating and maintaining infrastructure for biking and pedestrians, including bike lanes.

In addition, a poll conducted by the City of Auburn regarding the 2024 Comprehensive Plan asked participants to identify their top five priorities for Auburn in the next 20 years. The following results indicate that public improvement is a priority based on the percentage of respondents who selected it as a priority:

- Preserving open space and environmental stewardship (54.4 percent).
- Maintaining a safe community (45.5 percent).
- Increasing bicycle and pedestrian amenities (36.4 percent).
- Increasing access to parks and amenities (18.2 percent).

211 Data

From September 11, 2023, to September 9, 2024, 4.5 percent of calls received from the Auburn School District 211 call center requested transportation assistance. Of those, 55.8 percent of callers (234 calls) requested assistance with ride services and local transportation such as metro buses, senior rides, and paratransit. Of note, 41.5 percent of callers were over the age of 60. This underscores the need for increased transportation options, particularly for seniors.

Describe the jurisdiction's need for Public Services. How were these needs determined?

Consolidated Plan Survey

Several needs regarding public service needs arose from the open-ended survey comments, including:

- Support for early childhood education programs.
- Affordable childcare for young families.
- Business and technical assistance to improve childcare services.

Comprehensive Plan Update

In the poll conducted by the city of Auburn 18.2% of residents indicated that mainlining a high level of public services and utilities should be a priority for Auburn over the next 20 years.

211 Data

The City of Auburn analyzed publicly available 211 data from callers in the Auburn School District. The 211 data provides insight into the nature of services needed in the community. From September 11, 2023 to September 9, 2024, 9,407 calls were made to 211 from the Auburn School District. The data does not indicate the number of unique calls made. The data from the calls indicated:

- 34.5 percent were regarding housing and shelter service needs.
- The second most requested service category was utilities (13.9 percent).
- 61.7 percent of calls requesting utility assistance were about electric bills.
- 12.2 percent of callers requested government and legal support; 44.9 percent of those calls were requesting housing law assistance.
- 10.4 percent of calls were regarding food assistance; 65.4 percent of those calls requested help buying food.

Housing Needs Assessment

Introduction

The Housing Needs Assessment provides an overview of demographic information regarding Auburn's low- to moderate-income population, which serves as a base for further analysis into the needs and characteristics of these households. Another way to evaluate housing needs is to consider the different types of housing generally affordable to different household incomes. In 2023, a family of four is considered low-income if they earn less than \$110,950 per year. Assuming they spend 30 percent on rent, the maximum rent they could spend is approximately \$2,770.

Table 1 provides the FY 2024 income limits for the Seattle-Bellevue, WA HUD Metro fair market rent (FMR) area. These figures are calculated annually by the U.S. Department of Housing and Urban Development (HUD) and provide context as to what constitutes extremely low, low, and

moderate incomes in the region. The household area median family income (HAMFI) is comparable to the area median income (AMI) for the below analysis.

While CHAS estimates utilize the Seattle-Bellevue, WA Metropolitan Area in determining income categories in Auburn, the income limits for Auburn align more closely with Pierce County due to it lying on the outskirts of the Seattle-Bellevue area. Table 2 provides the FY 2024 income limits for the Tacoma, WA HUD Metro FMR area, which is located in Pierce County.

Table 1: FY 2024 Income Limits (Seattle Bellevue, WA HUD Metro FMR Area)

Income Category	1	2	3	4	5	6	7	8
Extremely low-income (30% HAMFI)	\$31,650	\$36,200	\$40,700	\$45,200	\$48,850	\$52,450	\$56,050	\$59,700
Very low-income (50% HAMFI)	\$52,700	\$60,250	\$67,800	\$75,350	\$81,400	\$87,450	\$93,400	\$99,450
Low-income (80% HAMFI)	\$77,700	\$88,800	\$99,900	\$110,950	\$119,850	\$128,750	\$137,600	\$146,500

Data Source: 2024 Income Limits Documentation System.

Table 2: FY 2024 Income Limits (Tacoma, WA HUD Metro FMR Area)

Income Category	1	2	3	4	5	6	7	8
Very low-income (50% HAMFI)	\$40,550	\$46,350	\$52,150	\$57,900	\$62,550	\$67,200	\$71,800	\$76,450
Extremely low-income (30% HAMFI)	\$24,350	\$27,800	\$31,300	\$34,750	\$37,550	\$41,960	\$47,340	\$52,720
Low-income (80% HAMFI)	\$64,900	\$74,150	\$83,400	\$92,650	\$100,100	\$107,500	\$114,900	\$122,300

Data Source: 2024 Income Limits Documentation System

An analysis of the most recent CHAS data found that 13,730 households earned less than 80 percent HAMFI in 2020, meaning that 47 percent of the total households qualified as low- to moderate-income. The Housing Needs Assessment uses ACS and CHAS data as a base to understand the characteristics and needs of those low- to moderate-income households in Auburn.

Population Growth

As of April 2024, 88,950 people resided in the City of Auburn, making it the 14th largest city in Washington State (Washington State Office of Financial Management). In the past five years, Auburn has experienced significant growth. One factor influencing growth was the opening of two large apartment complexes in the city, which attracted new residents.

Figure 1 depicts the annual population and growth rate in Auburn from 2012 to 2022. In that span, the city's population grew 21.8 percent. In 2021, the city experienced the highest growth rate of 5.4 percent, which is more than double the next highest growth rate (2.4 percent in 2017). In 2022, the rate slowed significantly to a near-stagnant growth.

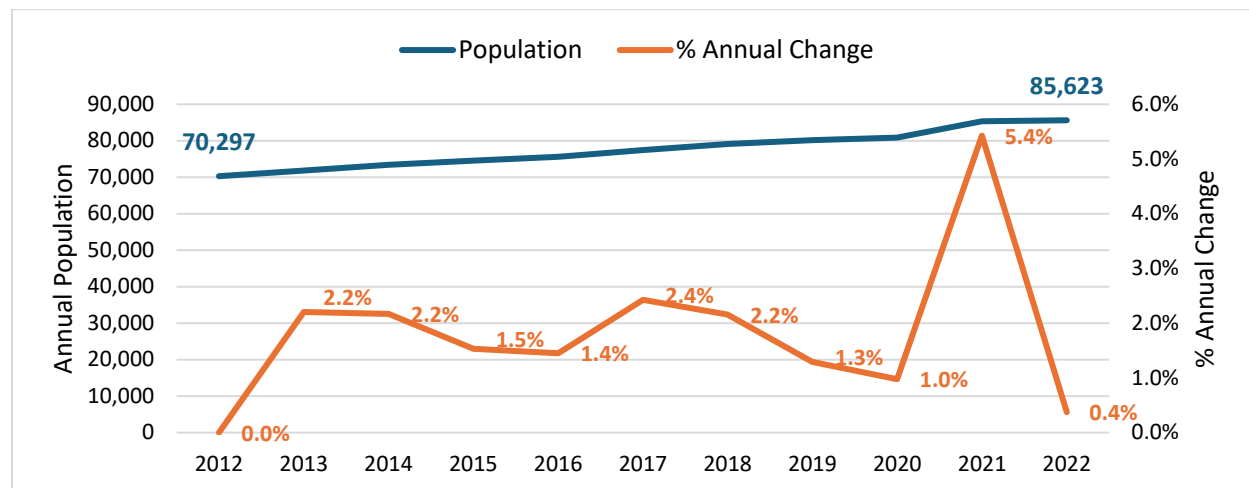
Increases in population create a greater need for housing and increase housing costs. As depicted in Table 3, the number of households in Auburn increased 15 percent in the last 10 years. As housing becomes less available and more expensive due to the spiking interest rates and stalling development, as described throughout the Needs Assessment and Market Analysis, low- to moderate-income households feel the effects of decreased affordable housing stock and increased instances of housing cost burden.

Table 3: Housing Needs Assessment Demographics

Demographics	Base Year: 2012	Most Recent Year: 2022	% Change
Population	70,297	85,623	22%
Households	26,968	30,987	15%
Median income	\$54,329	\$87,406	61%

Data Source: ACS 2008–2012 (Base Year), ACS 2018–2022 (Most Recent Year)

Figure 1 Annual Population in Auburn (2012–2022)

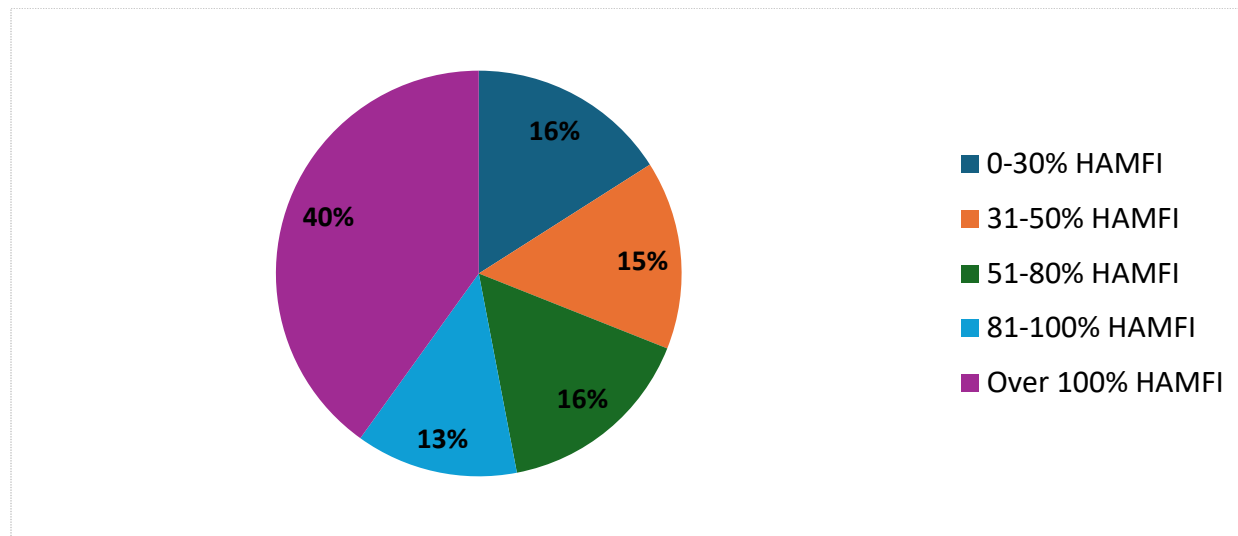


Data Source: ACS 5-year estimates for years 2012–2022

While median incomes per person have increased 61 percent in the last decade, many Auburn residents earn less than the AMI. Figure 2 depicts the number of Auburn households by income

category in 2020. Forty-seven percent (47%) of Auburn households fell into the low- to moderate-income category, earning less than 80 percent HAMFI. Among the low- to moderate-income categories, the extremely low-income (0–30 percent HAMFI), low-income (31–50 percent HAMFI), and moderate-income (51–80 percent AMI) were approximately equal, at 15 percent, 16 percent, and 15 percent respectively. 4,670 households were considered extremely low-income, and 4,395 households were considered low-income. Fifty-three percent of Auburn households were not considered low- to moderate-income, with 40 percent of households earning more than 100 percent HAMFI annually.

Figure 2: Number of Households by AMI Category



Data Source: 2016–2020 CHAS

Types of Households by Income Level

Table 4 analyses the type of households in the City of Auburn by income category in 2020. As depicted in the table, small households represented the greatest share of total households in Auburn. Forty-four percent of all households in Auburn were considered small-family households. Small-family households were the most represented in each income category as well. The data also indicates that in 2020, there were 4,239 low- to moderate-income households in Auburn with at least one household member over the age of 65.

Table 4: Households by Income Category

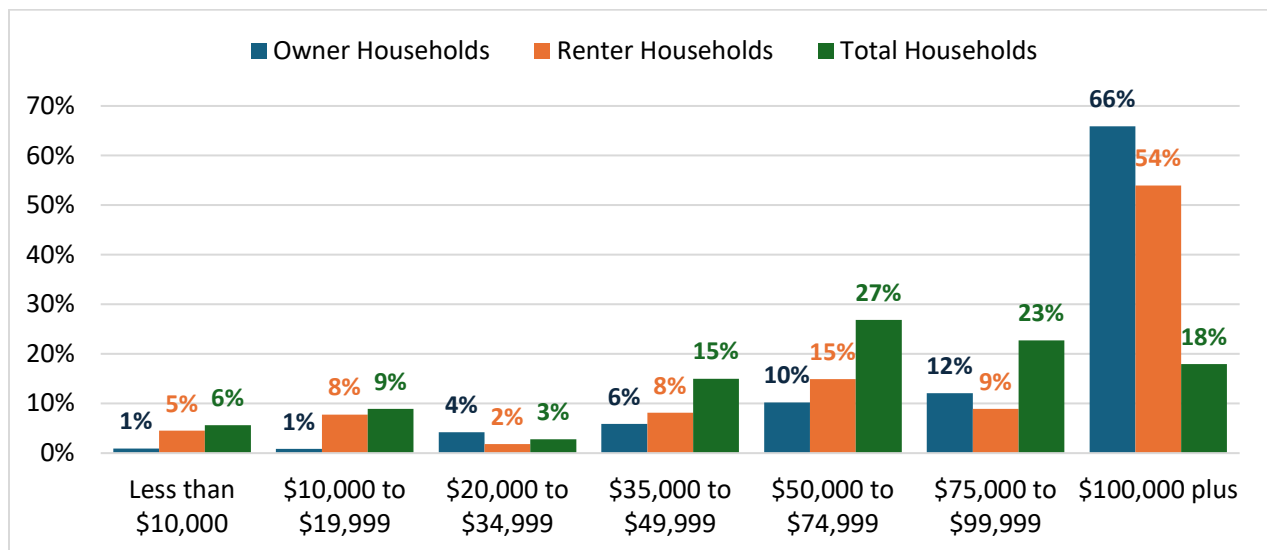
Household Type	0–30% HAMFI	31–50% HAMFI	51–80% HAMFI	81–100% HAMFI	Over 100% HAMFI
Total Households	4,670	4,395	4,665	3,780	11,710
Small-family households—four or fewer people in the household	1,435	1,525	2,145	1,745	6,255

Household Type	0–30% HAMFI	31–50% HAMFI	51–80% HAMFI	81–100% HAMFI	Over 100% HAMFI
Large-family households—five or more people in the household	505	420	730	405	1,385
Household contains at least one person aged 62 to 74 years of age	835	875	760	730	2,530
Household contains at least one person aged 75 or older	735	579	455	205	500
Household contains one or more children aged 6 years or younger	895	855	1,155	760	2,020

Data Source: 2016–2020 CHAS

Figure 3 provides further insight into the income levels of renter and owner households in Auburn. Notably, 66 percent of owners and 54 percent of renters earned over \$100,000 annually. The \$50,000–\$74,999 income bracket was most prevalent income category in Auburn, accounting for 27 percent of total households. However, renters were more represented in the lower-income categories, particularly in the \$35,000–\$74,999 income brackets.

Figure 3: Percentage of Owners and Renters by Income



Data Source: ACS Data 2018–2022

Housing Needs Summary Tables

The following tables explore the number of households in Auburn experiencing specific types of housing problems that are captured in CHAS data, which include the following.

Housing Problems

- **Substandard housing:** Units lacking complete plumbing or kitchen facilities.
- **Overcrowded:** Households in which there is more than one person per room (and none of the above problems).
- **Housing cost burden:** Households that spend more than 30 percent of their income on housing costs.

Severe Housing Problems

- **Substandard housing:** Units lacking any plumbing or kitchen facility.
- **Severe overcrowding:** Households in which there are more than 1.51 people per room (and none of the above problems).
- **Severe housing cost burden:** Households that spend more than 50 percent of their income on housing costs.

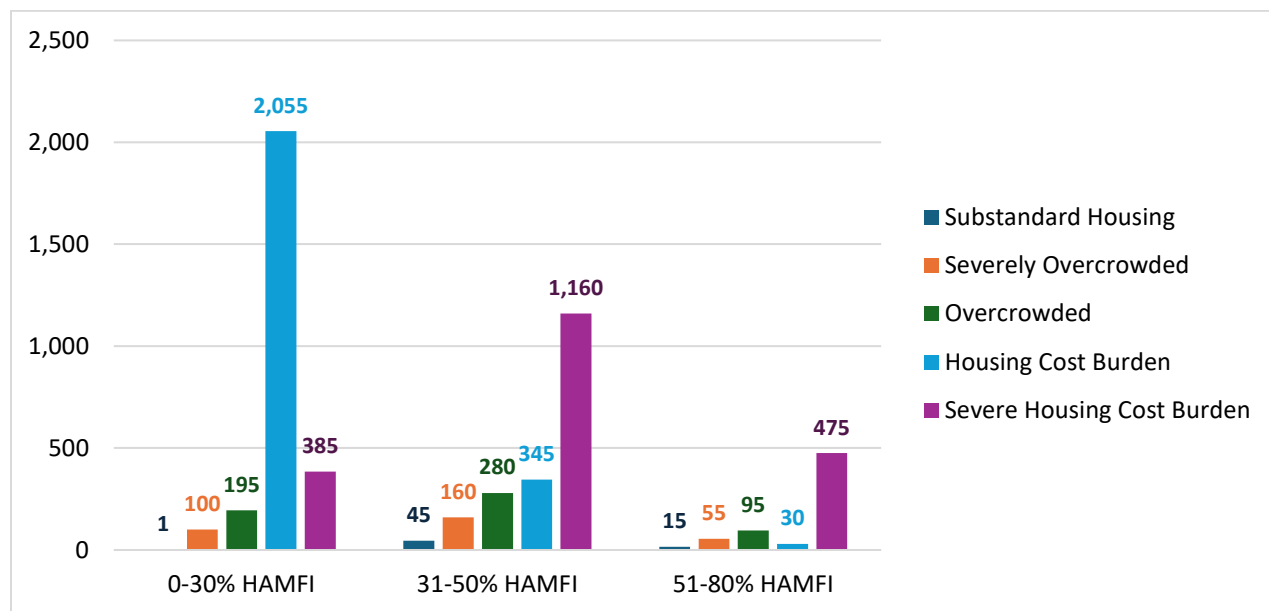
Table 5 outlines the number of households that experienced a housing problem by tenure in Auburn in 2020. Of the housing problems identified in the table, the most common issues for renter and owner households were housing cost burden and severe housing cost burden. For renter households, 2,165 were housing cost burdened and 2,475 were severely housing cost burdened. Those figures for owner households were 2,950 and 1,060, respectively. The most significant issue facing these groups is housing affordability across each income level. Aside from housing cost burdens, owner households do not have high instances of substandard housing issues or overcrowding, meaning owners could have better living conditions.

Table 5: Housing Problems by Income Level and Tenure

Income Level	Renters					Owners				
	0–30% HAMFI	31– 50% HAMFI	51– 80% HAMFI	81– 100% HAMFI	Over 100% HAMFI	0–30% HAMFI	31– 50% HAMFI	51– 80% HAMFI	81– 100% HAMFI	Over 100% HAMFI
Substandard housing	180	45	15	0	85	4	35	10	0	160
Severely overcrowded	100	160	55	10	75	0	0	4	0	45
Overcrowded	195	280	95	50	125	20	45	135	10	70
Housing cost burden greater than 50% of income (and none of the above problems)	2,055	345	30	0	40	555	315	120	40	30
Housing cost burden greater than 30% of income (and none of the above problems)	385	1,160	475	100	40	390	645	1,010	575	330
Housing cost burden not computed (and none of the above problems)	110	0	0	0	0	15	0	0	0	0
Has none of the above housing problems	425	345	1,375	1,410	235	1,020	1,330	1,585	8,675	12,845

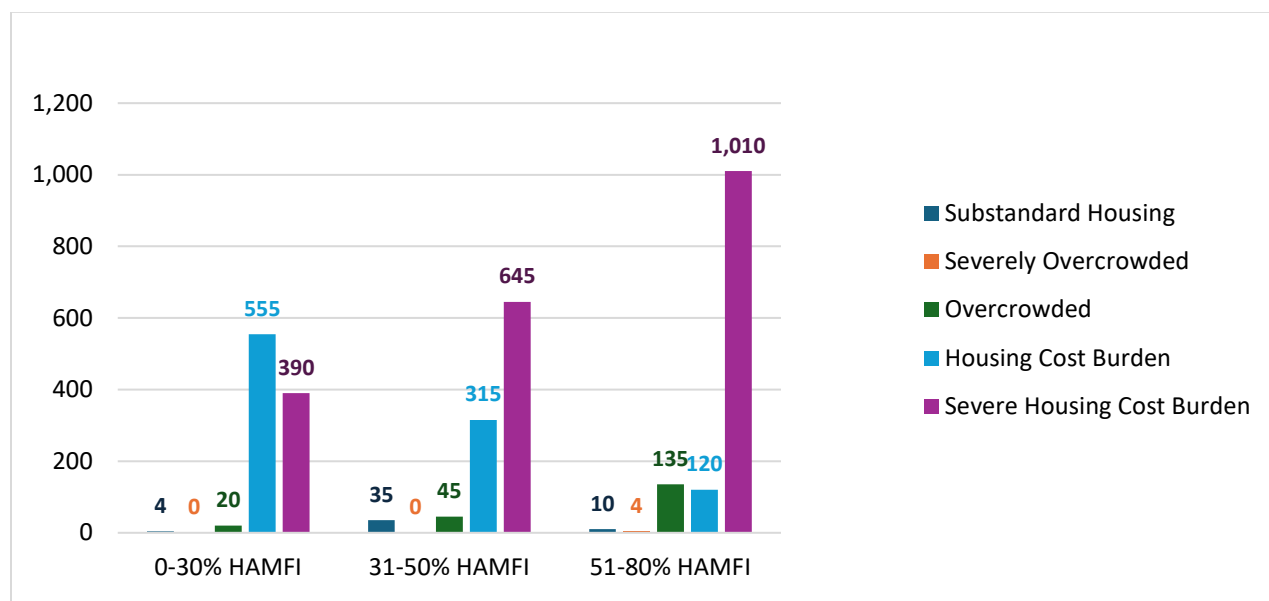
As represented in Figure 4 and Figure 5, for both renter and owner households, extremely low-income households experienced the greatest share of severe housing cost burden, while low- and moderate-income households experienced the greatest share of housing cost burden. In particular, moderate-income owners experienced a significant amount of housing cost burden. Between renters and owners, renters were more likely to experience housing problems: 52 percent of renter households experienced at least one housing problem as opposed to 26 percent of owner households.

Figure 4: Housing Problems by Income Category for Renter Households



Data Source: 2016–2020 CHAS

Figure 5: Housing Problems by Income Category for Owner Households

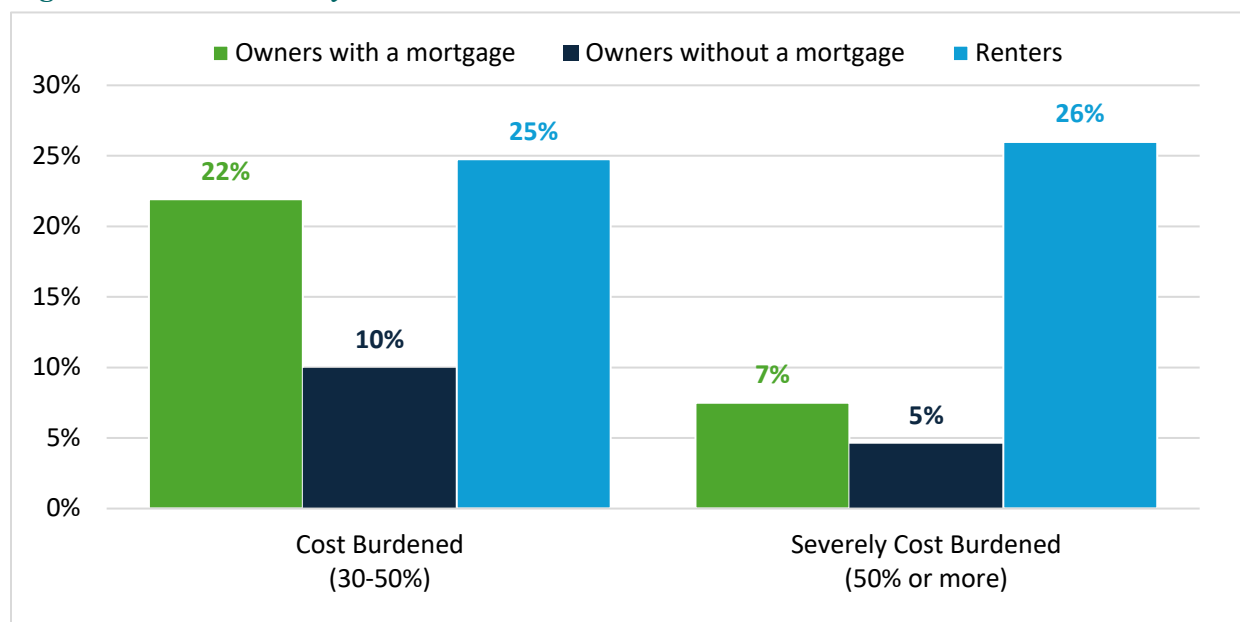


Data Source: 2016–2020 CHAS

Housing Cost Burden

Figure 6 depicts the percentage of households who experienced either form of cost burden by tenure. Notably, owners with a mortgage and renters experienced cost burden at similar rates—22 percent and 25 percent, respectively. However, renters experienced a severe cost burden more than three times as much as owners with a mortgage (26 percent and 7 percent respectively).

Figure 6: Cost Burden by Tenure

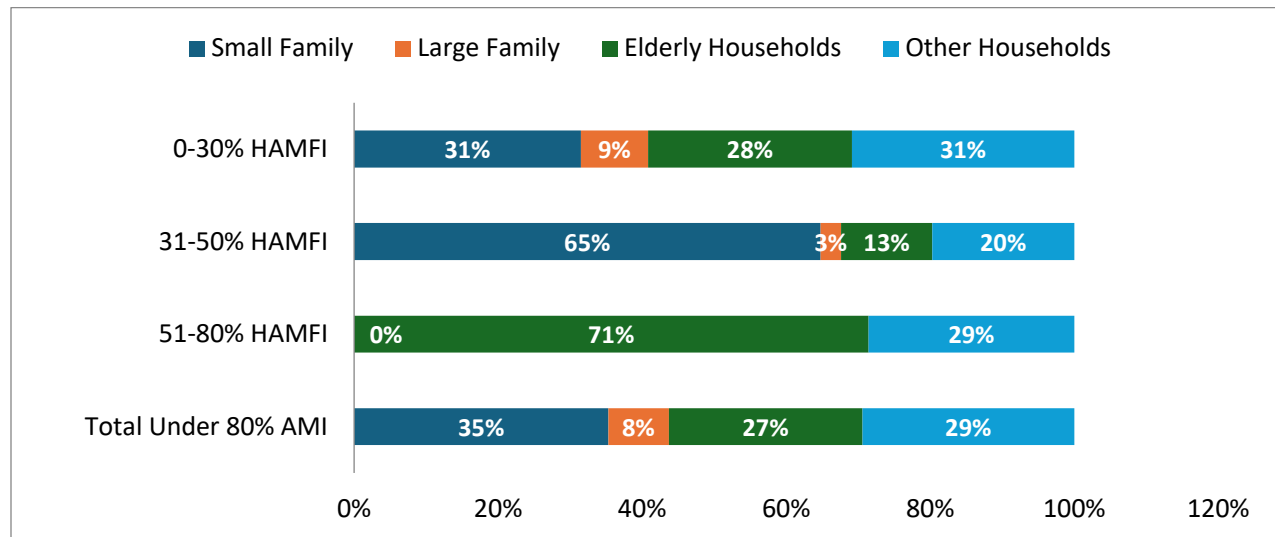


Data Source: 2018–2022 ACS.

To further explore the demographics of severe cost burden in Auburn, Figure 7 and Figure 8 depict which types of families experienced the greatest share of severe cost burden in 2020. For renters, small families made up the largest share of severely cost burdened households at 43 percent overall and in most individual income categories. One notable exception is the moderate-income category, in which elderly households represented the overwhelming majority (71 percent). This represents a large variation from the overall representation of elderly households at 21 percent.

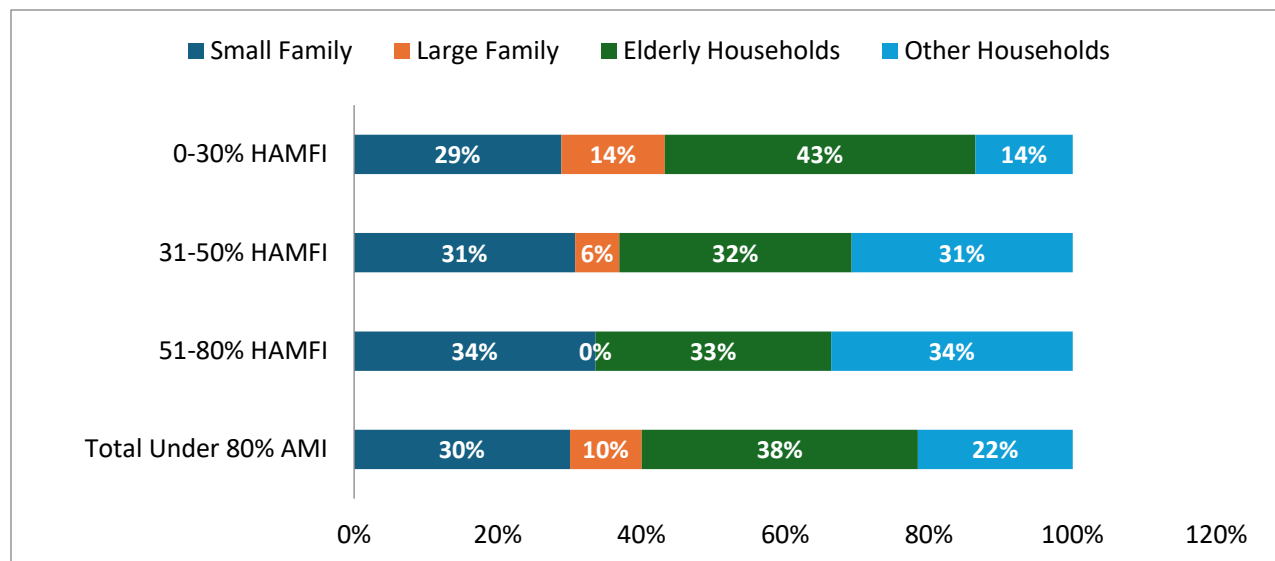
For owner households (Figure 8), elderly households represented the greatest share of severe housing cost burden across income categories, aside from the moderate-income category. Small families followed closely behind at 31 percent. Elderly households represented the greatest share of severe housing cost burden across all income levels except for the low-income category. Finally, small-family owner households comprised the majority of the moderate-income category.

Figure 7: Severe Housing Cost Burden for Renters by Income Category and Family Type



Data Source: 2016–2020 CHAS

Figure 8: Severe Housing Cost Burden for Owners by Income Category and Family Type



Data Source: 2016–2020 CHAS

Crowding

Although not as pervasive as housing cost burden, the data indicates that crowding was the most common housing problem not related to housing cost burden in 2020. Table 6 categorizes all instances of crowding in Auburn by income category and household type. 1,157 households in Auburn below 100 percent HAMFI experienced crowding. Across all income categories, single families comprised the greatest share of crowding instances, with 919 single-family households experiencing crowding out of 1,157 (79 percent of total crowding instances). In terms of need by income category, both extremely low- and low-income categories comprised the greatest share of crowding instances at 314 and 480, respectively.

Table 6: Instances of Crowding by Income Category and Family Type

	0–30% HAMFI	31–50% HAMFI	51–80% HAMFI	81–100% HAMFI	Total Under 100% HAMFI
Single-family household	280	410	174	55	919
Multiple, unrelated families	34	45	120	0	199
Non-family household	0	25	0	14	39
Total need by income	314	480	294	69	1157

Data Source: 2018–2020 CHAS

Lead-Based Paint Risk

Table 7 provides information on housing conditions in Auburn. In particular, the table presents data on the age of housing structures with children younger than age six present. In 1978, the federal government banned the use of lead-based paint in homes. Structures built prior to 1978 are at an increased risk of having lead-based paint, which poses a health risk to occupants. Due to data limitations, Table 7 provides information on structures built earlier than 1980. Most households (64 percent) lived in a structure built in 1980 or later, while 30 percent of households lived in a structure built between 1940 and 1979. Of the 1,060 households with children aged six and under living in a structure built prior to 1980, 67 percent were renters and 33 percent were owners. For renters, the extremely low- and low-income households were more likely to live in a structure built prior to 1980 at 48 percent and 43 percent, respectively. For owners, low- and moderate-income households experienced the greatest share of older housing stock at 44 percent and 42 percent, respectively.

Table 7: Age of Housing Structure by Income Level for Households with Small Children

Household Type	0–30% HAMFI	31–50% HAMFI	51–80% HAMFI	Total Under 80% HAMFI
Structure built 1980 or later	565	480	800	1,845
Structure built 1940 to 1979	330	305	250	885
Structure built 1939 or earlier	0	70	105	175
Total households with children aged 6 or younger present	895	855	1,155	2,905

Data Source: 2018–2020 CHAS

Disproportionally Greater Needs

Introduction

HUD defines a disproportionately greater housing need when a racial or ethnic group experiences housing problems at a rate over 10 percentage points higher than that of the corresponding income level as a whole. The tables below summarize the percentage of each racial or ethnic group experiencing housing problems by HAMFI levels. For this analysis, HAMFI is comparable to AMI.

Housing Problems

- **Substandard housing:** Units lacking complete plumbing or kitchen facilities.
- **Overcrowded:** Households in which there is more than one person per room (and none of the above problems).
- **Housing cost burden:** Households that spend more than 30 percent of their income on housing costs.

Severe Housing Problems

- **Substandard housing:** Units lack any plumbing or kitchen facility
- **Severe overcrowding:** Households in which there are more than 1.5 people per room (and none of the above problems).
- **Severe housing cost burden:** Households that spend more than 50 percent of their income on housing costs.

Table 8 lists the racial and ethnic groups that experience a disproportionately greater share of housing problems and their corresponding income category. The data analysis discovered six unique instances of disproportionately greater need regarding housing problems. Across income categories, Pacific Islander households experienced the most instances of disproportionate impact. Pacific Islander households were disproportionately impacted in two out of three income categories, while Pacific Islanders in the 0–30 percent and 31–50 percent income categories experienced disproportionate impact at the highest rate compared to the income category (17 percent and 28 percent higher than average, respectively). Note that the sample size in both categories was small (fewer than 100 households).

Table 8: Disproportionally Greater Need: Housing Problems

Race/Ethnicity	Income Category	Percent Difference from Total
Pacific Islander alone, non-Hispanic	0–30% AMI	17%
Hispanic, any race	0–30% AMI	11%
Asian alone, Non-Hispanic	31–50%	11%

Race/Ethnicity	Income Category	Percent Difference from Total
American Indian or Alaska Native alone, non-Hispanic	31–50%	20%
Pacific Islander alone, non-Hispanic	31–50%	28%
Black or African American alone, non-Hispanic	51–80%	24%

Data Source: 2016–2020 CHAS

Table 9 depicts the racial and ethnic groups that experienced severe housing problems disproportionately to their respective income categories. The data analysis identified eight instances of disproportionate impact. Pacific Islander households experienced two instances of disproportionate impact (in the 0–30 percent AMI and 31–50 percent AMI income categories). Notably, Pacific Islander households in the 31–50 percent AMI income category experienced severe housing problems 66 percent more than average, respectively. Again, it is important to note that in both categories the sample sizes were less than 100 people.

Table 9: Disproportionally Greater Needs: Severe Housing Problems

Race/Ethnicity	Income Category	Percent Difference from Total
Black or African American alone, non-Hispanic	0–30% AMI	11%
Pacific Islander alone, non-Hispanic	0–30% AMI	33%
Hispanic, any race	0–30% AMI	12%
Asian alone, non-Hispanic	31–50% AMI	10%
American Indian or Alaska Native alone, non-Hispanic	31–50% AMI	26%
Pacific Islander alone, non-Hispanic	31–50% AMI	66%
Black or African American alone, non-Hispanic	51–80% AMI	11%
American Indian or Alaska Native alone, non-Hispanic	51–80% AMI	18%

Data Source: 2016–2020 CHAS

Table 10 displays the percentage of each racial and ethnic group who experienced no housing cost burden (share less than 30 percent), housing cost burden (share 30–50 percent), and severe housing cost burden (share greater than 50 percent). The first row shows the percentages for total households, which represents the baseline for determining disproportionate need. The data analysis

finds no instance of disproportionately greater need regarding no housing cost burden. However, Black or African American and American Indian or Alaska Native households have a housing cost burden at 11 percent and 15 percent, respectively. Pacific Islander, Hispanic, and Asian households were the most overrepresented for severe housing cost burdens. There is no specific ethnic group that is disproportionately affected by a severe housing burden.

Table 10: Disproportionate Share of Housing Cost Burden

Race/Ethnicity	Share of Housing Cost Burden		
	Share Less Than 30%	Share 30–50%	Share Greater Than 50%
Total Households	68%	19%	13%
White alone, non-Hispanic	69%	18%	12%
Black or African American alone, non-Hispanic	63%	20%	16%
Asian alone, non-Hispanic	74%	15%	10%
American Indian or Alaska Native alone, non-Hispanic	58%	34%	10%
Pacific Islander alone, non-Hispanic	75%	13%	12%
Hispanic, any race	65%	17%	18%
Other	47%	29%	23%

Data Source: 2016–2020 CHAS

Public Housing

The King County Housing Authority (KCHA) serves low-income residents living in Auburn with housing assistance. KCHA aims to provide decent, safe, and sanitary housing to low-income people in the community. The following section outlines the number of public housing units and vouchers in use for Auburn and data on the characteristics of current public housing residents and 2023 voucher recipients.

As illustrated in Table 11, KCHA manages 315 units of public housing in Auburn and awards 1,471 project- and tenant-based rental vouchers. 1,316 vouchers (89 percent) are tenant-based Section 8 vouchers. KCHA also administers 336 special purpose vouchers in addition to project- and tenant-based vouchers. Approximately 60 percent of special purpose vouchers are dedicated to people living with a disability. These include non-elderly disabled, mainstream one-year, mainstream five-year, and nursing home transition vouchers. In addition, 73 Auburn residents received a Veterans Affairs Supportive Housing voucher, and 62 Auburn residents received a Family Unification Program voucher.

Table 12 depicts selected characteristics of Auburn residents residing in public housing or utilizing vouchers. Across programs, the average annual income of residents' ranges from approximately \$17,000 to \$23,000. Residents utilizing project-based vouchers report the lowest average annual income (\$17,304.79), while residents utilizing tenant-based vouchers report an average annual income that is almost \$5,000 higher (\$22,216.32). With the average household size being approximately 2.5 across programs, this indicates that, on average, Auburn residents living in public housing or utilizing vouchers are considered extremely low-income.

In addition, Table 12 includes the average length of stay in public housing or utilizing vouchers. Across all programs, the average length of stay in Auburn is higher than the King County Consortium. Of note, the average length of stay in public housing in the King County Consortium is 8.5 years. The average length of stay in Auburn is 9.8 years. Those figures are 8.8 and 10.2 years, respectively, for residents utilizing tenant-based vouchers.

Finally, Table 12 indicates that 400 housing vouchers are awarded to elderly residents and 756 are awarded to disabled families. The table also notes that in Auburn, there are no residents receiving vouchers identifying them as victims of domestic violence, HIV/AIDs program participants, or homeless at admission.

Tables 13 and 14 present race and ethnicity data for the head of household living in public housing or utilizing vouchers. Overall, 44 percent of voucher recipients identify as White, and 43 percent of voucher recipients identify as Black or African American. These figures align with trends observed in the King County Consortium, in which 45 percent of voucher recipients identify as White and 41 percent identify as Black or African American. Additionally, 68 percent of Auburn public housing residents identify as White, which is 14 percentage points higher than the King County Consortium. Nineteen percent of King County Consortium public housing residents identify as Asian, while just 6 percent of Auburn public housing residents identify as Asian. Finally, 5 percent of voucher recipients and 6 percent of public housing residents identify as Hispanic, which aligns with trends observed across the King County Consortium.

Table 11: Public Housing by Program Type

Voucher Numbers	Public Housing	Vouchers					
		Total	Project-Based	Tenant-Based	Special Purpose Vouchers		
					Veterans Affairs Supportive Housing	Family Unification Program	Disabled*
# of units/vouchers in use	315	1471	155	1316	73	62	201

Data Source: 2023 PHA data

*Includes non-elderly disabled, mainstream one-year, mainstream five-year, and nursing home transition vouchers.

Table 12: Characteristics of Public Housing Residents by Program Type

Characteristics	Public Housing	Vouchers				
		Total	Project-Based	Tenant-Based	Special Purpose Vouchers	
					Veterans Affairs Supportive Housing	Family Unification Program
Average annual income	\$21,698.79	\$19760.55	\$17,304.79	\$22,216.32	\$21,869.40	\$22,802.58
Average length of stay in years	9.8	8.35	6.5	10.2	4.2	9
Average household size	2.6	2.5	2.4	2.6	1.4	3.2
# Homeless at admission	0	0	0	0	0	0
0# of elderly program participants (age 62+)	400	400	35	365	36	6
# of disabled families	756	756	70	686	53	23
# of families requesting accessibility features	0	0	0	0	0	0
# of HIV/AIDS program participants	0	0	0	0	0	0

Data Source: 2023 PHA data

Table 13: Race of PHA Residents by Program

Race Category of the Head of Household	Public Housing	Vouchers					
		Total	Project-Based	Tenant-Based	Special Purpose Vouchers		
					Veterans Affairs Supportive Housing	Family Unification Program	Disabled
White	215	654	69	585	46	25	126
Black/African American	58	621	54	567	22	22	50
Asian	19	42	9	33	0	3	4
American Indian, Alaska Native	5	39	5	34	0	4	5
Pacific Islander	5	44	3	41	2	3	6
Other	13	71	15	56	3	5	10

Data Source: 2023 PHA data

Table 14: Ethnicity of PHA Residents by Program Type

Ethnicity of the Head of Household	Public Housing	Vouchers					
		Total	Project-Based	Tenant-Based	Special Purpose Vouchers		
					Veterans Affairs Supportive Housing	Family Unification Program	Disabled
Hispanic	19	74	6	68	4	5	9
Non-Hispanic	296	1397	149	1248	69	57	192

Data Source: 2023 PHA data

Homeless Needs Assessment

The Homeless Needs Assessment reviews data from various sources to describe the nature of homelessness in Auburn, including demographic information, challenges, and needs of those experiencing homelessness in Auburn. This section utilizes data acquired from the Seattle/King County CoC, the City of Auburn, the Consolidated Plan “Mini Poll,” and 211.

Point-in-Time Count and Homeless Management Information System Data from the Seattle/King County CoC

The Seattle/King County CoC (WA-500) is the regional planning body that coordinates housing, shelter, and supportive services for people experiencing homelessness in Auburn. The CoC is led by the King County Regional Homelessness Authority (KCRHA), whose mission is to significantly decrease homelessness throughout the county while centering the voices of people with lived experience into the homelessness response system. KCRHA publishes various dashboards, reports, and plans on its [website](#) that provide the public with detailed information on the people and households served and the performance of the homelessness response system.

The Homeless Needs Assessment includes data provided by KCRHA. This data includes the official 2024 Point-in-Time (PIT) count and an unofficial Homeless Management Information System (HMIS) report for the 2023 calendar year. Due to the nature of homelessness and system limitations, challenges exist in collecting Auburn-specific data. As noted by the CoC, people experiencing homelessness in King County frequently move between small cities, such as Auburn, for shelter services. This pattern of movement is not captured in the static PIT and HMIS data reports, indicating that the data provided by the CoC likely undercounts the true number of persons experiencing homelessness in Auburn.

Definition of Homelessness

CoCs use a specific definition of “homeless,” which determines whether someone is eligible to receive CoC-funded housing, shelter, and services. An individual or family is considered homeless if they fall into at least one of the following categories:

1. **Homeless:** The individual or family lacks a fixed, regular, and adequate nighttime residence. For example, they live in a place not meant for human habitation such as a car, park, or public place.
2. **At imminent risk of homelessness:** The individual or family will imminently lose their primary nighttime residence, does not have another residence identified, and does not have the resources or support networks to find permanent housing.
3. **Is fleeing or attempting to flee domestic violence:** The individual or family is fleeing or attempting to flee or experiencing trauma or a lack of safety related to domestic violence, dating violence, sexual assault, stalking, or other dangerous, traumatic, or life-threatening conditions related to the violence against the individual or a family member in the individual's or family's current housing situation, including where the health and safety of children are jeopardized.

The CoC definition of homelessness does not include people living in other unstable housing situations, such as people doubling up with another household, that could generally be considered

as homeless living arrangements, likely underrepresenting the true nature and extent of homelessness in Auburn.

PIT and HMIS Data

2024 PIT and 2023 HMIS data, summarized below, provide insight into the characteristics and demographics of people experiencing homelessness in Auburn. 694 households were entered into HMIS, meaning they experienced homelessness at some point throughout the year. Most households who experienced homelessness (85 percent) were comprised of adults and children. Just 105 households (15 percent) were comprised of adult-only households. This differs from trends observed in the King County Consortium, wherein 54 percent of all people experiencing homelessness belonged to adult-only households. Overall, the City of Auburn experiences a greater percentage of homelessness among households consisting of both adults and children.

Additionally, the 2023 HMIS report indicates that 66 percent of people who experienced homelessness in Auburn experienced chronic homelessness. Again, this figure is higher in Auburn than in the King County Consortium, where 20 percent of all people experiencing homelessness were experiencing chronic homelessness. Forty-one families also experienced unsheltered homelessness in 2023. Table 15 also indicates that 85 veterans and 281 unaccompanied youth experienced homelessness in 2023.

Finally, Table 15 estimates the number of days people experience homelessness according to HMIS data. For populations for which data is available, days spent homeless vary greatly depending on the population. However, the length of homelessness for all categories spans greater than one year. Individuals experiencing chronic homelessness experienced, on average, 527 days homeless, which equates to approximately one year and five months. Persons in households with an adult and children present—which comprise the greatest share of Auburn’s population experiencing homelessness—experience homelessness for approximately two years and five months. Finally, chronically homeless families experience homelessness for the greatest length of time on average, equating to four years and nine months. In all categories except chronically homeless individuals, residents of Auburn experience homelessness for longer periods of time than those in the King County Consortium as a whole.

Table 15: Homeless Needs Assessment

Population	Estimate the # of Persons Experiencing Sheltered Homelessness (PIT)	Estimate the # Experiencing Homelessness Each Year (HMIS)	Estimate the # Becoming Homeless Each Year (HMIS)	Estimate the # Exiting Homelessness Each Year (HMIS)	Estimate the # of Days Persons Experience Homelessness (HMIS)
Persons in households with adult(s) and child(ren)	29	589	552	188	884.6
Persons in households with only children	0	NA	6	3	0
Persons in households with only adults	6	105	213	253	622.38
Chronically homeless individuals	3	461	219	256	527
Chronically homeless families	3	41	161	90	1745
Veterans	0	85	15	32	0
Unaccompanied youth	6	281	69	81	821.13
Total	47	1,562	1,235	903	

Data Source: 2023 HMIS Data and 2024 PIT Count Data.

Table 16 outlines the racial and ethnic makeup of the 35 people experiencing sheltered homelessness recorded in the 2024 PIT count. Forty percent of people experiencing homelessness on a given night in Auburn identified as White, 34 percent of people identified as Black or African American, and 17 percent of people identified as multiracial. No persons in the PIT count identified as Hispanic.

Table 16: People Experiencing Homelessness on a Given Night by Race and Ethnicity

Race	# People Sheltered
White	14
Black or African American	12
Asian	0
American Indian or Alaska Native	0
Native Hawaiian/Other Pacific Islander	1
Multiracial	6
Client prefers not to answer	2
Hispanic	0
Total	35

Data Source: 2024 PIT Data.

HMIS data for 2023 also provides information on specific subpopulations experiencing homelessness in Auburn. Table 17 indicates that eight people who identify as severely mentally ill, eight people who identify with chronic substance abuse, and two people who identify with domestic violence experienced sheltered homelessness in 2023.

Table 17: Subpopulations Experiencing Homelessness in Auburn

Subpopulation	# of People Sheltered
Chronic homelessness	0
Domestic violence	2
Severely mentally ill	8
Chronic substance abuse	8
Survivors of domestic abuse	0
Unaccompanied youth	0
Parenting youth	0
Chronic homelessness	0

Data Source: 2023 HMIS Data.

City of Auburn Homeless Outreach Data

The City of Auburn employs three dedicated outreach staff who provide housing navigation services to people experiencing homelessness throughout the city and who work in encampments each day to provide assistance. Outreach staff maintain a client intake log, which collects demographic and outcome information on clients experiencing homelessness. The data tables

below summarize key information from the 2024 Auburn Homeless Outreach Data log (from January to September 2024).

From January to September 2024, the City of Auburn logged 983.4 total outreach contacts and 364 unduplicated clients. Table 18 depicts the number of total contacts by month. For five out of the first nine months of the year, Auburn staff interacted with over one hundred contacts (in February, March, April, May, and July). Auburn staff recorded the highest number of contacts in April (172) and February (145).

Figure 18: Total Number of Contacts by Month (2024)

Month (2024)	Number of Contacts
January	87
February	145
March	128
April	172
May	114.5
June	96
July	127
August	70
September	44
Total	983.5

Data Source: 2024 Homeless Outreach Data (provided by the City of Auburn).

Tables 19–21 provide insight into the demographic information of the 364 unduplicated clients for which information was recorded and available. Table 19 describes the gender identity of those experiencing homelessness in Auburn. Of unduplicated contacts for which gender information was available, 61 percent identified as male and 39 percent identified as female.

Table 19: Gender of Unduplicated Contacts Experiencing Homelessness

Gender	# of Unduplicated Contacts
Male	220
Female	142
Transgender	0
Unknown	0

Data Source: 2024 Homeless Outreach Data (provided by the City of Auburn).

Table 20 depicts the age of outreach clients. Out of the clients for which age was available (315), most contacts (48 percent) belonged to the 35–54 age category. Of note, 30 percent belonged to the 55–74 age category, which encompasses those considered to be elderly. Finally, 10 contacts (3 percent), belonged to the youngest age bracket (18–24).

Table 20: Age of Unduplicated Contacts Experiencing Homelessness

Age Category	# of Unduplicated Contacts
18–24	10
25–34	56
35–54	151

55–74	94
85+	0
Unknown	4

Data Source: 2024 Homeless Outreach Data (provided by the City of Auburn).

Table 21 depicts the race and ethnicity of unduplicated contacts. The majority of unduplicated contacts identified as White (57 percent), while approximately 21 percent of contacted identified as Black. Finally, approximately 7 percent of unduplicated contacts identified as Latino.

Table 21: Race/Ethnicity of Unduplicated Contacts Experiencing Homelessness

Race/Ethnicity Category	# of Unduplicated Contacts
American Indian or Alaskan Native	6
Black	76
Native Hawaiian	16
Latino	24
White	207
Mult-Racial	19
Unknown	3
Other	6

Data Source: 2024 Homeless Outreach Data (Provided by the City of Auburn).

Table 22 provides information on the length of homelessness reported by unduplicated contacts. In 355 instances, the length of homelessness was collected by outreach workers. Of those instances, 70 percent of contacts reported experiencing homelessness for one year or longer. This represents the majority of unduplicated clients. The second highest length of homelessness reported was “90 days or more, but less than a year,” which accounted for 14 percent of responses.

Table 22: Length of Homelessness of Unduplicated Clients

Time Frame	# of Unduplicated Contacts
One year or longer	249
One week or more, but less than one month	11
One night or less	1
One month or more, but less than 90 days	19
Not homeless	14
Data not collected	9
Client does not know	1
90 days or more, but less than a year	51

Data Source: 2024 Homeless Outreach Data (Provided by the City of Auburn).

Finally, Table 23 provides information on the outcomes of unduplicated clients. The City of Auburn defines outcomes using a scale of three levels, which are defined below. In 2024, most clients (approximately 50 percent) reached a level 2 outcome, which means they are actively engaged with outreach workers to resolve their situation. Thirty-two percent of contacts reached

level 3, meaning their situation was resolved or they otherwise achieved the goals of the outreach. Just one contact declined assistance in 2024.

Table 23: Outcomes for Unduplicated Contacts

Level Reached	# of Unduplicated Contacts
Level 1: Initial interactions, identify needs and offering support. Client may not yet be actively engaged.	54
Level 2: Client is actively engaged and working with outreach to set individual goals (needs/barriers/resources) that may resolve their individual situation. Client willing to accept referral services such as help with documentation, transportation, shelter, etc.	178
Level 3: Client situation is resolved, or individual goal(s) achieved	115
Client declined assistance	1
Unknown	16

Data Source: 2024 Homeless Outreach Data (Provided by the City of Auburn).

Consolidated Plan Survey

The City of Auburn conducted a public survey that accepted responses between July 25 and August 23, 2024. The survey, which garnered 120 responses, asked respondents to provide any information that they believed would be beneficial to the City in determining its spending priorities for the CDBG Grant Funds. Listed below are themes that emerged regarding homelessness:

- Provide more transitional housing solutions.
- Provide additional shelters to help people experiencing homelessness.
- Offer more affordable housing and solutions, particularly for seniors, fixed-income families, and people living with a disability, to prevent loss of housing and homelessness.
- Help people experiencing homelessness obtain and maintain ID cards, which are crucial to accessing services.

211 Data

211 data indicate that from September 12, 2023, to September 10, 2024, housing and shelter comprised the greatest number of inquiries to the directory (34.4 percent of calls). Of them, 10.4 percent, or 337 calls, directly requested shelter assistance. In 2023, 417 calls requested shelter assistance. Of those calls, 61.6 percent of callers identified as female, and 44.1 percent identified as being aged 30–39.

Market Analysis

MA-05 Overview

The Market Analysis of the Consolidated Plan includes quantitative data analysis, supplemented with information gathered from review of existing planning documents and reports, to identify the housing market, economic, and community development factors impacting low- and moderate-income people throughout the City of Auburn and serves as the strategic process for allocating it's HUD entitlement allocation over the next five years.

Like the Needs Assessment, the Market Analysis uses two primary data sources: data from the 2018-2022 American Community Survey (ACS) and 2016-2020 Comprehensive Affordability Study (CHAS). This section also summarizes information from other existing reports, studies, plans, and dashboards, such as the 2024 Auburn Comprehensive Plan Update and Housing Action Plan, to better understand the recent trends impacting the city.

Key Themes from the Market Analysis

Auburn's housing and community development landscape provides for unique opportunities and challenges in supporting the needs of workers, businesses, and residents. Listed below are some key findings uncovered within the Market Analysis.

- The greatest share of Auburn workers is employed in the Education and Health Care Services sector.
- Located within the orbit of Seattle's Professional, Scientific, and Management Services hub and Kent Valley's manufacturing hub, Auburn is uniquely positioned to enjoy a diversified economy.
- Auburn experiences a significant amount of inflow and outflow of jobs, meaning most residents do not work in the city, and most workers do not reside in the city.
- While there are no known Racially or Ethnically Concentrated Areas of Poverty (R/ECAPs) in Auburn, there do exist census tracts that have increased concentrations of racial or ethnic minorities and/or poverty.
- Approximately 7% of Auburn households lack broadband access.
- Increased instances and severity of drought, storms, and wildfires due to climate change threaten the most vulnerable populations in the city, including low- and moderate-income residents.
- The current supply of affordable housing units does not meet current demand.
- The cost of housing has increased significantly in the last decade
- Many households within the city are severely cost burdened because of increased housing costs leading many households to reside in units unaffordable to them
- 56% of renter households live in a unit with at least one housing problem.
- From 2019 to 2023, the number of permanent supportive housing beds, emergency shelter beds, and transitional housing beds to support people experiencing homelessness have increased.

City of Auburn Programs and Initiatives

The City of Auburn focuses on a variety of program areas through targeted investments to support low- and moderate-income households in the city. Listed below are a few programs and initiatives in which Auburn currently invests.

- Auburn's Human Services funding investments (which totals around \$600,000 per year, scheduled to increase to \$1.1 million per year in 2025) are directed toward priority areas established by the City's Human Services Committee and City Council.
- The city funds and operates a resource center that serves as a central hub for human services providers. (The lease and operations total approximately \$1 million per year)
- The City operates a Community Court, which is a diversion court that is designed to interrupt the traditional judicial system. The City funds one attorney that is dedicated to the Community Court.
- The City provides direct assistance to vulnerable veterans and seniors through funds raised by levy. The City contributes approximately \$450,000 per year.
- The City's Housing Repair Program serves approximately 80 elder low-income households a year. The City contributes approximately \$400,000 per year.
- The City of Auburn is a member of the South King Housing and Homelessness Partners which contributes approximately \$40,000 per year to help fund SKHHP staff and operations plus an additional \$150,000 per year to help fund SKHHP acquire or preserve affordable housing units.

Market Analysis Attachment 1 provides greater analysis into the trends described above.

MA-45 Non-Housing Community Development Assets - 91.410, 91.210(f)

Introduction

The MA-45 Non-Housing Community Development Assets section of the Consolidated Plan summarizes data trends related to employment and the workforce including labor force participation, educational attainment, and workforce skills training and development efforts in Auburn. Understanding the local economy and areas for expansion helps the City of Auburn to determine priorities for the allocation of CDBG funds.

Overall, the City of Auburn's geographic location is home to a diverse workforce sector in the area, which helps fuel a stable economy for the city. Located within King County, the city is absorbed in Seattle's sprawling information and technology, and professional services cluster. Additionally, Auburn participates in the local manufacturing hub (Kent Valley), particularly aerospace engineering. Auburn has seen an increase in the Education and Health Care Services sector over the past decade, which has now become the sector with the greatest share of workers in the city. Due to the confluence of opportunities, Auburn experiences a significant amount of inflow and outflow of workers. Just a small fraction of Auburn residents works in the city, and many have a commute of over thirty minutes. To promote continued economic development, Auburn participates in planning processes, partnerships, and undertakes development projects intended to support the needs of the business community and city residents.

Economic Development Market Analysis

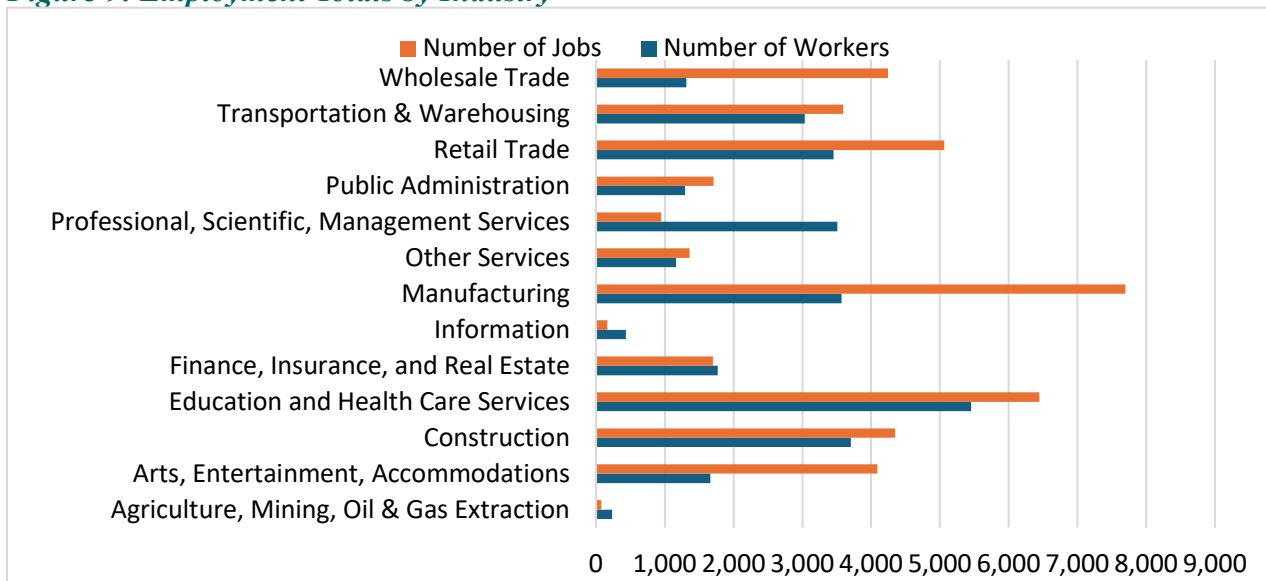
Table 24: Business Activity

Business by Sector	Number of Workers	Number of Jobs	Share of Workers %	Share of Jobs %	Jobs less workers %
Agriculture, Mining, Oil & Gas Extraction	231	75	1%	0%	-1%
Arts, Entertainment, Accommodations	1,663	4,093	5%	10%	4%
Construction	3,704	4,348	12%	10%	-2%
Education and Health Care Services	5,453	6,445	18%	16%	-2%
Finance, Insurance, and Real Estate	1,770	1,698	6%	4%	-2%
Information	433	164	1%	0%	-1%
Manufacturing	3,572	7,699	12%	19%	7%
Other Services	1,163	1,359	4%	3%	-1%
Professional, Scientific, Management Services	3,509	944	11%	2%	-9%
Public Administration	1,293	1,708	4%	4%	0%

Retail Trade	3,452	5,065	11%	12%	1%
Transportation and Warehousing	3,033	3,592	10%	9%	-1%
Wholesale Trade	1,311	4,244	4%	10%	6%
Total	30,587	41,434	100%	100%	0%

Data Source: 2017-2021 ACS (workers), 2021 Longitudinal Employer-Household Dynamics (Jobs)

Figure 9: Employment Totals by Industry



Data Source: 2017-2021 ACS (workers), 2021 Longitudinal Employer-Household Dynamics (Jobs)

Table 25: Labor Force

Total Population in the Civilian Labor Force	46,087
Civilian Employed Population 16 years and over	43,889
Unemployment Rate	4.7%
Unemployment Rate for Ages 16-24	7.8%
Unemployment Rate for Ages 25-65	4.3%

Data Source: 2018-2022 ACS

Table 26: Occupations by Sector

Occupations by Sector	Number of People
Management, business and financial	6,769
Farming, fisheries and forestry occupations	254
Service	8,206
Sales and office	8,659
Construction, extraction, maintenance and repair	3,650
Production, transportation and material moving	6,851

Data Source: 2018-2022 ACS

Table 27: Travel Time

Travel Time	Number	Percentage
< 30 Minutes	19,367	50%
30-59 Minutes	13,729	36%
60 or More Minutes	5,571	14%
Total	38,667	100%

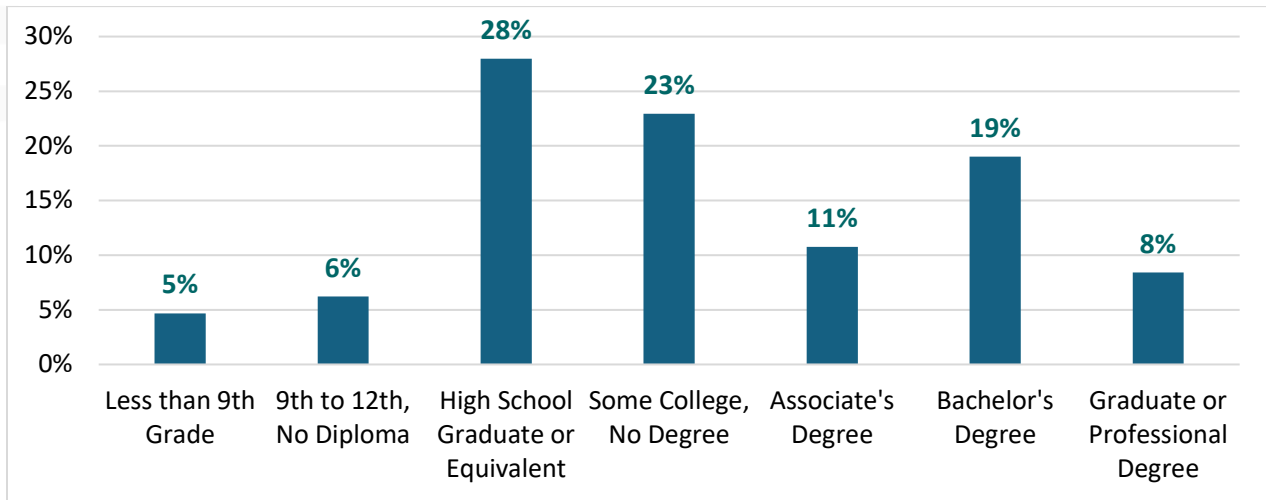
Data Source: 2018-2022 ACS

Table 28: Educational Attainment by Employment Status (Population 16 and Older)

Educational Attainment	In Labor Force		Not in Labor Force
	Civilian Employed	Unemployed	
Less than high school graduate	3,520	157	1,743
High school graduate (includes equivalency)	9,673	562	2,793
Some college or associate's degree	11,663	501	2,935
Bachelor's degree or higher	10,969	290	1,425

Data Source: 2018-2022 ACS

Figure 10: Educational Attainment by Employment Status (Population Aged 25-64)



Data Source: 2018-2022 ACS

Table 30: Educational Attainment by Age

Educational Attainment	Age				
	18–24 yrs	25–34 yrs	35–44 yrs	45–65 yrs	65+ yrs
Less than 9th grade	0	340	1,025	1,118	393
9th to 12th grade, no diploma	1,158	278	1,397	961	724
High school graduate, GED, or alternative	2,563	4,227	3,916	5,447	2,779
Some college, no degree	1,881	2,270	1,705	5,177	3,341
Associate's degree	993	877	1,393	1,669	1,309
Bachelor's degree	169	2,534	3,412	2,094	1,439
Graduate or professional degree	969	1,103	1,050	877	748

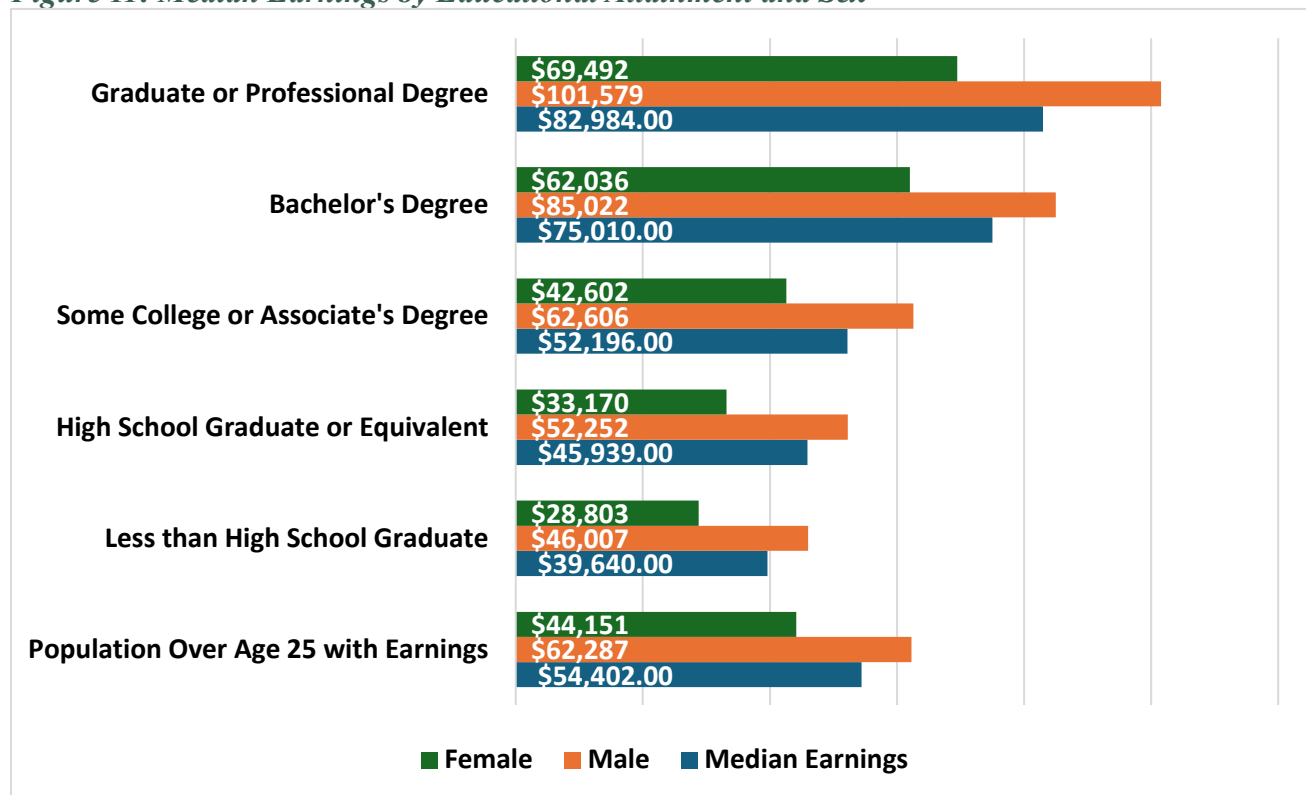
Data Source: 2018-2022 ACS

Table 31: Educational Attainment – Median Earnings in the Past 12 Months

Educational Attainment	Median Earnings in the Past 12 Months
Less than high school graduate	\$39,640.00
High school graduate (includes equivalency)	\$45,939.00
Some college or Associate's degree	\$52,196.00
Bachelor's degree	\$75,010.00
Graduate or professional degree	\$82,984.00

Data Source: 2018-2022 ACS

Figure 11: Median Earnings by Educational Attainment and Sex



Data Source: 2018-2022 ACS

Based on the Business Activity table above, what are the major employment sectors within your jurisdiction?

In 2021, 18% of Auburn residents were employed in the Education and Health Care Services sector. This accounted for the largest sector, by worker, in the city. The sector represented 16% of total jobs. On the other hand, the manufacturing sector comprised the greatest share of jobs in Auburn at 19%. The sector comprised 12% of workers in Auburn. Other major employment sectors

in Auburn include construction (comprising 12% of workers and 10% of jobs) and retail trade (comprising 11% of workers and 12% of jobs). Another key takeaway is that women, across each educational level, make approximately \$20,000 less than their male counterparts.

The trends identified in the U.S. Census Bureau’s 2021 ACS and the Longitudinal Employer-Household Dynamics (LEHD) data align with known economic characteristics of the region. Auburn is situated within Kent Valley, which enjoys a sustained manufacturing and distribution hub due to its proximity to major highway networks and large cities. The Kent Valley Economic Development Corporation estimates that over 12,000 businesses and 50,000 manufacturing jobs are located within Kent Valley, with approximately 31,200 of those jobs relating to the aerospace or outer-space industry.

The 2024 Auburn Comprehensive Plan Update provides insight into these trends. The plan describes that, despite decreases in the manufacturing sector in the 1990s and 2000s, the share of Auburn residents employed in manufacturing has rapidly increased since 2014. In fact, in 2022, Boeing Commercial Airplanes was by far the largest employer in Auburn, with nearly 3,500 employees. The plan notes that since the recession of 2008, Auburn’s economy has diversified greatly, which speaks to the growth in education, health care, and construction jobs.

Additionally, Auburn is situated in the King County Metropolitan area, which is a hub of information and technology, and professional services. According to the King County Office of Economic and Financial Analysis, eight Fortune 500 companies are headquartered in the County including Amazon, Starbucks, Costco, Microsoft, and Paccar. Boeing Commercial Airplanes is also headquartered in neighboring Renton. 11% of Auburn residents were employed in the information, technology, and professional sector. However, the sector accounted for 2% of jobs. This can likely be explained by looking at where these companies are located. Many technology and information companies tend to be located in Seattle or surrounding towns. This means that many Auburn residents commute into these areas for work.

LEHD data provides further detail into the labor and commuting patterns in Auburn and surrounding areas. Table 32 provides insight into where people who were employed in Auburn lived in 2021. As a note, “All Other Locations” includes any other place in the county not captured in the figure.

Table 32: Inflow and Outflow in Auburn

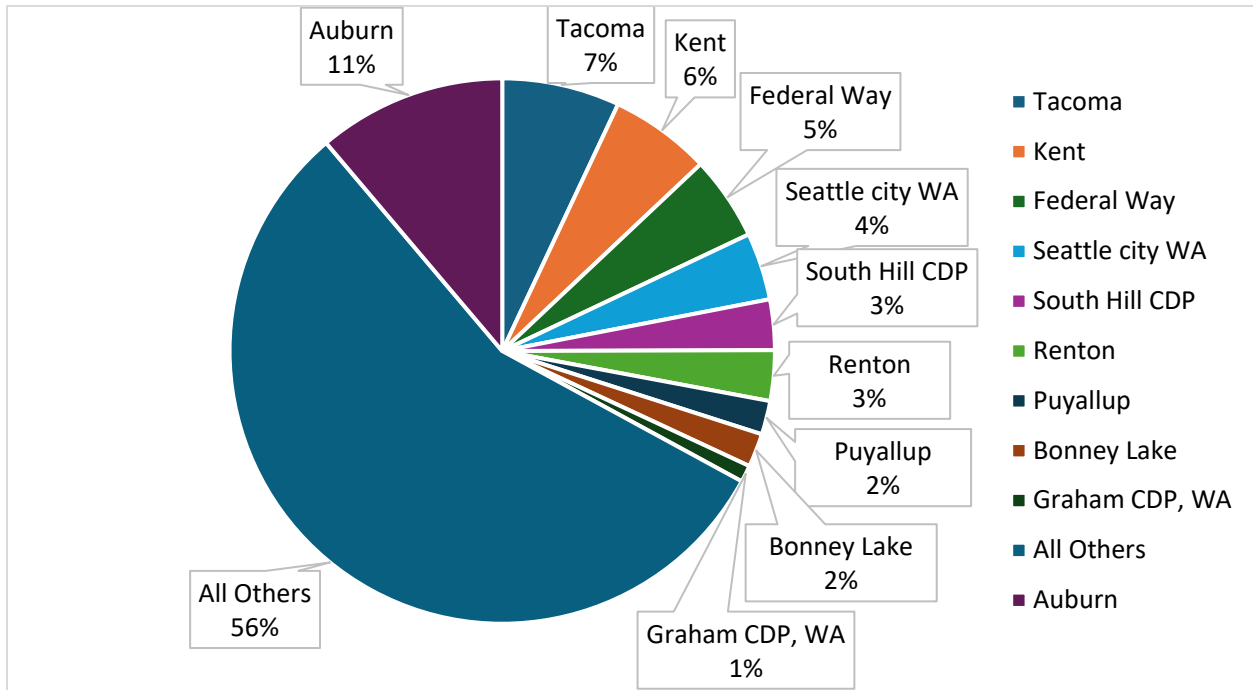
Job Inflow to Auburn			Job Outflow from Auburn		
Employed in Auburn but don’t live in Auburn:	39,410	88.6%	Live in Auburn but Employed somewhere else	31,609	82.6%
Tacoma	3,230	7%	Seattle	6,031	16%
Kent	2,736	6%	Kent	3,729	10%
Federal Way	2,026	5%	Renton	2,136	6%
Seattle city WA	1,572	4%	Tacoma	2,052	6%
South Hill CDP	1,370	3%	Bellevue	1,459	4%

Renton	1,133	3%	Federal Way	1,446	4%
Puyallup	920	2%	Tukwila	1,398	4%
Bonney Lake	798	2%	SeaTac	902	2%
Graham CDP, WA	659	1%	Sumner	750	2%
All Others	24,966	56%	All Other Places	11,706	32%

Data Source: LEHD On the Map, 2021

In 2021, 5,062 Auburn residents worked in Auburn, accounting for 11.4% of the Auburn workforce. This means that most Auburn workers (88.6%) lived outside of the city. Figure 12 illustrates the most common residences for Auburn workers. According to 2021 LEHD data, Tacoma, Kent, and Federal Way represented the three most popular places for Auburn workers to live outside of the city.

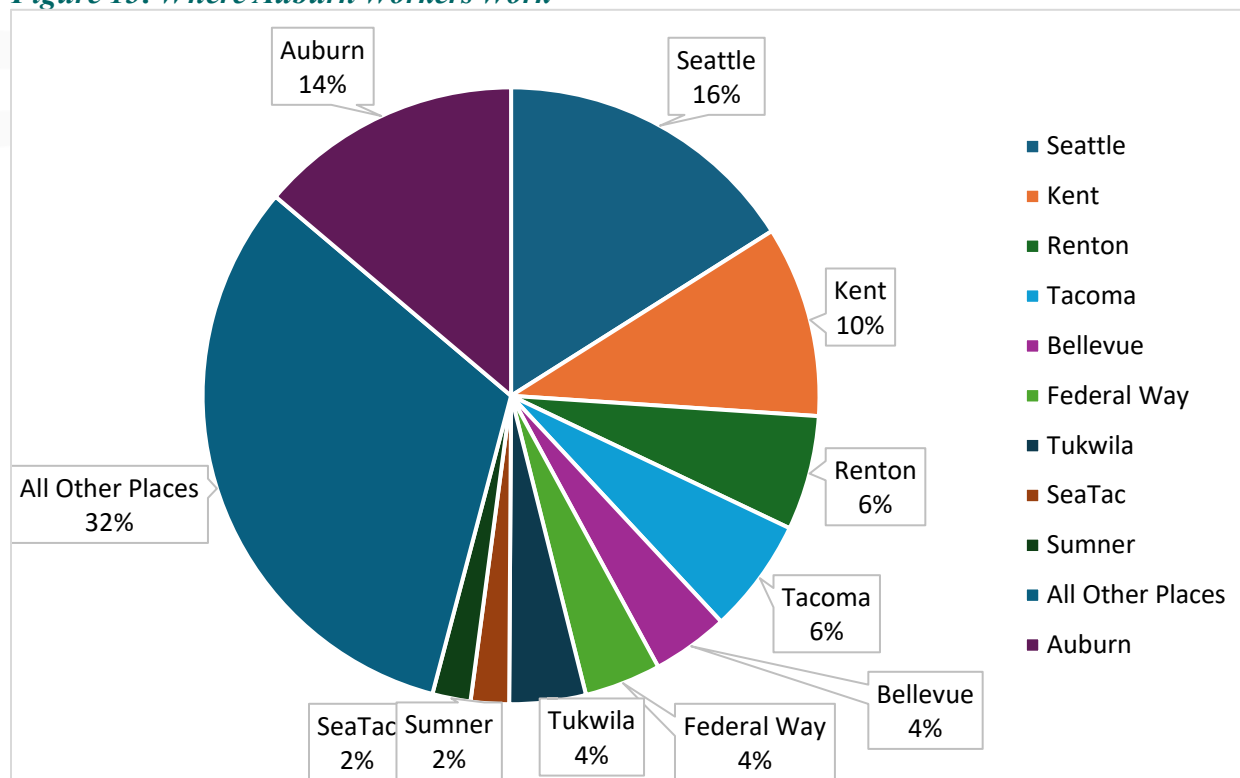
Figure 12: Where Auburn Workers Reside



Data Source: LEHD On the Map, 2021

Figure 13 depicts the places where Auburn residents work. 84% of Auburn residents worked outside of the city. As illustrated below, Seattle (16%) and Kent (10%) were the most popular locations for Auburn residents to work. This aligns with known characteristics of Auburn's economy with proximity to the Kent Valley manufacturing hub and Seattle technology and information sector.

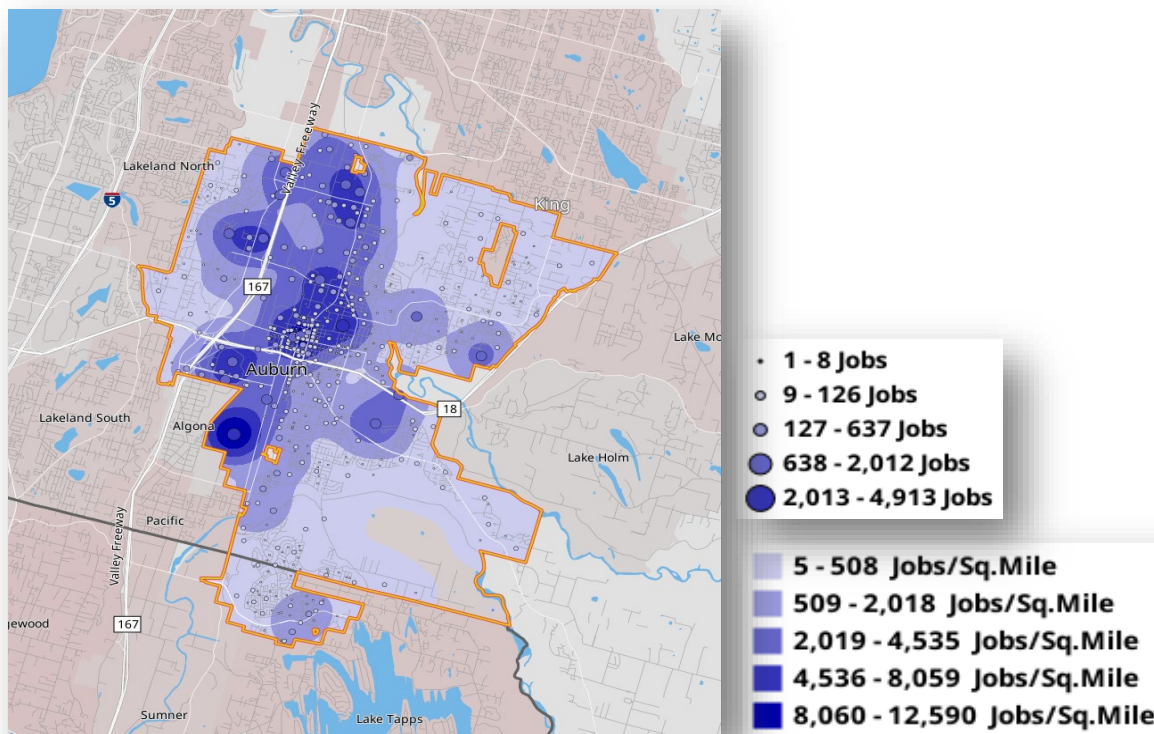
Figure 13: Where Auburn Workers Work



Data Source: LEHD On the Map, 2021

Figure 14 provides greater detail into the geography of jobs in Auburn in 2021. While there appear to be clusters of jobs throughout Auburn, the South Auburn and North Auburn regions appear to host concentrated clusters of jobs.

Figure 14: Concentration of Jobs in Auburn



Data Source: LEHD On the Map, 2021

Describe the workforce and infrastructure needs of the business community

The City of Auburn reviewed various plans and data to assess the needs of the business community.

First, the King County Urban Growth Capacity Report, adopted in 2021, assesses communities' development capacity for future housing and employment. The report determined 2035 growth targets for housing and job creation and assessed how well the cities in King County are growing to accommodate those targets. The 2035 targets set for Auburn were 11,159 units of new housing and 22,446 new jobs. The report indicates that, as of 2021, Auburn was underproducing housing and jobs, which could impact the business community if targets are not met.

Additionally, in the Consolidated Plan "Mini Poll" conducted for the Consolidated Plan by the City of Auburn, a common theme that emerged from participant comments was that support for small businesses, particularly restaurants, shops, artists, and entertainment businesses, is a high priority for residents.

Also, ACS data indicates that in 2022, 50% of Auburn workers had a commute over 30 minutes, with 14% of residents having a commute over 60 minutes. Given the outflow of workers in Auburn, there exists a need to ensure transportation networks accommodate the needs of commuters.

Finally, the 2024–2028 Workforce Innovation and Opportunity Act Local Plan published by the Seattle-King County Workforce Development Council (WDC) emphasizes the role of manufacturing in South King County. According to the report, aerospace manufacturing alone generated \$13.6 billion dollars toward the gross domestic product in the area. However, the report notes that the sector is projected to lose jobs over the next few years due to shifting emphasis on software development and computer technology and a lack of interested and trained workforce. To meet the needs of the manufacturing sector in South King County, the report highlights a demand for manufacturing talent and clear career pathways to meet the need.

As noted in the 2021 Washington State Workforce Innovation and Opportunity Act Annual Performance Narrative Report, low income is a top barrier to employment. Supporting workforce growth must accompany poverty-reducing measures. The report specifically notes South King County as an area that should be prioritized because of the overrepresentation of Black, Indigenous, and people of color, as well as refugee, immigrant, and justice-involved populations.

Describe any major changes that may have an economic impact, such as planned local or regional public or private sector investments or initiatives that have affected or may affect job and business growth opportunities during the planning period. Describe any needs for workforce development, business support or infrastructure these changes may create.

In an effort to align itself with the 2035 growth pace, the City of Auburn has various development projects completed and ongoing. These projects aim to increase housing and commercial space in Downtown Auburn, with the intention of providing housing for seniors and members of the workforce and creating new jobs and business opportunities.

- Divine Court Apartments: A six-story mixed-use building that includes 46 apartments and 42 micro-housing units with a ground floor of commercial space.
- Legacy Plaza Senior Apartments: An eight-story mixed-use commercial property that includes 166 senior apartment units and 8,000 square feet of commercial space.
- Auburn Station parking and access improvements: Expanding access to Auburn Station, including a new parking garage of 535 spaces for commuters.
- MultiCare Auburn Medical Center Pavilion: A two-story pavilion housing 24 medical beds that will be connected to the existing hospital, including street and landscape improvements.
-

How do the skills and education of the current workforce correspond to employment opportunities in the jurisdiction?

In 2022, 89 percent of Auburn residents over the age of 25 had a high school diploma or higher and 27 percent of residents had a bachelor's degree or higher. The educational attainment for a high school diploma was slightly lower in Auburn than the King County Consortium (93 percent

compared to 89 percent). However, the educational attainment for a bachelor's degree in Auburn was significantly lower than the King County Consortium (49 percent compared to 27 percent). Those with a bachelor's degree or higher are well equipped to participate in King County's information, technology, and professional services cluster. Those with a bachelor's degree or higher earn, on average, significantly more than the median income for Auburn.

However, as detailed in the previous Consolidated Plan, Auburn has access to skilled labor across Kent Valley. Auburn has access to people with hard-to-find skill sets such as customer service representatives, truck drivers, registered nurses, maintenance and repair workers, and various types of technicians who support manufacturing operations. In this way, residents without an advanced degree have options and skills to find meaningful work in Auburn.

Describe any current workforce training initiatives, including those supported by Workforce Investment Boards, community colleges and other organizations.

Describe how these efforts will support the jurisdiction's Consolidated Plan.

The City of Auburn Workforce Development, Business Assistance, and Business Development programs assist clients with specific training needs upon request. From 2023 to 2024, the City of Auburn has funded several non-profit organizations that provide employment and financial training. In addition, Auburn works with partners to develop appropriate training programs. These partners include:

- Auburn School District
- Green River College
- WorkSource, located in Auburn, provides human resource assistance, help during layoffs, and access to resources for business development free of charge.

Does your jurisdiction participate in a Comprehensive Economic Development Strategy (CEDS)?

Auburn does not participate in a CEDS. The City of Auburn participates in various planning initiatives that impact economic growth, which are described in the next section.

If so, what economic development initiatives are you undertaking that may be coordinated with the Consolidated Plan? If not, describe other local/regional plans or initiatives that impact economic growth.

The City of Auburn participates in various planning initiatives that impact economic growth, which are described below in the 2024 Comprehensive Plan, the Downtown Urban Center initiative and in the Workforce Development Council of Seattle King County

The 2024 Comprehensive Plan Update: Economic Development Element

In 2024, the City of Auburn undertook a periodic update to its Comprehensive Plan, which provides updated goals and policy priorities for the city. Listed below are the goals and policies determined in the economic development element of the Comprehensive Plan Update:

- Retention of Business
- Attracting New Business
- Identifying Missing and Under-Represented Industries

- Supporting Industry Clusters (including the existing aerospace industry)
- Supporting Economic Development of Downtown Auburn
- Street Beautification and Streetscape Improvements
- Workforce Development
- Partnership with Businesses
- Supporting Tourism
- Limiting Displacement

Downtown Urban Center

The City of Auburn continues to invest in Downtown, with recent projects including new businesses, commuter rail access, shopping and dining opportunities, and recreational and cultural amenities. Since 2010, the City of Auburn has been investing \$10 million of federal and state funds in the South Division Street Promenade Project and other downtown projects to make it easier and more attractive for private sector investment.

Workforce Development Council of Seattle King County (WDC)

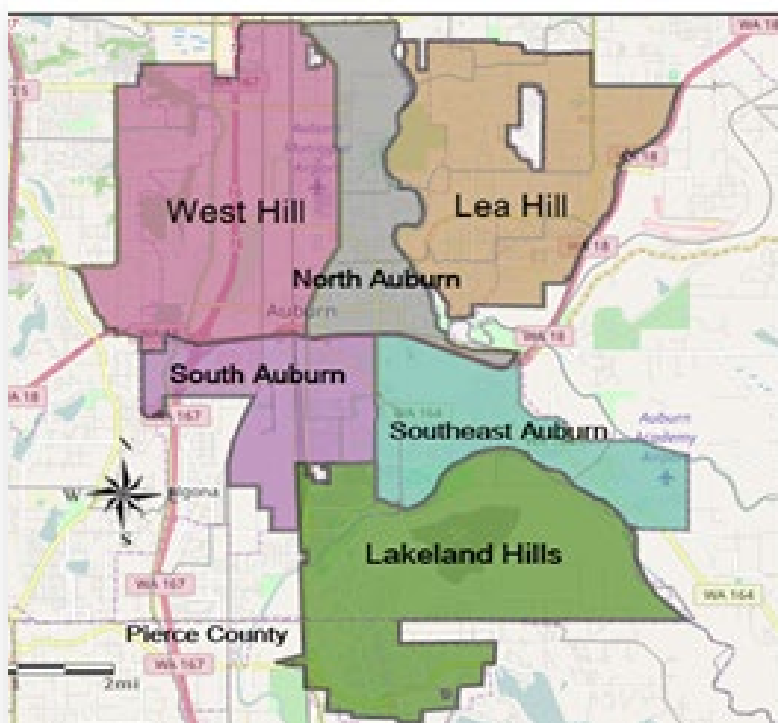
King County collaborates with neighboring counties and the Puget Sound Regional Council to participate in the 2022–2026 Regional Economic Strategy, which serves as the CEDS for the Puget Sound region. The Consortium Consolidated Plan provides more information on the CEDS. Although Auburn does not directly participate in the CEDS, other regional planning efforts, such as those led by the WDC of Seattle King County, aim to promote economic development in the area. WDC is a nonprofit grant-making organization with the goal of furthering workforce development efforts that empower individuals, foster economic growth, and ensure resilient and thriving communities. The WDC undertook a seven-month planning process to create the 2020–2024 Regional Strategic Plan. As stated in the plan, the goal was to establish a set of shared priorities for WDC and its regional partners over the next three to five years. The process included robust outreach to regional stakeholders. The 2020–2024 Regional Strategic Plan serves to promote a centered and industry-driven approach to development. The stated goals of the plan are as follows:

- Leverage and align federal and other workforce resources to increase scale and maximize investment impact.
- Improve system structure, efficiency, and delivery through collaboration and coordination.
- Remove barriers and racial disparities and provide equitable opportunities for residents to obtain and grow into living wage opportunities.
- Coordinate and centralize industry engagement to inform workforce development system partners and strengthen partnerships.
- Engage and partner with community and workforce training and system stakeholders to create innovative programs and practices to serve job seekers and businesses.

MA-50 Needs and Market Analysis Discussion

The City of Auburn is informally divided into six regions (West Hill, North Auburn, Lea Hill, South Auburn, Southeast Auburn, and Lakeland Hills). Figure 15 depicts the geography of these neighborhoods, which are used in the below analysis.

Figure 15: Map of Auburn Neighborhoods



Source: City of Auburn Community Profiles and Resident Engagement in Neighborhoods (2016)

Are there areas where households with multiple housing problems are concentrated? (include a definition of "concentration")

Housing problems occur in areas in the city with older home construction or older apartment complexes that may be outdated or struggle with energy efficiency, accessibility, etc. Additionally, there are 17 mobile home parks throughout the City of Auburn, which tend to have an increased risk of housing problems. The majority of individuals who reside in these parks are elderly, low-income, or disabled. Listed below are the mobile home parks within the city.

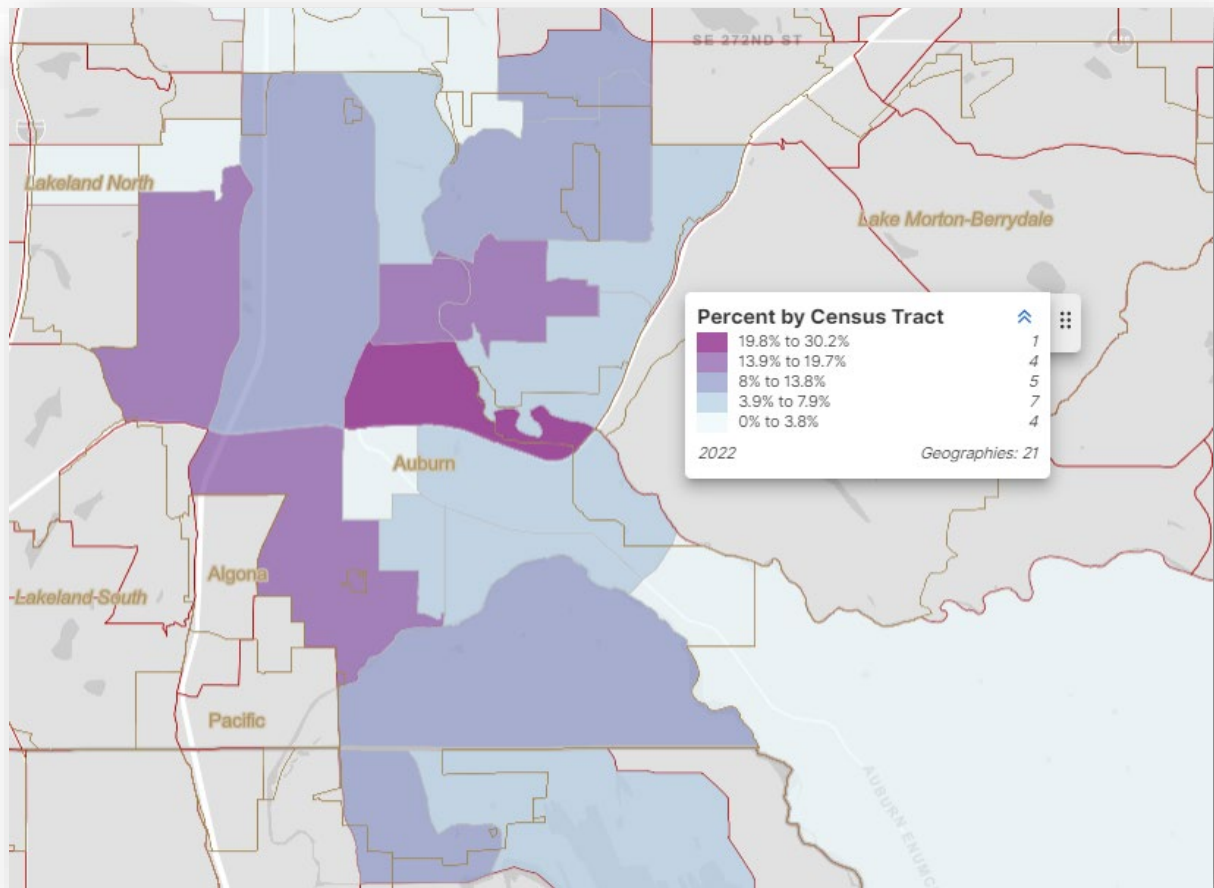
- Auburn Green
- Auburn Park
- College Place Manufactured Home Community
- Auburn Hills Mobile Home Community
- Auburn Manor Mobile Home Community
- Laurelwood Mobile Home Park

- Leisure Manor Mobile Home Park
- Rio Verde Mobile Estates
- Shady Hills Mobile Estates
- Skylark Village Estates II
- Tall Cedars MHC
- Wildwood Mobile Estates
- Palisades Mobile Home Estates
- River Mobile Estates
- Skylark Village Estates I
- Spaid Unique Manor & Estates
- White River Estates

The maps below depict the occurrence of select housing problems at the census tract level. Due to the misalignment of census tract and city boundaries, some areas may be included in the maps that do not fall within the jurisdiction of Auburn. Auburn's definition of concentration regarding households in the region is the density of individuals in a specific area.

Figure 16 illustrates the percentage of renter households that spent between 30 and 34.9 percent of their income on housing expenses. The map identifies one census tract in Southeast Auburn with the greatest percentage of cost-burdened renters (between 19.8 percent and 30.2 percent of households). Additionally, census tracts in South Auburn, North Auburn, Lea Hill, and West Hill had elevated instances of housing cost burden (between 13.9 percent and 19.7 percent of households).

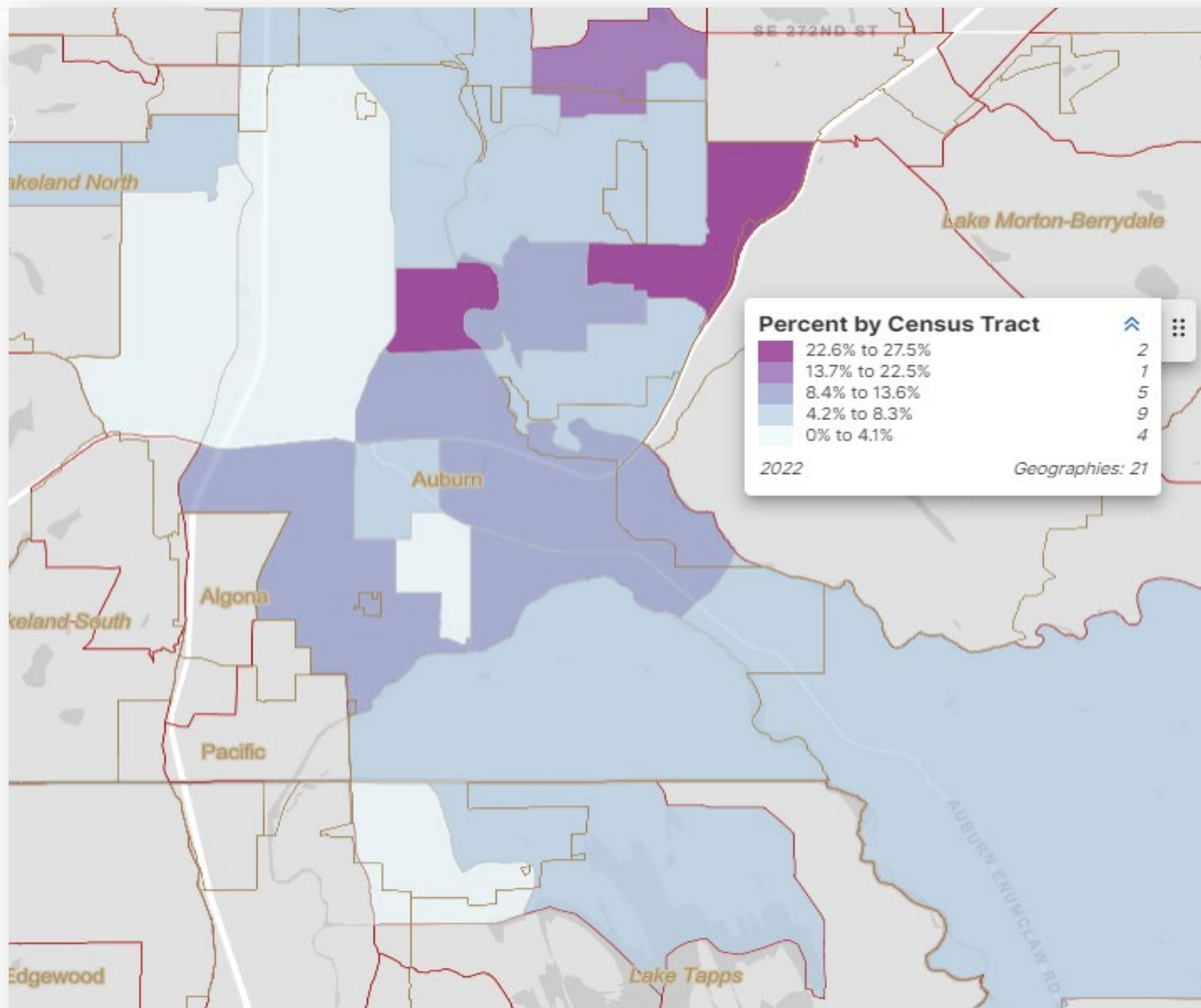
Figure 16: Housing Cost Burden for Renter Households



Source: 2018-2022 ACS

Figure 17 illustrates the percentage of owner households that spent between 30 and 34.9% of their income on housing expenses. Two census tracts, one in North Auburn and one in Lea Hill, had the greatest concentration of housing cost burden for owner households (between 22.6% and 27.5% of households).

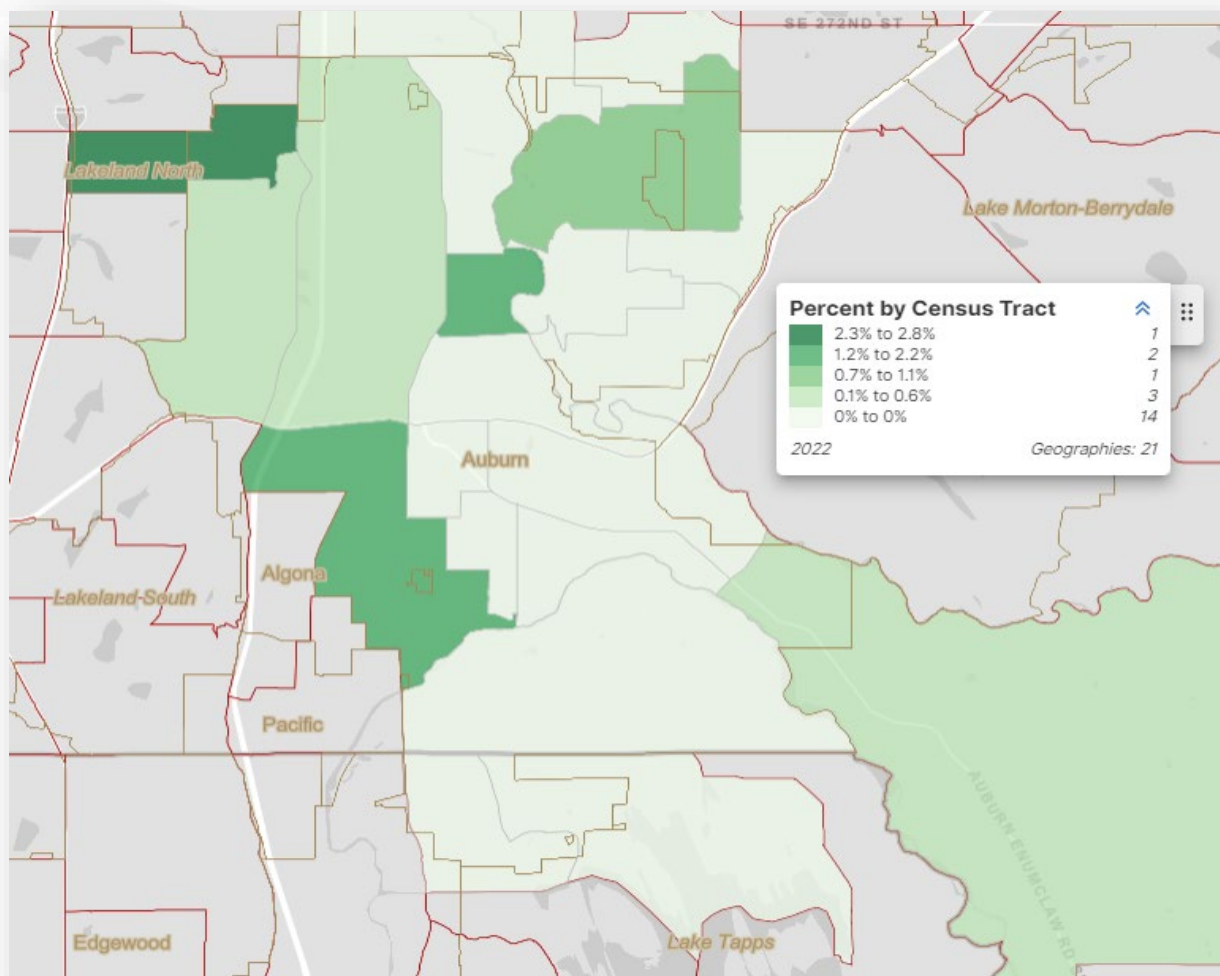
Figure 17: Housing Cost Burden for Owner Households



Source: 2018-2022 ACS

Figure 18 depicts the percentage of Auburn households that lacked complete plumbing facilities. A small section of a census tract in the West Hill neighborhood had the highest percentage of households without complete plumbing facilities (between 2.3 percent and 2.8 percent of total households). The map also indicates that two census tracts, one in North Auburn and one in South Auburn, had elevated instances of lack of complete plumbing facilities (between 1.2 percent and 2.2 percent of total households).

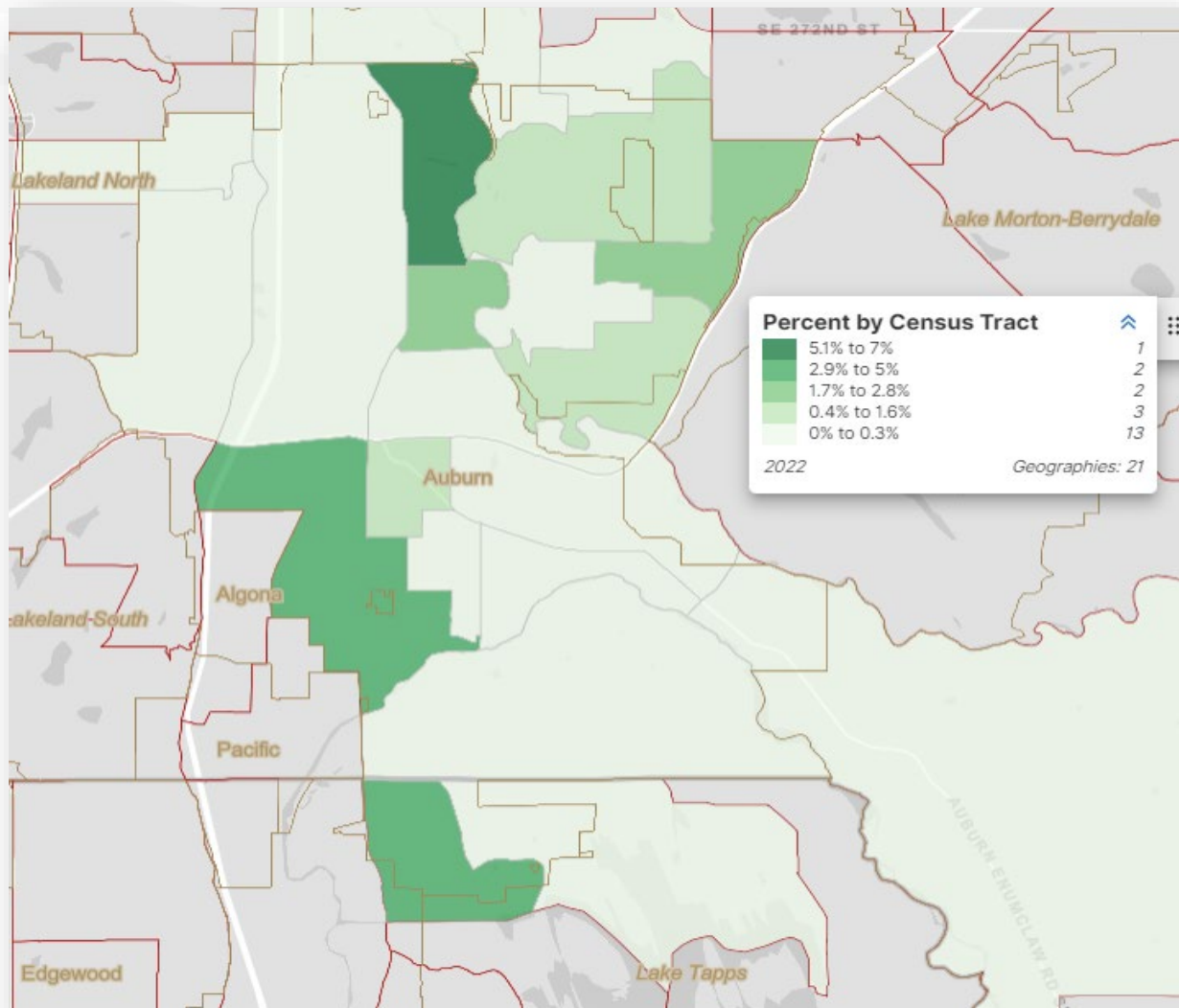
Figure 18: Percentage of Households without Complete Plumbing Facilities



Source: 2018-2022 ACS.

Figure 19 depicts the percentage of households that lacked complete kitchen facilities in Auburn. The map identifies one census tract in North Auburn that had the greatest concentration of households without complete kitchen facilities (5.1 percent to 7 percent of total households). The map also identifies two census tracts, one in South Auburn and one in Lakeland Hills, that had an elevated concentration of households without complete kitchen facilities (between 1.7 percent and 2.8 percent of total households).

Figure 19: Percentage of Households without Complete Kitchen Facilities



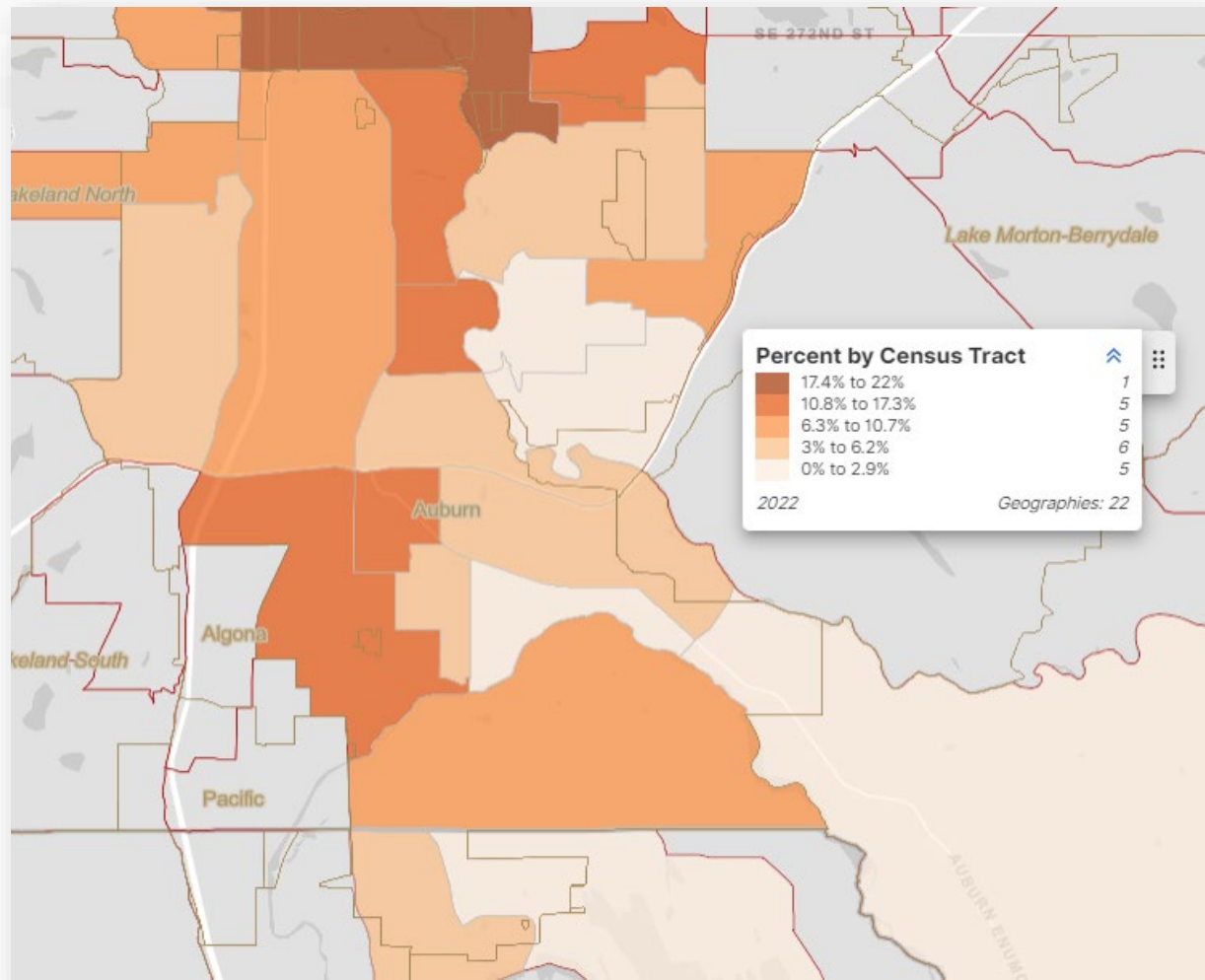
Source: 2018-2022 ACS.

Are there any areas in the jurisdiction where racial or ethnic minorities or low-income families are concentrated? (include a definition of "concentration")

The below maps depict the percentage of select racial or ethnic groups, as well as occurrences of poverty, at the census tract level. Due to the misalignment of census tract and city boundaries, some areas may be included in the maps that do not fall within the jurisdiction of Auburn. Auburn's definition of concentration regarding households in the region is the density of individuals in a specific area.

Figure 20 depicts the percentage of households who identified as Black or African American. The map notes that census tracts spanning North Auburn and North Lea Hill reported the greatest concentration of households identifying as Black or African American (17.4 percent to 22 percent). The map also identifies a census tract in South Auburn in which 10.8 percent to 17.3 percent of the population identified as Black or African American.

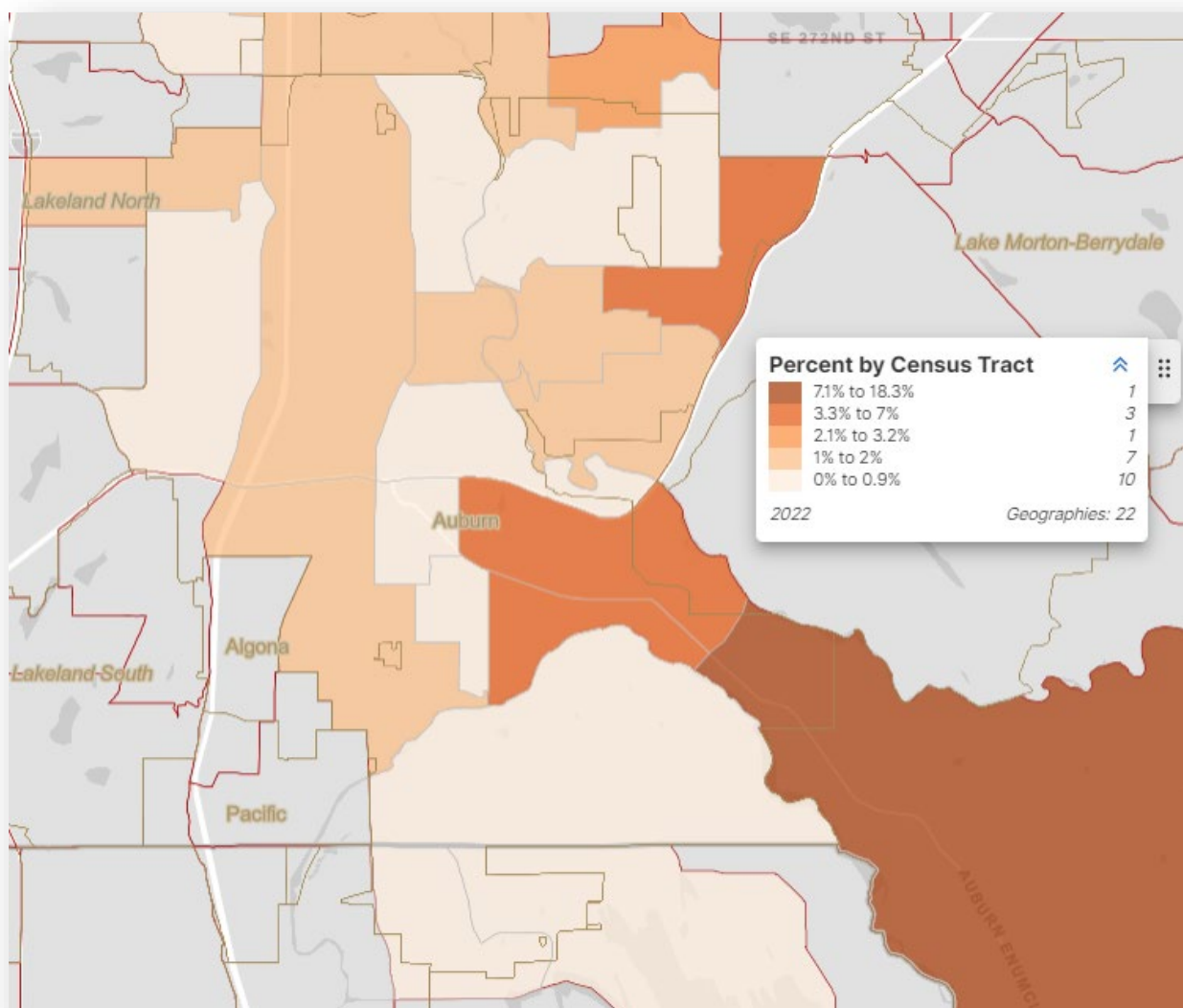
Figure 20: Percentage of Households Identifying as Black or African American



Source: 2018-2022 ACS.

Figure 21 depicts the percentage of Auburn households who identified as Native American. The map identifies two census tracts, one in Muckleshoot (Lakeland Hills) and one in Lea Hill, with the greatest concentration of households identifying as Native American (7.1 percent to 18.3 percent of the population). Muckleshoot Indian Tribe is a federally recognized tribe located within the city that governs the Muckleshoot Reservation.

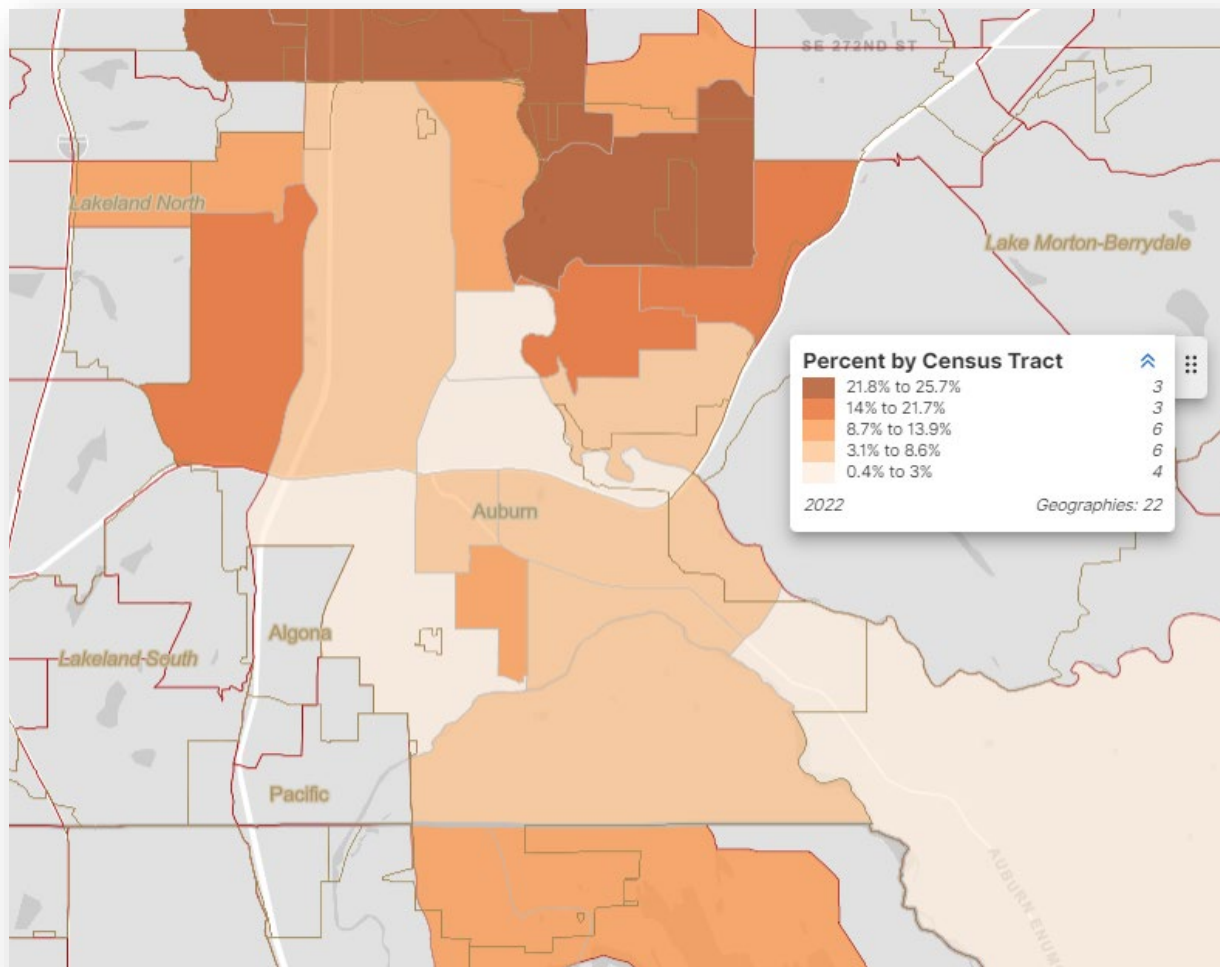
Figure 21: Percentage of Households Identifying as Native American



Source: 2018-2022 ACS.

Figure 22 depicts the percentage of Auburn households that identified as Asian. The map indicates three census tracts in Lea Hill with a concentration of households who identified as Asian. In two tracts, between 21.8% and 25.7% of total households identified as Asian. The map also indicates a greater concentration of households identifying as Asian in West Hill (between 14% and 21.7% of total households).

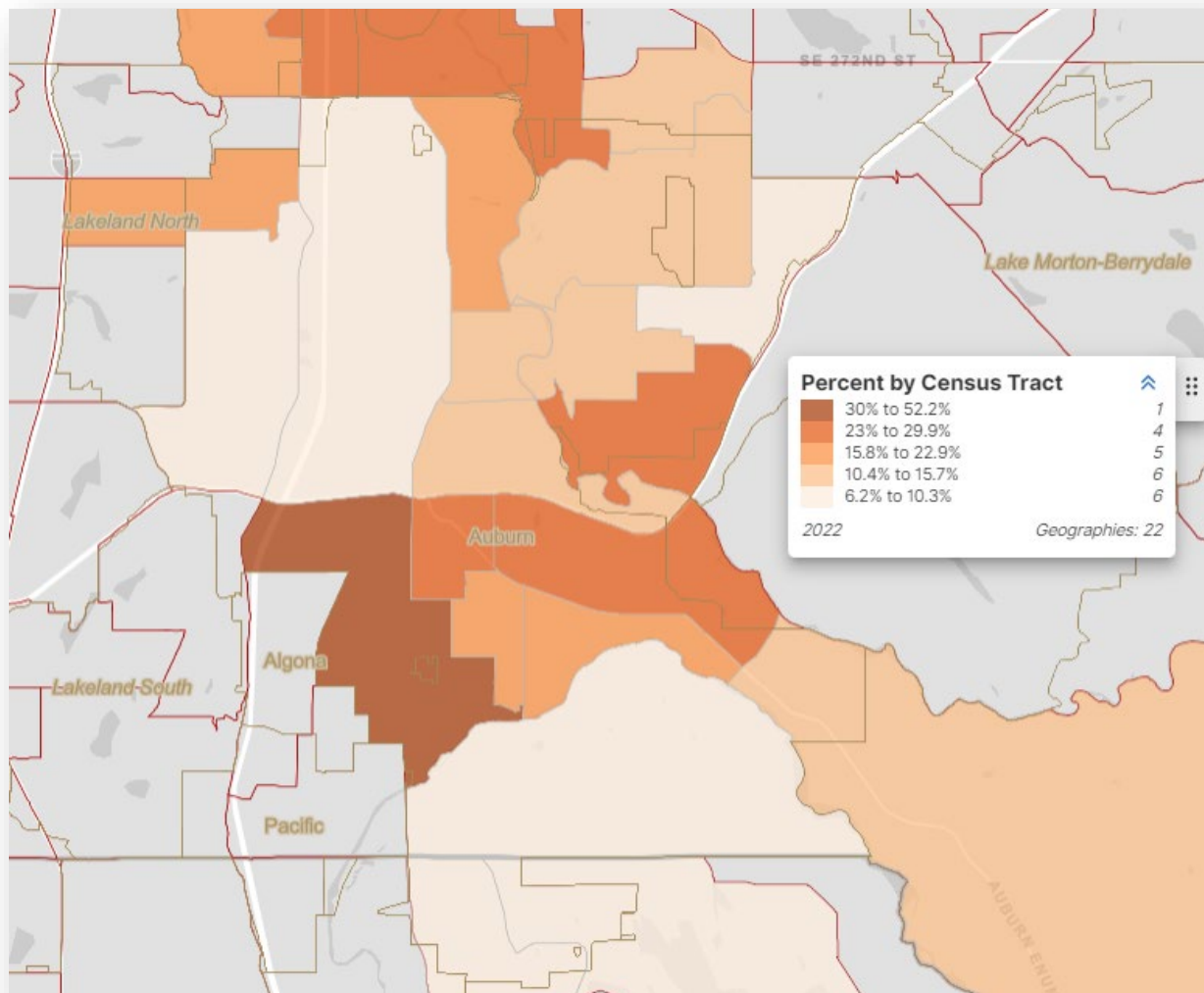
Figure 22: Percentage of Households Identifying as Asian



Source: 2018-2022 ACS.

Figure 23 depicts the percentage of Auburn households that identified as Hispanic. The map indicates a concentration of households who identified as Hispanic in South Auburn. In one such census tract, directly bordering Algona and Pacific, 30% to 52.2% of residents identified as Hispanic. The map also indicates areas of North Auburn and Lea Hill had concentrations of people who identified as Hispanic (between 23% and 29.9% of total households).

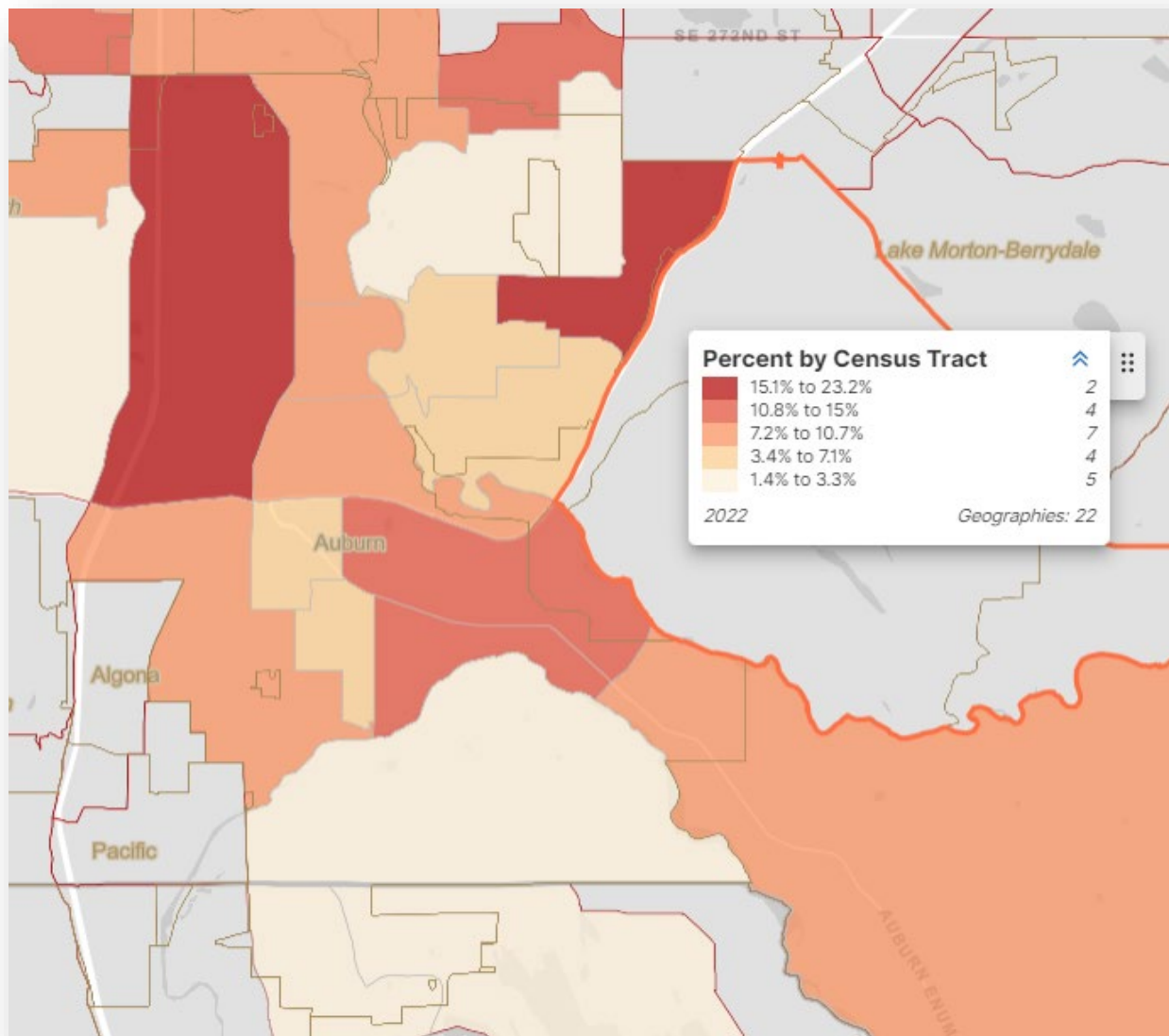
Figure 23: Percentage of Households Identifying as Hispanic



Source: 2018-2022 ACS.

Finally, Figure 24 depicts the percentage of Auburn residents who lived below the federal poverty line. The map indicates that West Hill and the northeastern section of Lea Hill had the greatest percentages of households living in poverty (between 15.1% and 23.2% of households). The map also indicates that a census tract in the South Auburn/Forrest Villa neighborhood had an elevated percentage of households in poverty (between 10.8% and 15% of households).

Figure 24: Percentage of Households Living Below the Federal Poverty Line



Source: 2018-2022 ACS.

What are the characteristics of the market in these areas/neighborhoods?

Across Auburn, areas with concentrations of low-income households and people of color tend to see increased housing costs. While housing costs, particularly rent, have increased significantly in the last ten years, housing costs in Auburn tend to be more affordable than surrounding areas. In fact, in 2022, the median rent in King County was \$1,950 while the median rent in Auburn was \$1,594. As described above, Auburn witnesses a lot of outflows in terms of employment, meaning households are living in Auburn, likely to enjoy lower housing costs, and commuting to work in higher cost areas. This has the effect of limiting affordable housing supply and, potentially, increasing displacement among Auburn residents.

Regarding the specific characteristics of Auburn's seven regions, the City of Auburn Plan Annex to the 2020-2025 King County Regional Hazard Mitigation plan provides greater detail into the characteristics of these neighborhoods:

- North Auburn - a regional serving area which is a concentration of employment base.
- South Auburn - a community serving area which contains a majority of the older, more established residential areas and locally oriented businesses.
- Southeast Auburn - home to a low-density residential area and an environmental park
- The Plateau – a residential area featuring land within the Muckleshoot Indian Tribe's reservation boundary and jurisdiction, and the Seven Day Adventists "Academy."
- Lakeland Hills – a master planned community featuring a mix of residential and commercial uses.
- West Hill - a residential area featuring a mix of older, established low density, rural development without a commercial area.
- Lea Hill – a residential area comprising rural development, traditional suburban development, and small locally serving commercial areas.

Are there any community assets in these areas/neighborhoods?

The City of Auburn has identified several community assets in these regions including, but not limited to small businesses, produce markets, faith-based institutions, schools, restaurants, the Muckleshoot Casino, and the White River Amphitheater.

Are there other strategic opportunities in any of these areas?

The City of Auburn continues to promote development in these areas, including mixed-use buildings with commercial and housing components. The city also notes the Auburn Senior Center and White River Valley Museum as community assets. Additionally, as outlined in the economic development element of Auburn's Comprehensive Plan Update, the city intends to identify and promote underrepresented sectors, and limit the effects of displacement, all of which provide opportunities for investment and strategic opportunities in these areas. Finally, Auburn offers support to local businesses through webinars, resources, and workforce development assistance.

MA-60 Broadband Needs of Housing Occupied by Low- and Moderate-Income Households - 91.210(a)(4), 91.310(a)(2)

As displayed in Table 32, 92 percent of Auburn residents have access to broadband internet and 7 percent of the population (2,016 households) have no internet access. Lack of internet accessibility exacerbates inequalities and limits opportunities for those households.

KCIT-Seattle Regional Broadband Infrastructure and Digital Equity Local Action Report, published in 2024, analyzes the unique barriers to connectivity faced by King County by project area. The report classifies Auburn as a suburban project area, which includes Kent, Renton, Sammamish, and Redmond. The report finds that suburban areas need upgrades or extensions to existing infrastructure to increase connectivity. In particular, the report notes “small pockets of homes” in the city that lack connectivity. The report suggests implementing service extensions from nearby new developments to increase connectivity.

To help improve connectivity in the city, Access Auburn provides guest WiFi service free of charge in seven public facilities and two outdoor areas throughout the city. The city is continuing to expand guest WiFi access in other public areas throughout the city to increase access to connection for low- and moderate-income households.

Table 32: Broadband Access in Auburn

Total Households	30,987	100%
With an Internet Subscription	28,373	92%
Dial-up with no other type of Internet subscription	64	0%
Broadband of any type	28,309	91%
Cellular data plan	26,482	85%
Cellular data plan with no other type of Internet subscription	3,194	10%
Broadband such as cable, fiber optic or DSL	24,463	79%
Broadband such as cable, fiber optic or DSL with no other type of Internet subscription	1,713	6%
Satellite Internet service	1,739	6%
Satellite Internet service with no other type of Internet subscription	38	0%
Internet access without a subscription	598	2%
No Internet access	2,016	7%

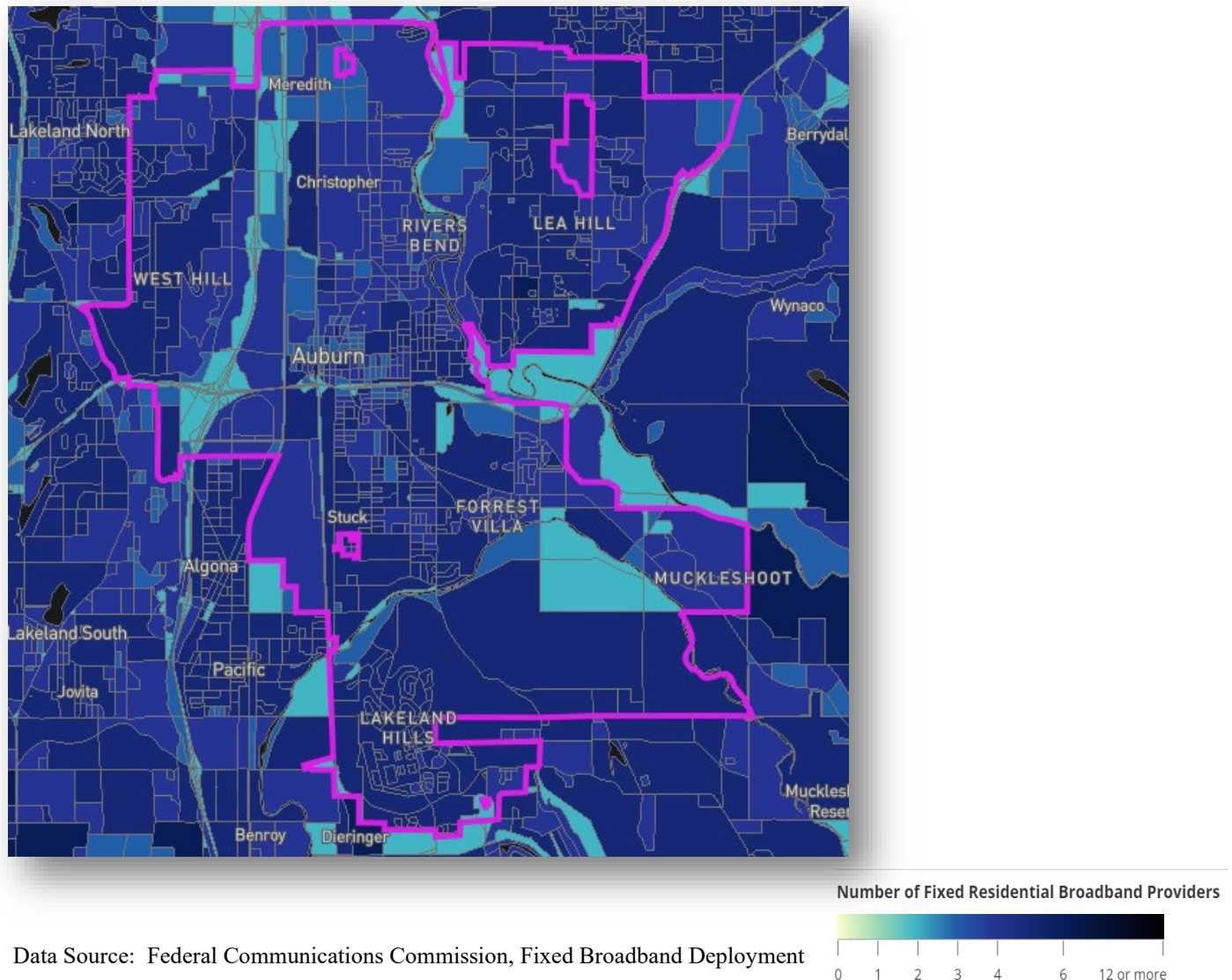
Data Source: 2018-2022 ACS.

Describe the need for increased competition by having more than one broadband Internet service provider serve the jurisdiction.

Auburn has multiple broadband internet service providers, with no area having less than two broadband providers, as depicted in Figure 25. The Eastern and Southeastern portion of the city, near Muckleshoot, have the fewest service providers at only two providers.

Available technologies in the City of Auburn include ADSL, Cable, Fiber, Fixed Wireless, and Satellite. Providers include Comcast, ViaSat, Hughes Network Systems, VSAT, and Lumen Technologies. In addition, Lumen expressed interest during outreach for the KCIT-Seattle Regional Broadband Infrastructure and Digital Equity Local Action Report that in additional projects throughout the region, including in Auburn.

Figure 25: Broadband Providers in Auburn



MA-65 Hazard Mitigation - 91.210(a)(5), 91.310(a)(3)

Describe the jurisdiction's increased natural hazard risks associated with climate change.

The City of Auburn has undergone multiple planning efforts to assess the city's natural hazard risks associated with climate change. Two recent efforts are summarized below.

City of Auburn Plan Annex: 2020-2025 King County Hazard Mitigation Plan

This plan provides a risk, vulnerability, and impact summary for all potential hazards a community might face. Listed below are the natural hazards that Auburn has an increased risk of confronting due to climate change as described in the plan.

- Earthquake: A significant percentage of structures in Auburn reside within a liquefaction zone.
- Flood: 6.43% of the total land area of the city is located within the Special Flood Hazard Area.
- Landslide: Auburn's hilly topography makes the city more susceptible to landslides.
- Severe Weather: Auburn is susceptible to thunderstorms, hail, tornados, excessive heat, drought, ice storms, blizzards, and extreme cold.
- Volcano: Past eruptions of Mt. Rainier have caused lahar to flow through the Auburn valley.
- Dam Failure: Seven active dams protect the city of Auburn and have potential to flood in the event of dam failure.

The Climate Element of the 2024 Comprehensive Plan Update

The Climate Element of the 2024 Comprehensive Plan Update indicates three priority climate hazards that are anticipated to impact Auburn the most, some of which are described above. The plan assessed regional context, the characteristics of the city's infrastructure, and the economic and public vulnerabilities of Auburn in determining these factors, which are described below.

- Rising Temperatures and Extreme Heat: Average annual temperatures rose 1.5 degrees Fahrenheit over the last century, resulting in reduced snowpack in the Cascade Mountains and more extreme heat events.
- Severe Storms and Flooding: Heavier-than-normal rains are expected to increase flooding events.
- Drought and Wildfires: Increased temperatures and drought create a greater risk for spreading wildfires.

Describe the vulnerability to these risks of housing occupied by low- and moderate-income households based on an analysis of data, findings, and methods.

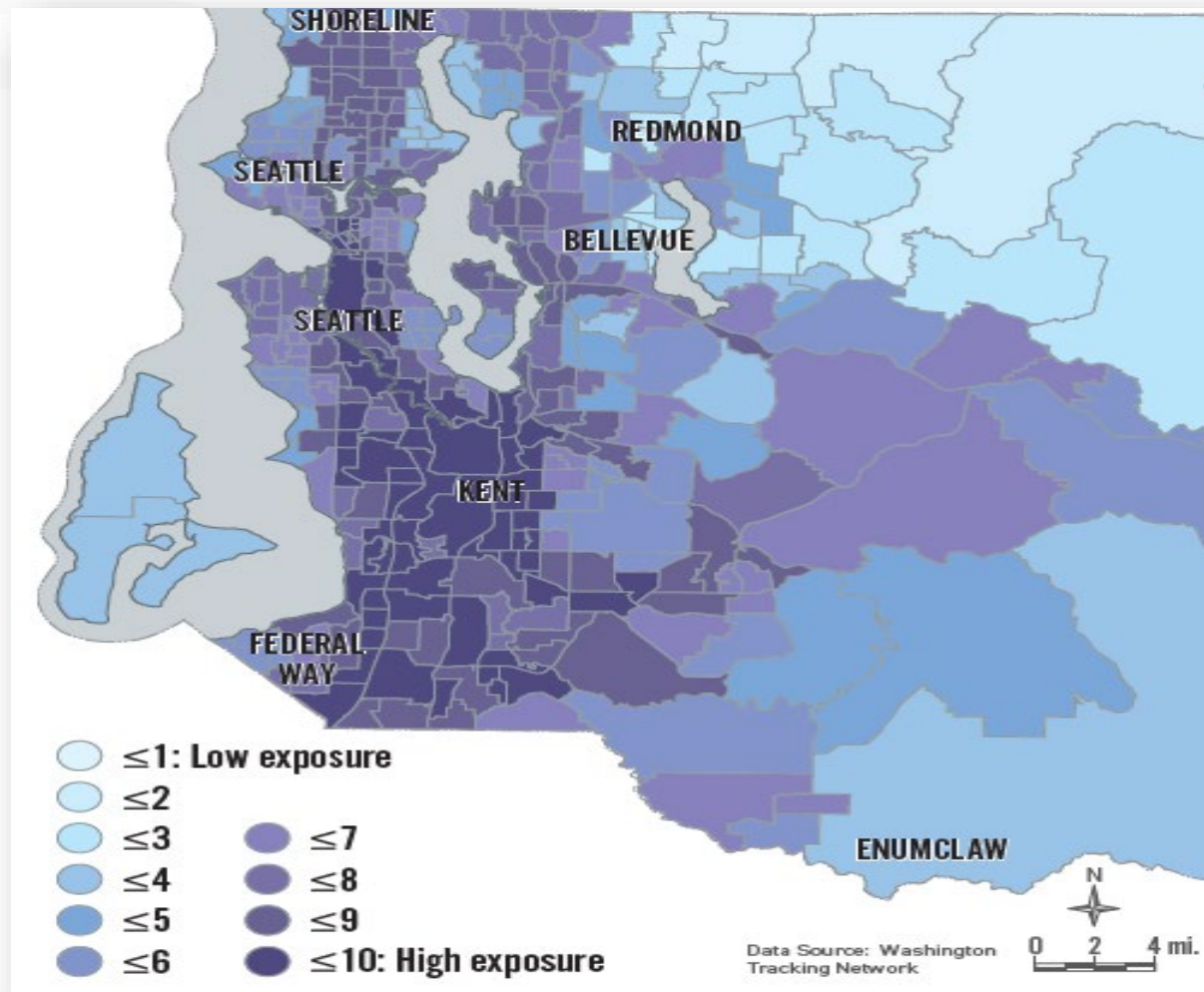
As the risk of climate change-related hazards increases, so does the vulnerability of low- and moderate-income households. Earthquakes, landslides, volcano eruptions, and dam failures bring short- and long-term damage to communities. Low- and moderate-income households may not have the means to evacuate hazardous situations or have the ability to recover quickly. For instance, low- and moderate-income households may be less likely to carry flood insurance. The

2024 Auburn Comprehensive Plan Update provides greater details into the vulnerabilities increased climate change-related hazards may bring.

- Rising temperatures and extreme heat: Warmer temperatures and extreme heat can increase heat stress and worsen air quality, heighten allergy symptoms, and exacerbate respiratory illness. The plan indicates that those who work outdoors and vulnerable populations, such as the elderly, are at the greatest risk.
- Severe storms and flooding: In addition to the immediate threats storms and flooding bring, particularly for those with limited means to seek shelter, flooding also has the potential to create water quality concerns if runoff totals exceed what the stormwater management facilities can handle. This carries risks to public health and economic activity, and it may produce direct financial costs to Auburn residents.
- Drought and wildfires: Increased intensity and frequency of wildfires can create unhealthy air quality levels due to smoke. This will increase instances of respiratory illness, limit outdoor activities, and harm the natural environment. Vulnerable populations, such as those with asthma and elderly residents, will be at a greater risk.

Finally, the 2020–2025 King County Regional Hazard Mitigation Plan notes that Kent Valley, due to its industrial economy, has a high concentration of hazardous waste. Vulnerable populations tend to live closer to hazardous waste due to lower housing costs. Figure 26 illustrates the effects of industrial and hazardous waste on the population. Multiple census tracts in Auburn record the highest level of environmental exposure (<10), which is associated with less opportunity, higher pollution exposure, existing inequities, and lower health and economic well-being outcomes.

Figure 26: Environmental Exposure Index in King County



Data Source: 2020 King County Strategic Climate Plan.

Number of Housing Units

Introduction

As detailed in the Needs Assessment, the lack of affordable housing is a concern for the community. The stock and quality of affordable housing is dictated by a variety of local and regional factors. The Housing Market Analysis of the Consolidated Plan explores recent data on both supply and demand characteristics of Auburn’s housing market. This includes the number, types, size, cost, and quality of housing units, as well as projected demand for additional housing units.

Characteristics of Current Housing Units

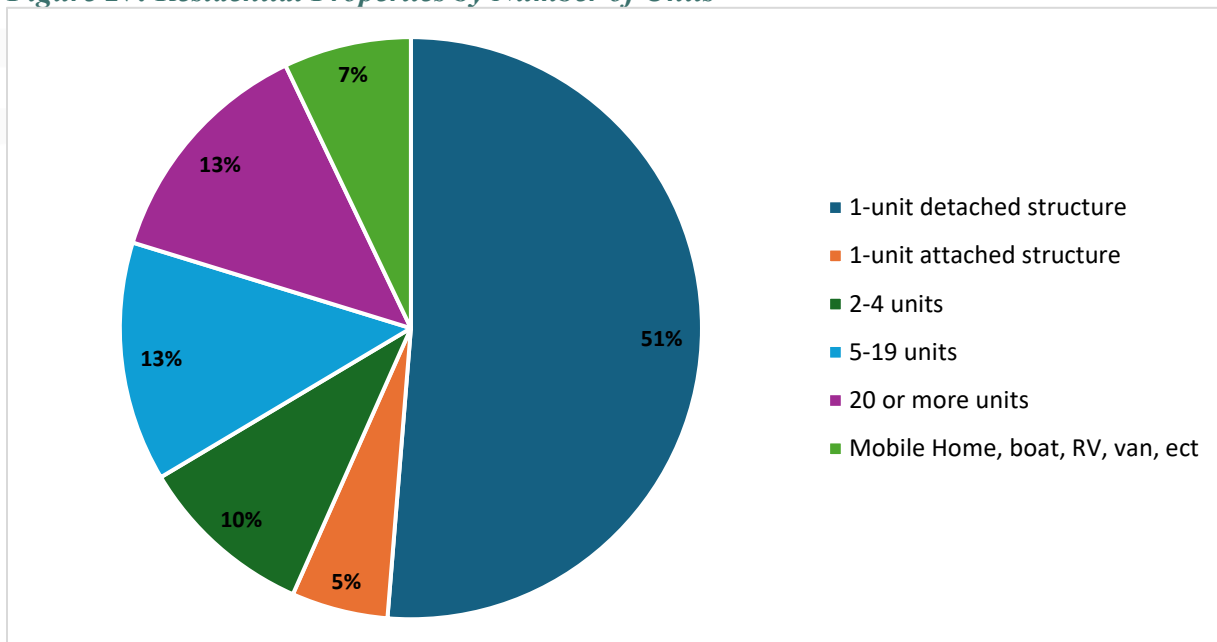
As of April 2024, there were 32,687 total housing units in Auburn (Washington State Office of Financial Management). 2022 ACS data on the number, types, and size of existing residential housing units provides additional insight into the City of Auburn’s current housing stock. Table 33 and Figure 27 provide the number of residential units by property type, which includes both occupied and unoccupied units. The data indicates that there were 32,420 units in the city in 2022. Most units were single-family homes (51 percent). The second most common property type were properties with 5–19 units (13 percent) and properties with 20 or more units (13 percent).

Table 33: Residential Properties by Number of Units

Property Type	#	%
1-unit detached structure	16,627	51%
1-unit attached structure	1,737	5%
2–4 units	3,178	10%
5–19 units	4,314	13%
20 or more units	4,266	13%
Mobile home, boat, RV, van, etc.	2,298	7%
Total	32,420	100%

Data Source: 2018–2022 ACS.

Figure 27: Residential Properties by Number of Units



Data Source: 2018–2022 ACS.

Data on the number of housing units by bedroom size and tenure (Table 34) indicates that, in 2022, the majority of renter and owner households had two or three bedrooms. Most owner households (82 percent) had three bedrooms or more. Conversely, most renter households (42 percent) had two bedrooms.

Table 34: Unit Size by Tenure

Unit Size	Owners		Renters	
	#	%	#	%
No bedroom	137	1%	813	7%
1 bedroom	234	1%	3,726	30%
2 bedrooms	3,068	16%	5,190	42%
3 or more bedrooms	15,321	82%	2,498	20%
Total	18,760	100%	12,227	100%

Data Source: 2018–2022 ACS.

Describe the number and targeting (income level/type of family served) of units assisted with federal, state, and local programs.

Data from the Washington State Housing Finance Commission’s Affordable Housing Data Portal provides information on the number and nature of assisted housing units subsidized by various public funding sources in the state. The database includes information on assisted units subsidized by the federal Low-Income Housing Tax Credit and tax-exempt bonds as well as data from the Web-Based Annual Reporting System, which includes Low-Income Housing Tax Credit properties

and multifamily properties supported by other forms of public funding, including the state Housing Trust Fund, federal HOME funds, and regional government or levy dollars.

As of September 2024, 19 properties located in Auburn utilize a public subsidy, which includes 3,001 total units; 2,812 of those units are affordable to Auburn residents earning 60 percent AMI or less. Table 35 depicts the number of assisted units in Auburn by income affordability. Most assisted units are affordable to those earning 60 percent AMI (80 percent) or those earning 50 percent AMI (17 percent).

Table 35: Number of Assisted Units by Income Affordability

Income Affordability Level	Number of Units	Percent of Total Assisted Units
At 30% AMI	30	1%
At 35% AMI	0	0%
At 40% AMI	43	2%
At 45% AMI	0	0%
At 50% AMI	483	17%
At 60% AMI	2256	80%
Total	2812	100%

Data Source: Washington State Housing Finance Commission Affordable Housing Data Portal.

Table 36 illustrates the number of assisted units that are specifically targeted for a vulnerable population. Most units (54.6 percent) are not targeted for a specific population. Among targeted units, elderly households, large households, and households with a person living with a disability comprise the greatest share of units.

Table 36: Number of Assisted Units by Targeted Population

Targeted Population	Number of Units	Percent of Total Assisted Units
Elderly	613	20%
People experiencing homelessness	12	0.4%
Large households	303	11%
People with a disability	414	14%
Transitional	0	0%
No targeting/no data	1,659	54.6%
Total	3,001	100%

Data Source: Washington State Housing Finance Commission Affordable Housing Data Portal.

Overall, the availability of affordable housing units does not meet the needs of the current population. The 2016–2020 CHAS data indicates that 3,535 households experienced housing cost burden, and 5,115 households experienced severe housing cost burden. This means that more than 8,000 households in Auburn did not live in units that were affordable to them.

Units Needed in the Future

An analysis completed in the 2021 Auburn Housing Action Plan projects the future need for housing units in the city. The report notes that Auburn is projected to grow at a faster rate than it has in the past, which creates greater demand for housing. Table 37 describes the number of units needed to meet projected housing demand in 2040. As indicated, Auburn is projected to need 10,429 new dwelling units between 2020 and 2040. Half of all projected units would need to be affordable to low- to moderate-income households. In particular, 24 percent of total units will be needed for moderate-income households.

Table 37: Housing Units Needed by 2040

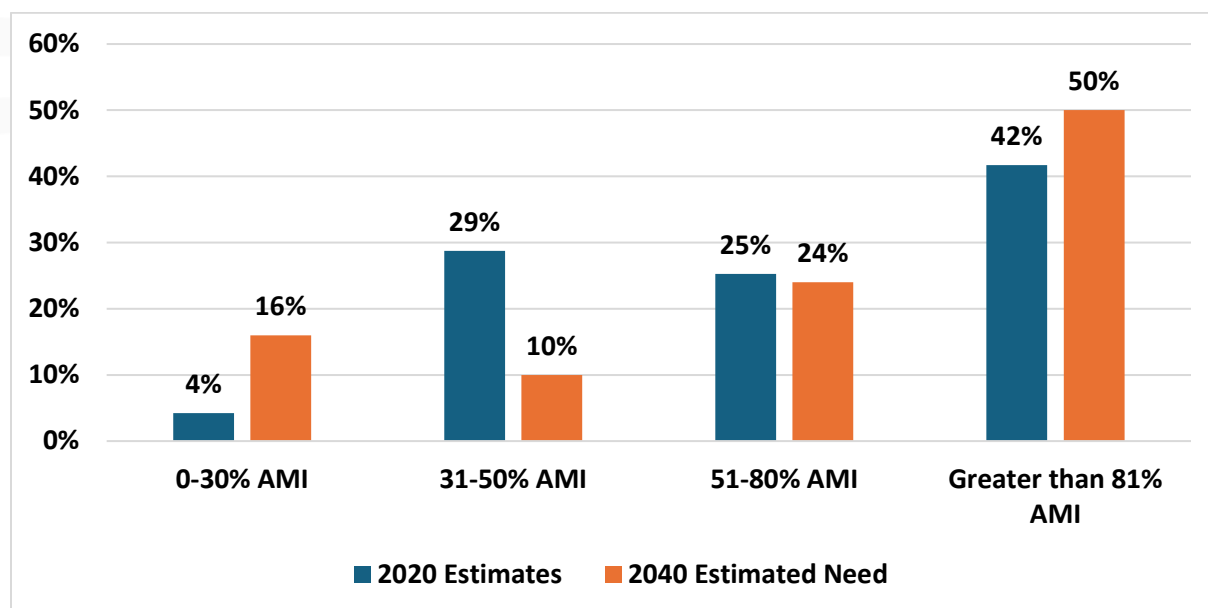
Income Affordability Level	Number of Units	Percent of Total Assisted Units
0–30% AMI	1,669	16%
30–50% AMI	1,043	10%
50–80% AMI	2,503	24%
80–100% AMI	1,251	12%
100%+ AMI	3,963	38%
Total	10,429	100%

Source: Auburn Housing Action Plan (2021).

The analysis indicates that to meet the production goal, 521 units will need to be produced a year. However, between 2011 and 2019, only 390 units were built per year on average. This means that Auburn was underproducing housing units.

Figure 28 compares the percentage of housing units available and affordable to each income level in 2020 to the new units that would need to be brought online according to the 2021 Housing Action Plan. The chart shows that units affordable to the lowest income level (0–30 percent AMI) accounted for just 4 percent of the 2020 housing stock but would need to account for 16 percent of new units produced between 2020 and 2040.

Figure 28: Housing Availability (2020) and Future Estimated Need (2040)



Data Source: 2016–2020 CHAS (2020 Estimates); Auburn Housing Action Plan (2040 Estimated Need).

Data from the Washington Office of Financial Management indicates that Auburn continues to permit and complete various housing projects to increase housing stock. From 2020 to 2024, 266 single-family housing units and 541 projects with more than five units have been completed.

Cost of Housing

Introduction

Compounded with a lack of affordable housing units, housing costs in Auburn have increased significantly in the past decade. As seen across King County, rising housing costs contribute to housing cost burden and severe housing cost burden, which put substantial financial strains on low- and moderate-income households.

Housing Affordability in Auburn

Table 38 provides insight into the changes in housing costs in Auburn over the last ten years of available ACS data (2012–2022). As of 2022, the median rent in Auburn was \$1,425, and the median home value was \$460,100. In the past decade, the median contract rent increased 69 percent, and the median home value increased 79 percent.

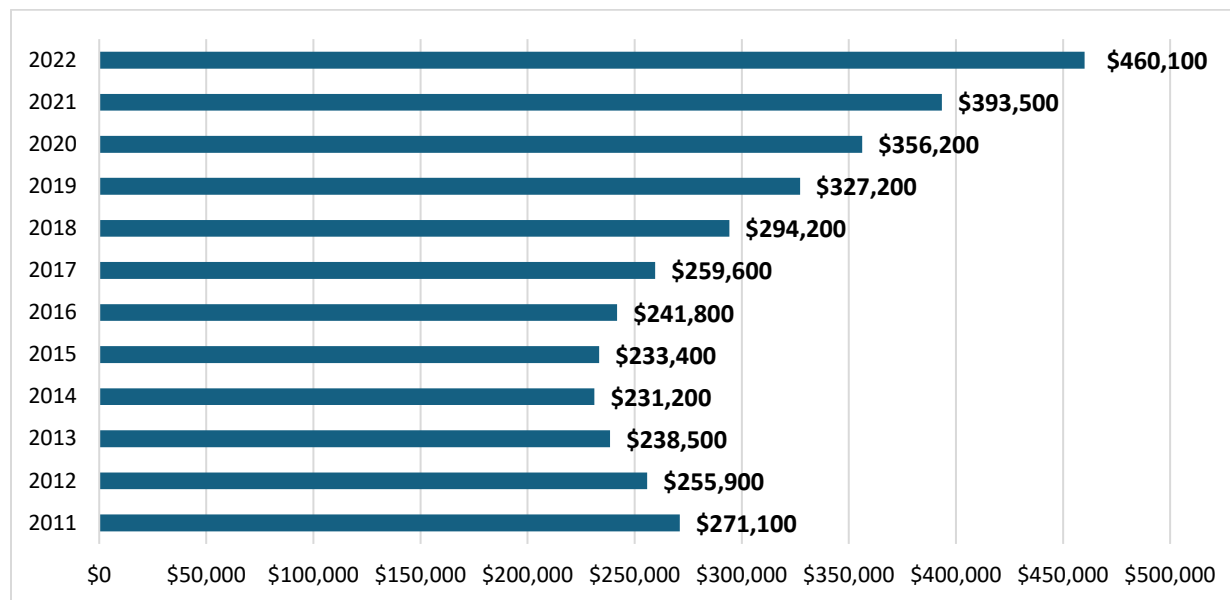
Table 38: Cost of Housing in Auburn

	Base Year: 2012	Most Recent Year: 2022	% Change
Median home value	\$ 255,900	\$ 460,100	79%
Median contract rent	\$840	\$1,425	69%

Data Source: 2008–2012 ACS (Base Year), 2018–2022 ACS (Most Recent Year).

Figure 29 depicts the annual change in median home value from 2012 to 2022. Notably, home values decreased from 2011 to 2014. However, home values began to increase in 2015 and have increased each year. The highest growth occurred between 2021 and 2022, where the growth rate was 17 percent. This trend can be seen broadly in King County and the nation as home values increased in the years following the COVID-19 pandemic.

Figure 29: Annual Median Home Values in Auburn



Data Source: 2011–2022 ACS.

Table 39 provides information on how much Auburn residents pay for rent monthly. In 2022, 35 percent of Auburn renters paid more than \$2,000 for rent each month, and 28 percent of renter households spent between \$1,500 and \$1,999 on rent. The means that nearly 63 percent of Auburn households paid more than the median rent each month. Finally, 17 percent of Auburn residents paid less than \$1,000 on rent.

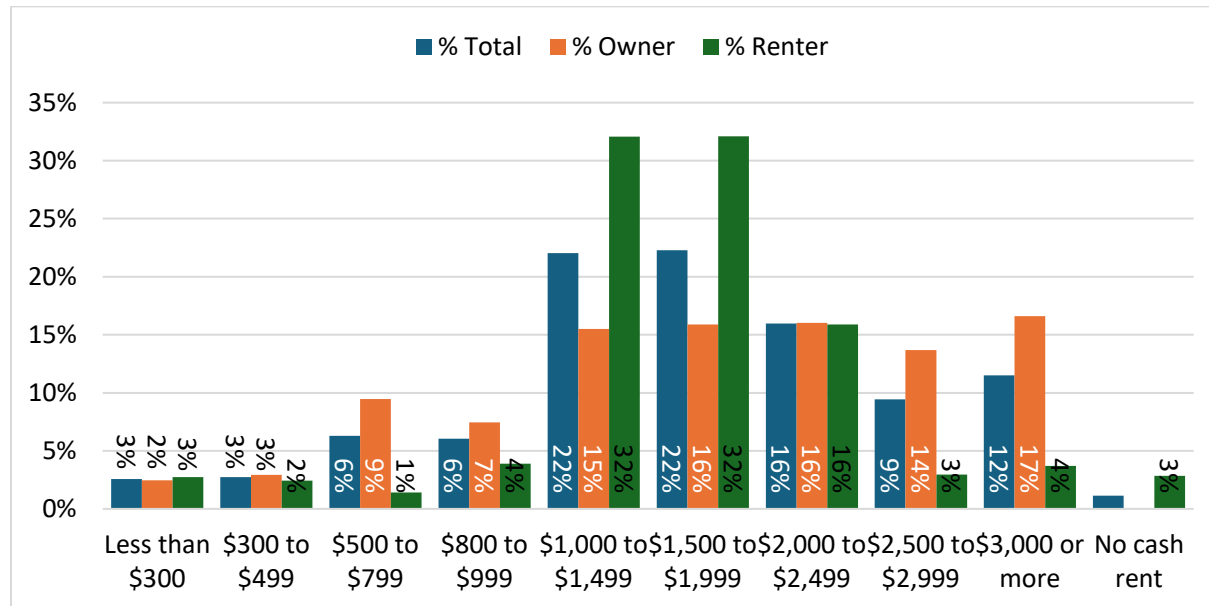
Table 39: Rent Paid in Auburn

Rent Amount Paid	# of Households	% of Households
No cash rent	439	1%
Less than \$500	1,621	6%
\$500–\$999	3,318	11%
\$1,000–\$1,499	5,549	19%
\$1,500–\$1,999	8,118	28%
\$2,000 or more	10,311	35%
Total	29,356	100%

Data Source: 2018–2022 ACS.

To go further, Figure 30 compares monthly housing costs among owner and renter households in Auburn in 2022. The greatest share of renters spent between \$1,000 and \$1,999 on housing costs (62 percent). The greatest share of owners (17 percent) spent more than \$3,000 on housing costs. Overall, owner households are more represented on the ends of the cost spectrum, meaning they are more likely to spend either less than \$1,000 or more than \$3,000 on housing costs per month. On the other hand, renters are most represented in the middle cost ranges, with most renters spending between \$1,000 and \$3,000 on housing costs.

Figure 30: Monthly Housing Costs by Tenure



Data Source: 2018–2022 ACS.

Table 40 provides data on the number of housing units that are affordable to households at different income brackets in 2020. Forty-two percent were affordable to households earning more than 81 percent AMI. That means that the remaining 58 percent of units were affordable to extremely low-, low- and moderate-income households: 25 percent of units were affordable to moderate-income households, 29 percent of units were affordable to low-income households, and just 4 percent of units were affordable to extremely low-income households.

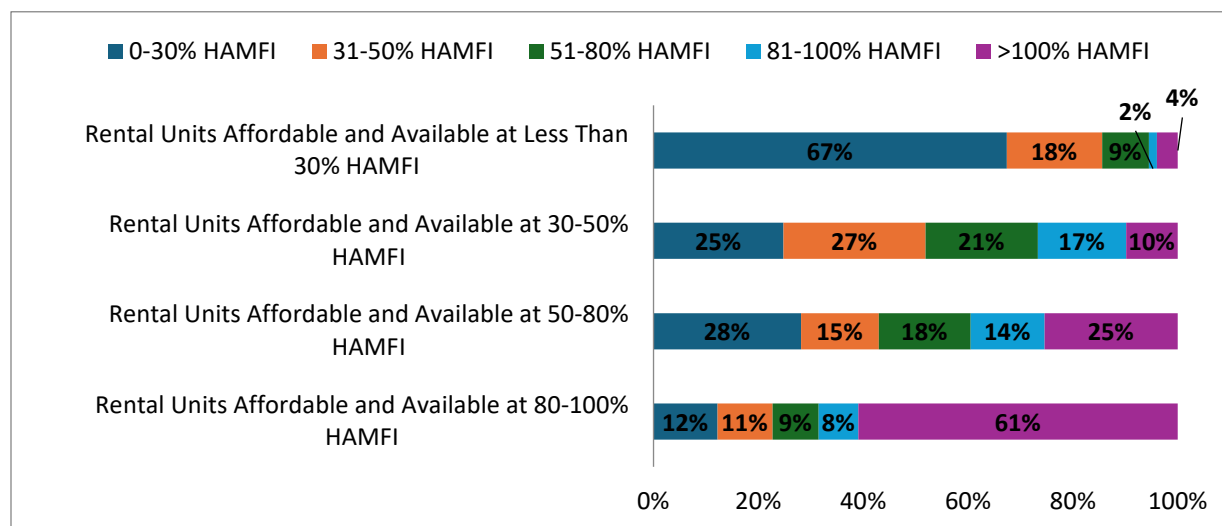
Table 40: Share of Units Affordable to Households by Income Level and Tenure

AMI Category	Renter Units	Owner Units	Total Units
Less than 30% AMI	1,240	0	1,240
31–50% AMI	4,920	3,485	8,405
51–80% AMI	4,469	2,920	7,389
Greater than 81% AMI	1,185	11,007	12,192
Total	11,814	17,412	29,226

Data Source: 2016–2020 CHAS.

However, the presence of affordable units does not ensure their availability for households who need them. Figure 31 illustrates the percentage of rental units affordable at different income levels by the income level of the households comprising them. Households occupying units that they cannot afford indicates that they are experiencing housing cost burden or severe housing cost burden. For instance, Figure 31 illustrates that 25 percent of occupants of units affordable to low-income households are occupied by extremely low-income households. Similarly, 43 percent of units affordable to moderate-income households are occupied by low- and extremely low-income households. Overall, this figure underscores the lack of available, affordable housing and rising housing costs.

Figure 31: Percentage of Rental Units Occupied at Different Affordability Categories



Data Source: 2016–2020 CHAS.

Lastly, Table 41 provides the HUD FMRs for various unit sizes in Auburn. FMRs are used to determine payment standard amounts for various HUD housing programs and generally represent the estimated cost to rent a moderately priced unit in a local housing market.

Table 41: HUD FMR and HOME Rents

Monthly Rent (\$)	Efficiency (No Bedrooms)	1-Bedroom	2-Bedroom	3-Bedroom	4-Bedroom
FMR	\$2,042	\$2,100	\$2,455	\$3,297	\$3,847
High HOME rent	\$1,539	\$1,650	\$1,982	\$2,282	\$2,525
Low HOME rent	\$1,198	\$1,284	\$1,541	\$1,781	\$1,987

Data Source: 2023 HUD FMR and HOME Rents.

Condition of Housing

Introduction

In addition to housing cost and availability, the condition of currently available housing provides important information on the stability and safety of Auburn residents.

To assess housing condition, Auburn analyzed 2022 ACS data, which captures information on housing units with at least one of the following “selected conditions:”

1. Lacks complete plumbing facilities.
2. Lacks complete kitchen facilities.
3. Has more than one person per room.
4. Monthly housing costs exceed 30 percent of household income.

This section uses the following definitions:

- **Standard condition:** A standard housing unit that meets HUD Housing Quality Standards and state and local codes. This includes plumbing and adequate kitchen facilities.
- **Substandard condition:** A substandard housing unit that does not meet state and local building, fire, health, or safety codes; presents health and safety issues to occupants; and is not structurally and financially qualified for rehabilitation.
- **Substandard condition but suitable for rehabilitation:** A substandard unit that is in poor condition but is both structurally and financially able to be rehabilitated.

Assessment of Housing Conditions

Table 42 depicts the number of occupied residential units with varying numbers of housing conditions in 2022. Notably, the majority of owner-occupied housing units (73 percent) had no selected housing conditions, while the majority of renter-occupied housing units (49 percent) had at least one selected housing condition, meaning that renter households are more likely to experience either housing cost burden, crowding, or substandard living conditions. No Auburn residents reported having more than three selected conditions.

Table 42: Condition of Units

Condition of Units	Owner-Occupied		Renter-Occupied	
	Number	%	Number	%
With one selected condition	4,936	26%	6,033	49%
With two selected conditions	88	0%	831	7%
With three selected conditions	0	0%	29	0%
With four selected conditions	0	0%	0	0%
No selected conditions	13,736	73%	5,334	44%
Total	18,760	100%	12,227	100%

Data Source: 2018–2022 ACS.

Table 43 presents the age of residential units of renter- and owner-occupied housing. The age of the structure can indicate the risk of lead-based paint exposure and the safety and suitability of the unit overall.

In 2020, the percentage of units at different ages appeared similar for renter- and owner-occupied housing units. 59 percent of renter-occupied units were built after 1980, while 66 percent of owner-occupied units were built after 1980. Owner households were, however, more likely to live in units built in 2000 or later than renter households. Those figures are 35 percent and 25 percent, respectively.

Table 43: Year the Unit Was Built

Age of Unit	# Owner-Occupied	% Owner-Occupied	# Renter-Occupied	% Renter-Occupied
2000 or later	6,598	35%	3,072	25%
1980–1999	5,783	31%	4,217	34%
1950–1979	5,420	29%	4,223	35%
Before 1950	959	5%	715	6%
Total	18,760	100%	12,227	100%

Data Source: 2018–2022 ACS.

Table 44 provides additional information on units built prior to 1980 occupied by households with at least one child aged six years or younger in 2020. Federal legislation banning the use of lead-based paint was enacted in 1978, meaning households built prior to 1980 could contain lead-based paint, which poses a health risk to inhabitants. In 2020, 8 percent of owner households and 6 percent of renter households with children six years and under present lived in a unit built prior to 1980.

Table 44: Year the Unit Was Built

Age of Unit	# Owner-Occupied	% Owner-Occupied	# Renter-Occupied	% Renter-Occupied
Units built before 1980	4,959	42%	6,180	36%
Units built before 1980 with children 6 years and under present	980	8%	990	6%
Total units	11,815	100%	17,405	100%

Data Source: 2018–2022 ACS.

Homeless Facilities and Services

Introduction

Shelter and housing options for people experiencing homelessness are a vital part of Auburn's housing and community development efforts.

The City of Auburn operates both a day and a night shelter for individuals facing homelessness, funded by city resources. Between January 8, 2024, and September 23, 2024, the shelter checked in 396 clients, with the highest number of check-ins occurring in April (172). The shelter provides 35 beds, with the capacity to expand to 55 beds as needed. The shelter also includes 16 safe parking spaces.

In addition, KCHRA, the Seattle/King County CoC, provides housing, shelter, and supportive services to people experiencing homelessness in Auburn. The next sections include data on the number of beds and units available in Auburn for those experiencing homelessness through KCRHA.

CoC Housing and Shelter Terms

The following section uses specific terms to refer to housing and shelter for people experiencing homelessness, including:

- **Emergency shelter:** Temporary shelter for people experiencing homelessness. Emergency shelter is typically provided for a limited period of time such as 90 days.
- **Permanent supportive housing:** Permanent housing paired with supportive services to assist chronically homeless individuals and families. HUD defines “chronically homeless” as an individual with a disability who lives in a place not meant for human habitation, a shelter, or an institutional care facility. Chronically homeless individuals must have been living in any of these situations for at least 12 months or on four separate occasions over the past three years.
- **Rapid rehousing:** A form of permanent housing that provides short-term or medium-term rental subsidy and supportive services to quickly move people experiencing homelessness into permanent housing.
- **Transitional housing:** Temporary housing with supportive services to help people transition from homelessness to permanent housing. Transitional housing is usually provided for anywhere between two weeks and 24 months.
- **Other permanent housing:** Includes other forms of permanent housing that are not considered permanent supportive housing or rapid rehousing. It includes housing only as well as housing with supportive services.

Facilities Targeted to People Experiencing Homelessness

Table 45 provides data on the number of beds and units available to various subpopulations by program type through KCRHA. In 2023, there were 307 beds available through KCRHA in Auburn. 111 beds were emergency shelter beds, 36 were transitional housing beds, and 79 were permanent supportive housing beds. Of note, most emergency shelter beds (77 percent) were targeted to households with only adults. However, most transitional beds (80 percent) were

targeted to households with adults and children. Also noted in the table, 52 permanent supportive housing beds were targeted to chronically homeless households, and 29 were targeted to veterans.

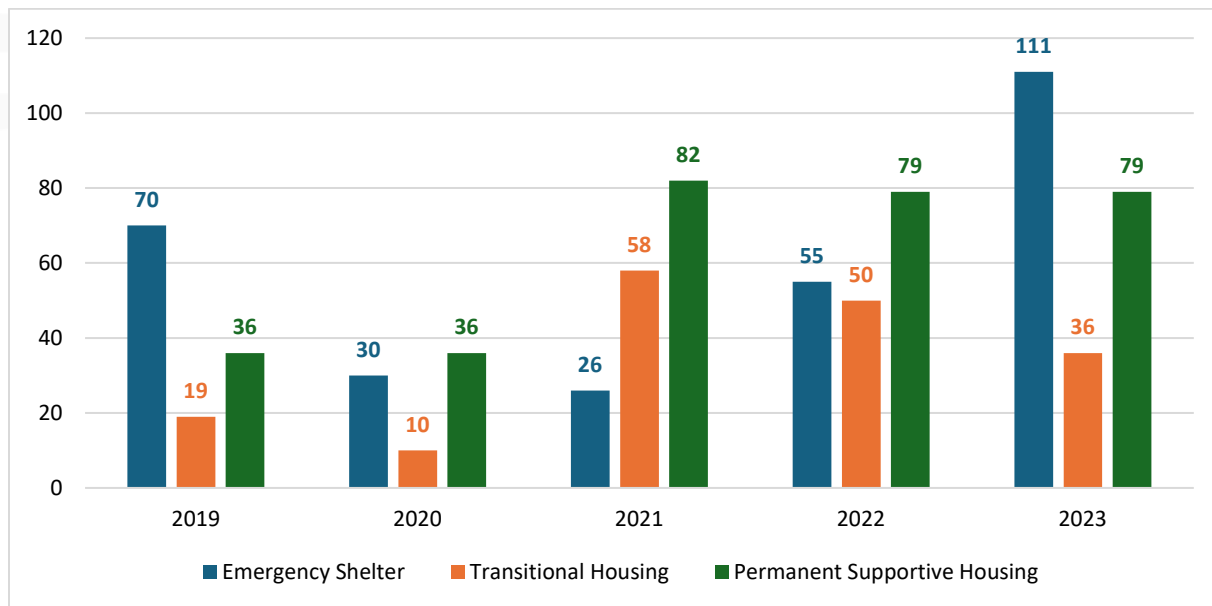
Table 45: Current Unit and Bed Inventory

Targeted Subpopulations	Emergency Shelter Beds		Transitional Housing Beds	Permanent Supportive Housing Beds	
	Year-Round Beds (Current & New)	Voucher/Seasonal /Overflow Beds	Current & New	Current & New	Under Development
Households with adult(s) and child(ren)	25	0	30	40	N/A
Households with only adults	86	0	6	39	N/A
Chronically homeless households	0	0	0	52	N/A
Veterans	0	0	0	29	N/A
Unaccompanied youth	0	0	0	0	N/A

Data Source: 2023 Housing Inventory Count.

KCRHA also provided historical data on the number of emergency shelters, transitional housing, and permanent supportive housing beds available in Auburn as counted in the Housing Inventory Count. Figure 32 indicates that in the past four years, emergency shelter beds have increased in availability by 59 percent. Permanent supportive housing beds have increased by 119 percent. Transitional housing beds have increased in availability since 2019 but decreased by 28 percent from 2022 to 2023.

Figure 32: Total Year-Round Beds by Program Type



Data Source: 2023 Housing Inventory Count.

Strategic Plan

SP-05 Overview

Strategic Plan Overview

The City of Auburn's strategic plan is based on the assessment of our community's needs as identified in this Consolidated Plan. The strategic plan will cover the following topics:

- **Geographic priorities:** Based on the analysis of needs, the area in Auburn with the greatest need lies along Auburn's Valley neighborhood which runs parallel to HWY 167 in the middle of the city. Even though there is a greater need in the Valley, the City has determined not to set priorities on that geographic basis: rather, residents in all areas of the City have priority needs.
- **Priority needs:** This section will explain the rationale for the decided priorities based on data, citizen participation, consultations with community partners and stakeholders and other assessments.
- **Influence of Market Conditions:** The City's housing strategy will indicate how the characteristics of the housing market influenced the City's decisions on how to allocate funds to support the preservation and development of affordable housing options for residents.
- **Anticipated Resources:** The City has several anticipated resources that will assist in the delegation of funds as well as determining strategies and goals.
- **Institutional Delivery Structure:** This section describes organizations that will carry out the identified objectives outlined in the Strategic Plan.
- **Goals:** The section will provide an explanation of the objectives intended to initiate and complete through the duration of the Consolidated Plan. Each objective identifies proposed accomplishments and outcomes using the provided Goal Outcome Indicators template. Auburn's desired outcomes for each goal are impacted by many factors, including the larger economy, shifts in local funding patterns, and resources available.
- **Public Housing:** This section explains the needs of public housing residents and the objectives established in the Strategic Plan to meet those needs.
- **Barriers to Affordable Housing:** This section identifies the strategies for removing or ameliorating any negative effects of public policies that serve as barriers to affordable housing in Auburn as identified in the Market Analysis section of the Consolidated Plan.
- **Homelessness Strategy:** This section describes Auburn's strategy for reducing homelessness through outreach, intervention, and homeless prevention services.
- **Lead-Based Paint Hazards:** This section outlines the City's proposed actions to evaluate and reduce lead-based paint hazards and the policies/programs that will be implemented to address the issue.
- **Anti-Poverty Strategies:** This section will summarize the City's goals, programs, and policies for reducing family poverty.
- **Monitoring:** This section will identify the standards and procedures the City will use to monitor sub-recipients to ensure long-term compliance with program and comprehensive planning requirements.

Within this context, the Consolidated Plan strategic plan intends to focus on two broad priority areas:

- Affordable Housing
- Homelessness

The following context will detail the highest priority need, as well-established goals and objectives.

SP-10 Geographic Priorities - 91.415, 91.215(a)(1)

Geographic Area

General Allocation Priorities

Describe the basis for allocating investments geographically within the city

Due to the fact that low/moderate-income individuals and families in need of supportive services reside throughout all geographic regions of the city of Auburn, geographic boundaries will not be used as a basis for allocating investments.

SP-25 Priority Needs - 91.415, 91.215(a)(2)

Priority Needs

Table 4 – Priority Needs Summary

1	Priority Need Name	Affordable Housing
	Priority Level	High
	Population	Extremely Low / Low Moderate / Large Families / Families with Children / Elderly / Public Housing / Residents / Chronic Homelessness / Individuals / Families with Children / Chronic Substance Abuse / Veterans / Frail Elderly / Persons with Mental Disabilities / Persons with Physical Disabilities / Victims of Domestic Violence
	Geographic Areas Affected	City-wide
	Associated Goals	1. Keep people who are currently housed from entering homelessness. 2. Maintain dignified and healthy housing. 3. Deliver supportive services such as addiction and mental health treatment, job training, financial well-being, and food security to low-income populations that are housing cost burdened. 4. Provide targeted support to vulnerable populations such as senior citizens, veterans, people with disabilities, and homeless individuals who desire a transition into housing. 5. Partn with other agencies and organizations that are working towards housing stability and enhancing affordable housing opportunities.

Description	The City of Auburn will: 1. Engage in housing activities, collaborations, and partnerships to enhance opportunities for the creation and preservation of affordable housing. 2. The City will plan for and support housing strategies and initiatives designed to affirmatively further increase access to housing and housing programs. 3. Support actions that are intended to help people access housing. 4. Support actions that are intended to enhance housing stability for those who are at risk of entering homelessness.
Basis for Relative Priority	The City of Auburn continues to experience a significant increase in its population, number of households, housing costs and median income. Although household numbers and median income continues to increase, the City continues to experience housing problems and an increasing housing need for its residents which is common throughout the South King County region. South King County has experienced consistently increasing housing costs over the past five years, which has contributed to housing instability and housing cost burdens for low- to moderate-income households. Residents who are low income or extremely low income suffer from cost burdens greater than 30-50% for both renters and homeowners and other housing problems such as overcrowding and substandard living conditions. These cost burdens can result in eviction, foreclosure and even homelessness for many families. To address these issues the city intends to support programs offered by agencies and the city itself that provide services to alleviate financial crisis, establish financial stability, address barriers to housing, and prevent eviction or homelessness. The city will also continue to explore ways to ensure that seniors, veterans and disabled residents have equal access to safe, affordable, dignified and healthy housing.

Narrative (Optional)

These strategic priorities identified are a direct conclusion of the data collected and assessment conducted from the Needs Assessment as well as an enhancement of the previous Consolidated Plan.

2	Priority Need Name	Reducing Homelessness
	Priority Level	High
	Population	Extremely Low / Low / Large Families / Families with Children / Elderly / Rural / Chronic Homelessness / Individuals / Families with Children / Mentally Ill / Chronic Substance Abuse / Veterans / Victims of Domestic Violence / Unaccompanied Youth
	Geographic Areas Affected	Citywide
	Associated Goals	Reducing homelessness / Providing temporary shelter / Providing associated supportive services
	Description	We value working together with collective impact to continue the work to develop a cohesive and coordinated homeless system; we invest in projects that ensure that those are experiencing homelessness from all sub-populations are treated with dignity and respect; are returned to permanent housing as quickly as possible; receive strength-based services that emphasize recovery, as needed; are supported to graduate from temporary homeless housing as rapidly as possible, and from permanent supportive housing as soon as they are ready; receive only what they need to be returned to housing quickly and to be as self-reliant as possible.
	Basis for Relative Priority	Homelessness is an issue that affects communities across the United States and has been increasing in King County over the past five years. As regional housing costs have increased, we see a correlation to increasing numbers of individuals and families in our community experiencing unsheltered homelessness. The specific number of individuals experiencing homelessness in Auburn, as part of the overall King County estimate of 16,385, has not yet been released by King County. The data referenced is based on the Point in Time Count, which is conducted annually but may not provide detailed breakdowns at the city level in all cases, especially in regions where the data is still being processed or anonymized for privacy reasons. The City of Auburn collects and tracks its own homelessness data to assess where resources are most needed as homelessness continues to grow. From January 2024 to November 1st, 2024, Auburn staff made contact with 423 homeless individuals. Of those individuals the majority of them are white males between the ages of 35-54. The shared outcomes King County and cities are focusing on include reducing the number of households becoming homeless, shortening the duration of homelessness, increasing permanent housing exits, and reducing re-entry rates. These goals reflect broader efforts to both prevent homelessness from occurring and ensure that those who do experience it are supported in their journey toward stable housing.

SP-35 Anticipated Resources - 91.420(b), 91.215(a)(4), 91.220(c)(1,2)

Introduction and Anticipated Resources

The City of Auburn anticipates funding for the duration of the Consolidated Plan from CDBG and City of Auburn General Fund allocation for Human Services

Program	Source of Funds	Uses of Funds	Expected Amount Available Year 1				Expected Amount Available Remainder of ConPlan	Narrative Description
			Annual Allocation \$	Program Income \$	Prior Year Resources	Total		
CDBG	public - federal	Acquisition Admin and Planning Housing Public Services	Apx. \$619,474	0	0	Apx. \$619,474	Apx. \$3,097,370	Resources anticipated based on 2024 estimated entitlement. Funds to be directed into (1) programs, initiatives, services, partnerships, and efforts that focus on creation, preservation and/or access to affordable housing, and (2) programs, initiatives, services, partnerships and other efforts that support the City's desire to own and operate a day and night shelter, provide needed services to those experiencing homelessness, to provide needed services to those who are at risk of experiencing homelessness, and/or to provide service and support to those who are exiting homelessness.

Anticipated Resources Continued..

Program	Source of \$	Use of Funds	Expected Amount Available Year 1				Expected Amount Available Remainder of the Con Plan	Narrative Description
			Annual Allocation	Program Income	Prior Year Resources	Total		
General Fund	Public-local	Public Services City funded programs & Initiatives	Apx. \$3,778,253	0	0	Apx. \$3,778,253	Apx. \$18,891,266	Anticipated general fund allocation to human services in the community across various programs and initiatives
General fund	Public-local & Federal	Public Services City Funded Programs & Initiatives	Apx. \$373,906	0	0	Apx. \$373,906	Apx. \$1,869,534	Anticipated use of existing ARPA & Opioid Settlement funds
Total						Apx. \$4,771,633	Apx. \$23,858,170	

Table 5 and 7 - Anticipated Resources

Explain how federal funds will leverage those additional resources (private, state and local funds), including a description of how matching requirements will be satisfied

The City of Auburn relies on CDBG funds to support activities in efforts to support low to moderate income populations in the community primarily in the areas of affordable housing and homelessness. However, CDBG funds are not the only source of funds the City uses to support public services and community projects and activities. The City's general funds are used to support public services in addition to CDBG funds. CDBG funds do not require matching funds.

Historically, federal funds have been used to create and maintain a Housing Home Repair program that has typically served between 60 and 70 low-income households per year. This program provides needed repairs to restore such basic needs as hot and/or running water and heat as well as fixing leaky roofs, installing ADA ramps and bathroom fixtures, and replacing broken windows and doors. It is important to emphasize that this program would likely have never been launched had it not been for federal funding support. This highly successful program has expanded over the years and has led to additional local funding support to ensure that the City is was to support more repairs and serve more vulnerable households. The City is now ready to embark upon an effort to make this program fully funded by local dollars and to now use federal funds to help support other community needs. The City is hopeful to use federal funds to seed another successful program that will serve low-income households or those who are experiencing homelessness.

If appropriate, describe publicly owned land or property located within the state that may be used to address the needs identified in the plan

Discussion

The City of Auburn will explore possibilities to utilize publicly owned land to address needs identified in the consolidated plan. The City is engaged in investing \$6 million dollars to buy a commercial property that it has been leasing for the last 5 years. This property houses the City operated day and night shelter, food bank, community court, resource hub, and non-profit tenants that provide various types of services. The City intends to further build out this property to provide additional community services that target low-income populations.

SP-40 Institutional Delivery Structure - 91.415, 91.215(k)

Explain the institutional structure through which the jurisdiction will carry out its consolidated plan including private industry, non-profit organizations, and public institutions.

Responsible Entity	Responsible Entity Type	Role	Geographic Area Served
AUBURN	Government	Planning	Jurisdiction

Table 6 - Institutional Delivery Structure

Assess Strengths and Gaps in the Institutional Delivery System

Strengths:

- Local, South King County and King County systems collaborate services to create a more integrated and comprehensive approach to avoid duplication in services.
- City of Auburn's engagement in regional collaborations supports larger solutions focused work on often-intractable issues such as affordable housing and homelessness.
- Population specific services such as seniors, children and families, culturally specific, and faith based are present throughout the community.
- City supported neighborhood and community collaboration events and projects.

Gaps:

- Affordable housing need in Auburn and region exceeds available supply
- Lack of authority to force delivery of services to individuals that aren't capable of advocating for themselves.
- Auburn makes numerous efforts to fill gaps in services throughout the region by supporting emergency service and other supportive service programs. However, as solutions are designed to serve an existing need or community, the community grows and so to does the need.
- Lack of programs or resources that provide mortgage assistance to low-income populations where there is a financial barrier to affordable housing ownership.

Homelessness Prevention Services	Available in the Community	Targeted to Homeless	Targeted to People with HIV
Homelessness Prevention Services			
Counseling/Advocacy	X	X	
Legal Assistance	X		
Mortgage Assistance	X ²		

² The City does not currently offer Mortgage Assistance but has an interest in developing this service using CDBG funds during the span of this Consolidated Plan.

Homelessness Prevention Services	Available in the Community	Targeted to Homeless	Targeted to People with HIV
Homelessness Prevention Services			
Rental Assistance	X	X	
Utilities Assistance	X		

Street Outreach Services			
Law Enforcement	X	X	
Mobile Clinics	X	X	
Other Street Outreach Services	X	X	

Supportive Services			
Alcohol & Drug Abuse	X	X	
Child Care	X		
Education	X	X	
Employment and Training	X	X	
Healthcare	X	X	
HIV/AIDS			
Life Skills	X		
Mental Health Counseling	X	X	
Transportation	X		
Other			

Table 7 - Homeless Prevention Services Summary

Describe the extent to which services targeted to homeless person and persons with HIV and mainstream services, such as health, mental health and employment services are made available to and used by homeless persons (particularly chronically homeless individuals and families, families with children, veterans and their families and unaccompanied youth) and persons with HIV within the jurisdiction

The City of Auburn has provided funding for, supported and collaborated with numerous homeless prevention and intervention service providers throughout the region. Additionally, the city has made investments with local funds to create and operate its own homeless shelter, service hub, food bank, community court, and day shelter. Considering homelessness prevention and intervention are high priorities in the City's Consolidated Plan, there are several systems in place to ensure services listed above are made available to and used by individuals and families experiencing homelessness.

- The City funds multiple shelter programs utilizing general fund dollars, including those that serve youth and young adults, individuals fleeing domestic violence, families, and single adults.
- The City recently invested \$6 million dollars of local funds to acquire the property upon which it's day and night shelter is located (as well as the food bank, community court, and resource service hub). This enables the city to make additional investments to help better serve the community and to have greater control over the long-term management of this property and resource asset.
- Most emergency service providers are centrally located in Auburn on major bus routes where individuals experiencing homelessness utilizing public transportation or are unfamiliar with the area can easily locate resources.
- King County's Mobile Medical Unit visits Auburn regularly and schedules are made visible at local homeless prevention and emergency assistance service provider's locations.
- The City coordinates with homeless outreach teams to network with agencies who work with and serve individuals experiencing homelessness. For example: Sound Mental Health's PATH Outreach team regularly visits the hospital, food banks, free meal sites and Auburn Library to make access to services easier for homeless persons.
- The City co-facilitates a monthly provider meeting for service providers in South King County serving individuals experiencing homelessness. These meetings provide training opportunities, networking and resource sharing, policy updates, and coordination on regional initiatives.

Describe the strengths and gaps of the service delivery system for special needs population and persons experiencing homelessness, including, but not limited to, the services listed above

Strengths:

- Partnerships of multi-service organizations that collaborate to integrate service delivery
- Funders who independently support and partner with anti-poverty service programs and organizations
- Dedicated volunteers and staff providing direct services to residents
- Central point of entry to access services
- Numerous opportunities for collaboration and integration of services amongst government and nonprofit entities
- Ownership and operation of a night and day shelter.
- Operation of a senior center
- Operation of veteran's services.

Gaps:

- Insufficient funding
- Competition and political pressure amongst service providers
- High turnover in direct service providers
- Insufficient access for individuals who are not English proficient
- Transportation
- Insufficient supply of affordable accessible housing
- Insufficient resources to support a household's desire to move from rental housing into home ownership.

Provide a summary of the strategy for overcoming gaps in the institutional structure and service delivery system for carrying out a strategy to address priority needs

To overcome gaps of the service delivery system, Auburn will continue to support and work collaboratively with human service providers in the region to ameliorate barriers to program accessibility as well as develop and implement systems and strategies to leverage their current resources while still providing optimal service to residents. The City will also continue to assess and evaluate programs and service delivery to ensure the community's needs are being met.

SP-45 Goals - 91.415, 91.215(a)(4)

Goals Summary Information

Sort Order	Goal Name	Start Year	End Year	Category	Geographic Area	Needs Addressed	Funding 5 Year Plan	Goal Outcome Indicator
1	Affordable Housing	2025	2029	Affordable Housing Public Housing Homeless Non-Homeless Special Needs	City of Auburn	Affordable Housing (Housing Stability)	CDBG: Apx. \$0 City Funding: Apx: \$690,000/yr Apx. Total: \$3,450,000	Public Service Activities for low/moderate income clientele (60 people)
2	Reducing Homelessness	2025	2029	Homeless	City of Auburn	Reducing Homelessness	CDBG: Apx. \$2,477,895 (\$495,579/yr) City Funding: Apx. \$15,441,265 (\$3,088,253/yr) Apx. Total: \$17,919,070 (\$3,583,814/yr)	Public Facility activities other than low/moderate income benefit: receive service that either [1] interrupts a loss of housing that would lead to homelessness (90 persons), or [2] migrates a person from shelter into stable housing through access to the Auburn Resource Center (200 persons) [3] shelter services through city funded programs (300 persons) [4] property repair that allows residents to remain stably housed (65 families) [5] Facility update to the ARC (1,560 persons) [6] Provide downpayment rent assistance to prevent homelessness (90 families) [7] Conduct a study to determine the possible location of a Tiny Village to house senior and/or homeless

								veterans in the City of Auburn (10 individuals benefit from housing through the creation of the village)
3	Community & Economic Development	2025	2029	Non-Homeless Special Needs Non-Housing Community Development	City of Auburn	Community & Economic Development	CDBG: \$123,894	Acquisition or improvement of one distressed property. Public amenities in improvement in a qualified census tract (2,000 people)
4	Planning and Administration	2025	2029	Administration	City of Auburn		CDBG: Apx. \$619,474 (\$123,894/yr)	Program Administration Costs

Table 8 – Goals Summary

Goal Descriptions

1	Goal Name	Affordable Housing
	Goal Description	The City of Auburn will engage in housing activities, collaborations, and partnerships to enhance opportunities for (1) the creation and preservation of affordable housing, or (2) programs that help low-income households to achieve home ownership, or (3) prevents currently housed individuals from entering homelessness, or (4) transitions individuals from being homeless into stable housing. The City will plan for and support strategies and initiatives designed to increase access to housing and housing programs.
2	Goal Name	Reducing Homelessness
	Goal Description	The City of Auburn will support Public Service activities that work toward the following outcomes: 1) reduce the number of households becoming homeless; 2) reduce the length of time that households are homeless; 3) increase the rate of exits to permanent housing; and 4) reduce the number of households that re-enter the homeless system after exit to permanent housing.
3	Goal Name	Community & Economic Development
	Goal Description	City of Auburn City Council, designated downtown as a blighted area due to aging infrastructure and properties. Downtown is also located within a qualified census tract. Opportunities exist for acquisition and enhancement and investment in public spaces within downtown Auburn that have the potential to reverse the impact of blight.
4	Goal Name	Planning and Administration
	Goal Description	General administration and project management

Estimate the number of extremely low-income, low-income, and moderate-income families to whom the jurisdiction will provide affordable housing as defined by HOME 91.315(b)(2)

Auburn does not directly receive HOME grant fun

SP-65 Lead-based Paint Hazards - 91.415, 91.215(i)

Actions to address LBP hazards and increase access to housing without LBP hazards

The City of Auburn includes language in its CDBG contracts that require agencies to comply with HUD Lead-Based Paint Regulations (24 CFR Part 35) issued pursuant to the Lead-Based Paint Poisoning Prevention Act (42 U.S.C. Sections 4831, et seq.) requiring prohibition of the use of lead-based paint whenever CDBG funds are used. In addition, the City notifies residents of potential lead-based paint hazards when it awards a Housing Repair grant. A copy of the pamphlet – "Protect Your Family from Lead In Your Home" is provided each Housing Repair client when the City conducts the initial inspection of their home.

The city takes additional measures when the age of the home indicates a possible presence of lead-based paint. Before housing repair work commences, the city contracts with a certified provider to undertake lead paint testing. When lead-based hazards are positively identified, the city works with the housing repair client and contractors certified in RRP Lead Abatement to implement the necessary mitigation and safety strategies.

How are the actions listed above integrated into housing policies and procedures?

Auburn's Housing Repair Program has established written procedures that incorporate all processes of LBP hazard mitigation listed above.

SP-70 Anti-Poverty Strategy - 91.415, 91.215(j)

Jurisdiction Goals, Programs and Policies for reducing the number of Poverty-Level Families

Over half of Auburn's households would qualify under federal guidelines as low/moderate income households. Auburn has one of the highest poverty rates among all the King County cities. Historically, data included in the Analysis of Impediments to housing show that low-income households are more likely to experience cost burden, multiple housing problems, and be concentrated in areas with poorer environmental health. The City of Auburn assumes that this finding will persist and will be included in King County's update to the Analysis of Impediments. These low-income households have limited financial resources at their disposal to use when faced with normal fluctuations in daily expenses and more serious life crises. Many of these households are precariously housed and several of them become homeless. Helping these residents retain or obtain housing, along with other supportive services that will help them get out of poverty, remain priority issues relative to the City's consideration for grant awards.

The City of Auburn's Human Services Department is developing strategies and systems to promote the City's efforts to reduce poverty and work in partnership with citizens, non-profit agencies, and other city departments to:

- Develop affordable housing opportunities
- Foster job growth and employment opportunities
- Support the delivery of human services

The ultimate goal of the City's Consolidated Plan is to reduce the number of people living in poverty in Auburn. In addition to complying with federal regulations and addressing a priority outlined in the Consolidated Plan, the City will give funding priority to programs which are consistent with the following anti-poverty strategy for resource allocation.

How are the Jurisdiction poverty reducing goals, programs, and policies coordinated with this affordable housing plan

The City of Auburn's supportive residents and leadership has contributed largely to the City's multiple efforts to pass initiatives that support preserving affordable housing, human service and self-sufficiency needs, economic development and address the needs of the lower income residents to ameliorate barriers to help them escape poverty.

The City's poverty reducing goals, programs and policies coordinate with the Consolidated Plan by giving funding priority and investing to:

- Emergency assistance programs
- Shelters and transitioning housing programs
- Homeless prevention and intervention programs
- Healthcare services for homeless and low-income residents
- Neighborhood revitalization programs
- Programs targeting underserved and special populations such as seniors, ethnic minorities, disabled, homeless and non-English speaking residents.

SP-80 Monitoring - 91.230

Describe the standards and procedures that the jurisdiction will use to monitor activities carried out in furtherance of the plan and will use to ensure long-term compliance with requirements of the programs involved, including minority business outreach and the comprehensive planning requirements

Where delivery of services is contracted to an outside agency, once CDBG funding is approved, City staff executes an agreement with any outside service providers. The agreement will include, among other general and specific conditions, the project goals and requirements. Grant agreements with project recipients will be required to submit reports at least quarterly detailing the number of Auburn residents served, level of service provided, and a demographic profile of the clients served. Grant recipients will be required to submit an annual report that explains the progress the agency made toward achieving its outcomes and output goals.

Grant agreements with recipients will be executed following the completion of the review of the project. Projects will be required to submit progress reports quarterly. If the project warrants additional reporting requirements (such as weekly payroll reports for proof of federal prevailing wage compliance), project monitoring will be increased accordingly. Projects will be monitored on a consistent, on-going basis by City staff. Telephone and/or in person contacts are made at least quarterly, depending upon the activity and issues associated with the individual project. On-site monitoring visits will be conducted upon grant recipients at least annually. Frequency of on-site visits will depend upon the amount of funds provided, history of contract compliance, and/or programmatic changes that may occur in the project in the service delivery of public service programs. City staff will review, prior to approval all vouchers and back up documentation for payment. Environmental, lead-based paint inspections and contractor debarment issues will be reviewed with agency project managers at the beginning of each project.

City staff will strive to help grant recipients complete their projects in a timely manner and in accordance with applicable rules and regulations.

When delivery service is provided directly by the city, data is collected and reported by means of the annual CAPER.

Annual Goals and Objectives

Expected Resources

AP-15 Expected Resources - 91.420(b), 91.220(c)(1,2)

Introduction

The City of Auburn anticipates funding for the duration of the Consolidated Plan from CDBG and City of Auburn General Fund allocation for Human Services

Anticipated Resources

Program	Source of Funds	Uses of Funds	Expected Amount Available Year 1				Expected \$ Available in ConPlan	Narrative Description
			Annual Allocation: \$	Program Income: \$	Prior Year Resources: \$	Total: \$		
CDBG	public - federal	Acquisition Admin and Planning Economic Development Housing Public Improvements Public Services	Apx. \$619,474	0	0	Apx. \$619,474	Apx. \$3,097,370	Resources anticipated based on 2024 estimated entitlement. Funds to be directed into (1) programs, initiatives, services, partnerships that focus on creation, preservation and/or access to affordable housing, and (2) programs, initiatives, services, partnerships and other efforts that support the City's desire to own and operate a day and night shelter, provide needed services to those experiencing homelessness, to provide needed services to those who are at risk of experiencing homelessness, and/or to provide service and support to those who are exiting homelessness.

Program	Source of Funds	Uses of Funds	Expected Amount Available Year 1				Expected \$ Available in ConPlan	Narrative Description
			Annual Allocation: \$	Program Income: \$	Prior Year Resources: \$	Total: \$		
General Fund	Public-local	Public Services City funded programs & Initiatives	Apx. \$3,778,253	0	0	Apx. \$3,778,253	Apx. \$18,891,266	Anticipated general fund allocation to human services in the community across various programs and initiatives
General fund	Public-local & Federal	Public Services City Funded Programs & Initiatives	Apx. \$373,906	0	0	Apx. \$373,906	Apx. \$1,869,534	Anticipated use of existing ARPA & Opioid Settlement funds
Total						Apx. \$4,771,633	Apx. \$23,858,170	

Table 9 - Expected Resources – Priority Table

Explain how federal funds will leverage those additional resources (private, state and local funds), including a description of how matching requirements will be satisfied

The City of Auburn relies on CDBG funds to support activities in efforts to support low to moderate income populations in the community primarily in the areas of affordable housing and homelessness. However, CDBG funds are not the only source of funds the City uses to support public services and community projects and activities. The City's general funds are used to support public services in addition to CDBG funds. CDBG funds do not require matching funds.

Historically, federal funds have been used to create and maintain a Housing Home Repair program that has typically served between 60 and 70 low-income households per year. This program provides needed repairs to restore such basic needs as hot and/or running water and heat as well as fixing leaky roofs, installing ADA ramps and bathroom fixtures, and replacing broken windows and doors. It is important to emphasize that this program would likely have never been launched had it not been for federal funding support. This highly successful program has expanded over the years and has led to additional local funding support to ensure that the City wants to support more repairs and serve more vulnerable households. The City is now ready to embark upon an effort to make this program fully funded by local dollars and to now use federal funds to help support other community needs. The City is hopeful to use federal funds to seed another successful program that will serve low-income households or those who are experiencing homelessness.

If appropriate, describe publicly owned land or property located within the state that may be used to address the needs identified in the plan.

CDBG funds do not require matching funds.

Discussion

The City of Auburn will explore possibilities to utilize publicly owned land to address needs identified in the consolidated plan. The City is engaged in investing \$6 million dollars to buy a commercial property that it has been leasing for the last 5 years. This property houses the City operated day and night shelter, food bank, community court, resource hub, and non-profit tenants that provide various types of services. The City intends to further build out this property to provide additional community services that target low-income populations.

AP-20 Annual Goals and Objectives - 91.420, 91.220(c)(3)&(e)

Goals Summary Information

Sort Order	Goal Name	Start Year	End Year	Category	Geographic Area	Needs Addressed	Funding	Goal Outcome Indicator
1	Affordable Housing	2025	2029	Affordable Housing Public Housing Homeless Non-Homeless Special Needs	City of Auburn	Access to, and availability of Affordable Housing / Housing Stability	CDBG: Apx. \$0 City Funding: Apx: \$690,000 Apx. Total: \$690,000	Public Service Activities for low/moderate income clientele (60 people)
2	Addressing Homelessness	2025	2029	Homelessness	City of Auburn	Reducing Homelessness	CDBG: Apx. \$495,579 City Funding: Apx: \$3,088,253 Apx. Total: \$3,583,832	Public Facility activities other than low/moderate income benefit: receive service that either [1] interrupts a loss of housing that would lead to homelessness (90 persons), or [2] migrates a person from shelter into stable housing through access to the Auburn Resource Center (200 persons) [3] shelter services through city funded programs (300 persons) [4] property repair that allows residents to remain stably housed (65 families) [5] Facility update to the ARC (1,560 persons) [6] Provide downpayment rent assistance to prevent homelessness (90 families) [7] Conduct a study to determine the possible location of a Tiny

								Village to house senior and/or homeless veterans in the City of Auburn (10 individuals benefit from housing through the creation of the village)
3	Community & Economic Development	2025	2029	Non-Homeless Special Needs Non-Housing Community Development	City of Auburn	Community & Economic Development	CDBG: \$123,894	Acquisition or improvement of one distressed property. Public amenities in improvement in a qualified census tract (2,000 people)
4	Planning and Administration	2025	2029	Administration	NA		CDBG: Apx. \$123,894	Program Administration Costs

Table 10 – Goals Summary

Goal Descriptions

1	Goal Name	Affordable Housing
	Description	The City of Auburn will engage in housing activities, collaborations, and partnerships to enhance opportunities for (1) the creation and preservation of affordable housing, or (2) programs that help low-income households to achieve home ownership, (3) prevents currently housed individuals from entering homelessness, or (4) transitions individuals from being homeless into stable housing. The City will plan for and support housing strategies and initiatives designed to increase access to housing and housing programs.
2	Goal Name	Addressing Homelessness
	Goal Description	The City of Auburn will support activities that work toward the following outcomes: 1} reduce the number of households becoming homeless; 2} reduce the length of time that households are homeless; 3} increase the rate of exits to permanent housing; and 4} reduce the number of households that re-enter the homeless system after exit to permanent housing.
3	Goal Name	Community & Economic Development
	Goal Description	The City of Auburn City Council, designated downtown as a blighted area due to aging infrastructure and properties. Downtown is also located within a qualified census tract. Opportunities exist for acquisition and enhancement and investment in public spaces within downtown Auburn that have the potential to reverse the impact of blight.
4	Goal Name	Planning and Administration
	Goal Description	General administration and project management.

AP-35 Projects - 91.420, 91.220(d)

Introduction

Auburn's Annual Action Plan provides descriptions of proposals of how funds will be prioritized to achieve goals identified in the Consolidated Plan. Projects funded by the City will address the priority needs of aiding prevent homelessness, ensure affordable housing and a suitable living environment. Projects and programs are selected through a competitive application process to ensure optimal quality services is provided to the community in use of the funds.

#	Project Name
1	Tiny Village Development Study
2	Public Facility Improvement
3	Home Repair Program
4	Downpayment Assistance
5	Rent Assistance
6	Service Providers – addressing affordable housing
7	Planning and Administration

Table 11 – Project Information

Describe the reasons for allocation priorities and any obstacles to addressing underserved needs

The allocations proposed are based on the assessment of Auburn's needs, the resources available in the region, the availability of other funds also focusing on needs, and the purpose of Consolidated Plan funds.

Should CDBG revenues exceed the proposed amount, the additional resources shall be allocated in accordance with the following guidelines:

- Fill gaps in human services primarily healthcare, homeless prevention and intervention and affordable housing accessibility.
- Increase funding for community development projects and activities including housing, community facilities and economic development.
- Funding for rehabilitation of the Auburn Resource Center

If increases are not significant enough to enhance projects or activities funds may be placed in contingency for programming later in the year or the following program year.

Should CDBG revenues come in lower than anticipated; the City will continue with its planned policy and to the extent allowed reduce funding allocations in homeowner rehabilitation projects and administrative activities.

Should CDBG revenues come in less than originally proposed, the City will continue managing the programs with decreased resources to the extent possible and reduce funding allocations in administrative activities and not public services.

AP-50 Geographic Distribution - 91.420, 91.220(f)

Description of the geographic areas of the entitlement (including areas of low-income and minority concentration) where assistance will be directed. The City of Auburn intends on distributing funds throughout the jurisdiction.

Geographic Distribution

Target Area	Percentage of Funds
City of Auburn	100%

Table 12 - Geographic Distribution

Rationale for the priorities for allocating investments geographically

Due to the fact that all areas of Auburn have low to moderate income families dispersed throughout the entire City, the City intends on investing throughout the entire jurisdiction to ensure that all populations throughout the region have access to beneficial programs and housing opportunities.

Discussion

None

AP-85 Other Actions - 91.420, 91.220(k)

Introduction

The City of Auburn will continue to work with service providers throughout the region in coordination to develop systems and strategies to promote their efforts in providing optimal, easily accessible services. The City will work to reduce the number of families in poverty, sustain relationships with employment training agencies, and work to preserve and increase the affordable housing stock in our community.

Actions planned to address obstacles to meeting underserved needs

By establishing a strong foundation of networks between local service providers, stakeholders and government agencies through committees and coalitions, the City will work in partnership to address obstacles and ameliorate barriers to meeting underserved needs. The collaborated organizations will develop detailed strategic plans that will delegate tasks, build systems and ongoing assessment of service delivery.

Actions planned to foster and maintain affordable housing

The City will continue to maintain the affordability of decent housing for low-income Auburn residents by fully funding the City's Housing Repair Program with local funds. The program provides emergency repairs necessary to maintain safe housing for at least 60 Auburn homeowners per year, many of whom are senior citizens and/or are experiencing barriers to safely accessing their homes due to physical disabilities.

In addition to Auburn's Housing Repair program, the City will maintain affordable housing by continuing to engage and partner with coalitions, committees and other government agencies to integrate and enhance efforts on the issue.

Auburn has been participating in multiple robust regional efforts to coordinate affordable housing activities in King County. One of these efforts, The South King Housing and Homelessness Partners (SKHHP) is a coalition formed by an interlocal agreement between the jurisdictions of Auburn, Burien, Covington, Des Moines, Federal Way, Kent, Normandy Park, Renton, Tukwila, and King County. The agreement allows for South King County jurisdictions to work together and share resources in order to effectively address affordable housing and homelessness. This collaborative model is based on similar approaches used in Snohomish County, East King County, and other areas of the country. The purpose of the coalition is to increase the available options for South King County residents to access affordable housing and to preserve the existing affordable housing stock.

Additionally, the City of Auburn has been an active participant in the recently formed Affordable Housing Committee of the Growth Management Planning Council (GMPC), with a City Councilmember sitting on the Committee as a voting member. The Affordable Housing Committee serves as a regional advisory body to recommend action and assess progress toward implementing the Regional Affordable Housing Task Force (RAHTF) Five Year Action Plan. The Committee functions as a point in coordinating and owning accountability for affordable housing efforts across King County.

Actions planned to reduce lead-based paint hazards

The City of Auburn includes language in its CDBG contracts that require agencies/contractors to comply with HUD Lead-Based Paint Regulations (24 CFR Part 35) issued pursuant to the Lead-Based Paint Poisoning Prevention Act (42 U.S.C. Sections 4831, et seq.). This requirement prohibits the use of lead-based paint whenever CDBG funds are used. In addition, the City notifies residents of potential lead-based paint hazards when it awards a Housing Repair grant. A copy of the pamphlet – "Protect Your Family from Lead In Your Home" is provided each Housing Repair client when the City conducts the initial inspection of their home.

The city takes additional measures when the age of the home indicates a possible presence of lead-based paint. Before housing repair work commences, the city contracts with a certified provider to undertake lead paint testing. When lead-based hazards are positively identified, the city works with the housing repair client and contractors certified in RRP Lead Abatement to implement the necessary mitigation and safety strategies.

Actions planned to reduce the number of poverty-level families

The City of Auburn's planned actions to reduce the number of poverty- level families within the context of this Annual Action Plan include but are not limited to:

- Participate and partner with coalitions, committees and agencies that provide antipoverty services to develop and enhance strategies and efforts to reduce poverty level families
- Supporting the development and sustainability of affordable multi-family housing in Auburn
- In addition, the city will continue to support and fund programs serving families living in poverty through a competitive human services funding process.

Actions planned to develop institutional structure

The City's planned actions to address the gaps and weaknesses identified in the strategic plan include:

- Maintaining partnerships with and participating in the South King County Housing and Homelessness Partnership, All Home of King County and other regional human service providers, coalitions and committees who address homeless issues. The City will also continue to work collaboratively with partnering organizations and groups to integrate and enhance services to provide optimal services to individuals and families currently experiencing or at risk of homelessness. In addition, the City plans to allocate \$250,000 to emergency shelters and homelessness intervention services, and more than \$60,000 to emergency services such as food, financial assistance, clothing and healthcare.
- Take a comprehensive approach to consolidated and comprehensive planning to include all internal City departments, commissions, committees and task forces.

Actions planned to enhance coordination between public and private housing and social service agencies

The City of Auburn has heavily contributed and intends to continue cultivating relationships between public and private housing and social service agencies. In addition, the City will continue to participate in collaborations with the South King County Forum on Homelessness, the South King County Council of Human Services, Seattle-King County Housing Development Consortium and the King County Joint Planners Meeting.

In 2016 the City of Auburn started participating in Affordable Housing Week through the Housing Development Consortium along with other public and private housing agencies in King County to continue our partnerships in providing affordable housing in the region. The City will continue its participation in this annual event and look for other similar opportunities to raise build partnerships to support the preservation and enhanced affordability of housing in our community.

Discussion

The expressed goal of the City's Consolidated Plan is to reduce the number of people living in poverty within Auburn. The City intends to give funding priority to programs that in addition to complying with federal regulations and address a priority and outlined in the Consolidated Plan are consistent with all of the goals and objectives identified.

AP-90 Program Specific Requirements - 91.420, 91.220(l)(1,2,4)

Introduction

The City of Auburn does not anticipate receiving any program income during the 2025 Annual Action Plan year.

Community Development Block Grant Program (CDBG)

Reference 24 CFR 91.220(l)(1)

Projects planned with all CDBG funds expected to be available during the year are identified in the Projects Table. The following identifies program income that is available for use that is included in projects to be carried out.

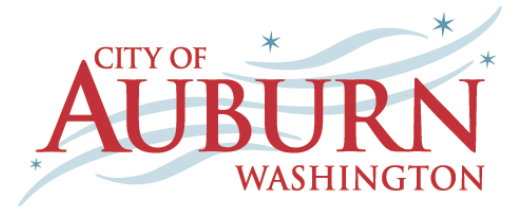
1	The total amount of program income that will have been received before the start of the next program year and that has not yet been reprogrammed	\$0
2	The amount of proceeds from section 108 loan guarantees that will be used during the year to address the priority needs and specific objectives identified in the grantee's strategic plan	\$0
3	The amount of surplus funds from urban renewal settlements	\$0
4	The amount of any grant funds returned to the line of credit for which the planned use has not been included in a prior statement or plan.	\$0
5	The amount of income from float-funded activities	\$0
6	Total Program Income	\$0

2025-2029 Consolidated & Action Plan(s)

Needs Assessment/Market Analysis/Consolidated and Action Plan
Overview and Summary

April 2025

Kent Hay, Jody Davison, Jason Krum



Public Engagement for Plan Development

- Work began on July 1st, 2024, with Cloudburst Consulting Group
- Conducted a needs assessment and Market Analysis
- Auburn conducted an input survey from the community
- Draft plan(s) were publicized in the Seattle Times and Auburn Reporter, SpeakUpAuburn, City Website
- Public Meetings and Hearings were held before the Human Services Committee



THE **CLOUDBURST** GROUP

The Seattle Times

AUBURN
REPORTER



Stakeholder Engagement

- June 24th, 2024 – City Council study session
- July 25 – August 23rd, 2024 – Online Survey seeking initial input
- July 24th – Seattle Times Publication
- August 8th – Email to subscribers
- July 25th – Flyers distributed throughout the City
- June 1st – Posted on SpeakUpAuburn
- October 28th – City Council study session
- August 19th, October 28th, 2024 and January 27th, 2025 – Human Services held a public hearing.
- December 31st, 2024 – Plan shared with Consortium Cities of (Kent, Bellevue, Federal Way and King County)
- January 1st – January 31st, 2025 – 30-day Comment Period on the draft Plan
- April 28th 2025 – City Council study session
- May 5th 2025 – City Council meeting

Initial Council Feedback

June 24th, 2024, and October 28th, 2024

- Rakes: Engagement, **Senior Mobile Home Parks**, Blight, Code Enforcement, Economic Development
- Amer: Affordable Daycare, **Help for Seniors**, Education on available services, Mobile Dental, Clinics
- Baldwin: **Housing Affordability**, Food Resilient Systems, Cooling Programs, **Property Rehab**, Public Safety
- Taylor, T: Education workshops for Seniors (available services), New business support, **homeownership assistance**
- Taylor C: Accountability, leverage existing agencies, streamline services, make sustainable **decisions for the long term**.
- Trout-Manuel: Removing **barriers to housing** especially for marginalized populations. Also, assistance with **home repairs and home ownership**

Public & Stakeholder Feedback*

Basic Needs

Public Facilities

Housing

Homeless Prevention

Economic Development

Additional Comments included:

- Public Safety & Infrastructure
- Downtown Development & Community Engagement
- Housing & Homelessness
- Childcare & Early Education

Needs Assessment

- Identified **housing**, particularly for the disabled & elderly as a priority need
- Reducing Homelessness

Consolidated Plan Draft Goals

Affordable Housing

- Activities that work toward the following outcomes:
 - (1) creation and preservation of affordable housing
 - (2) help low-income households to achieve home ownership
 - (3) prevent currently housed individuals from entering homelessness
 - (4) assist transition from homeless into stable housing
 - (5) support fair housing strategies to increase access to housing and housing programs

Annual Funding Commitment:

CDBG: \$0

City: \$690,000

Addressing Homelessness

- Activities that work toward the following outcomes:
 - (1) reduce the number of households becoming homeless
 - (2) reduce the length of time that households are homeless
 - (3) increase the rate of exits from homelessness to permanent housing;
 - (4) reduce the number of that re-enter the homeless system after exit to permanent housing households

Annual Funding Commitment:

CDBG: \$495,579

City: \$3,088,253

Key Changes from previous years

- Goals have remained similar however:
 - Funding Source for the Home Repair Program has changed:
 - Built with CDBG funding
 - Expansion needed
 - By funding internally, the program can pivot to allow greater flexibility to address need
 - Funds have been re-allocated from Human Services to Community Development

Key Changes cont.

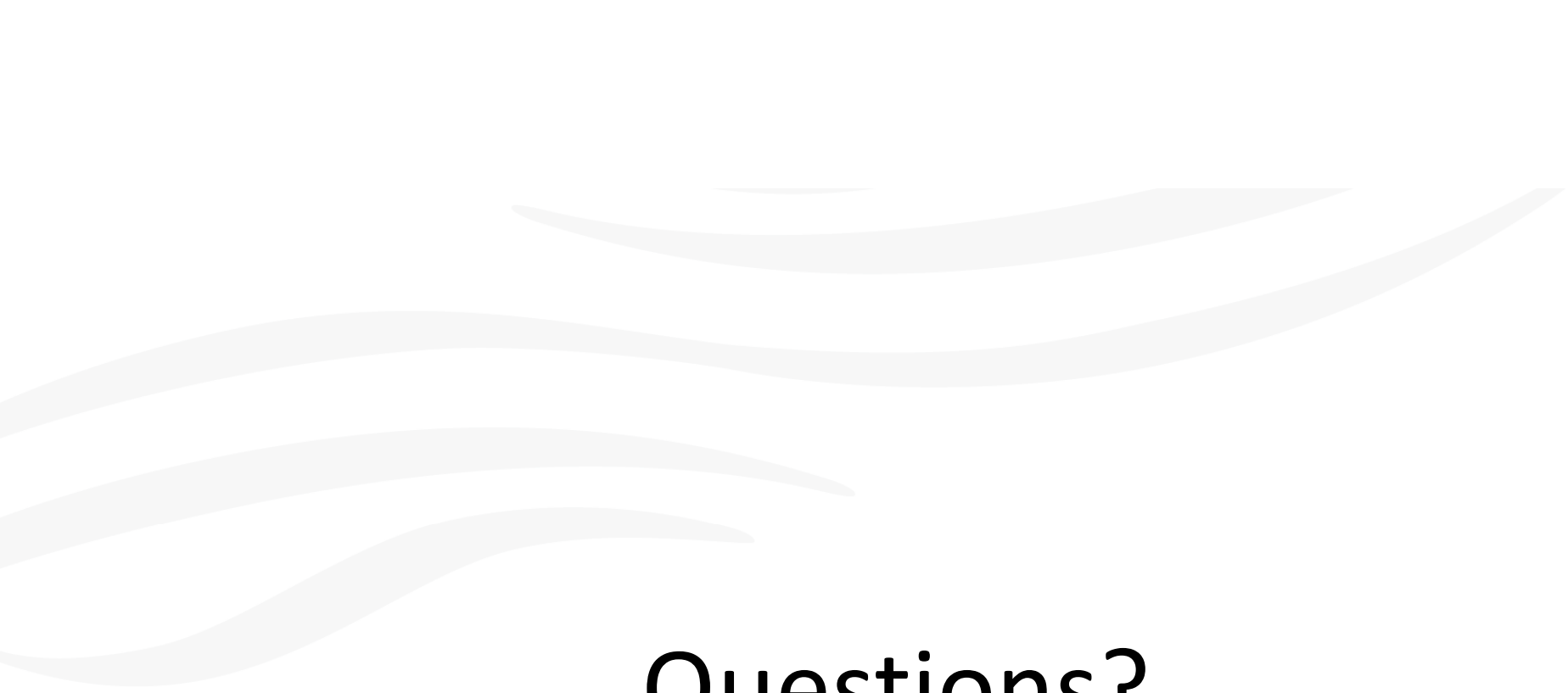
- Purchase of the Auburn Consolidated Resource Center Building
- Need for additional funding to modify the space
- Facility upgrades

2025 Annual Action Plan

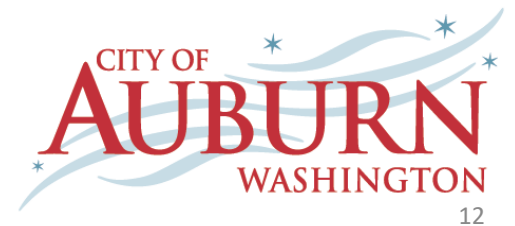
- Expected Funding Apx. \$619,474 (based on 2024)
- Remaining Prior year funding: \$82,392
 - Reducing Homelessness: \$495,579
 - Administration: \$123,894
 - Addressing the goal of Affordable Housing will be done with City Funding

Next Steps





Questions?



RESOLUTION NO. 5825

A RESOLUTION OF THE CITY COUNCIL OF THE CITY
OF AUBURN, WASHINGTON, ADOPTING THE 2025-
2029 CONSOLIDATED PLAN AND THE 2025 ANNUAL
ACTION PLAN

WHEREAS, the U.S. Department of Housing and Urban Development (HUD) designated the City of Auburn as an entitlement community for its Community Development Block Grant (CDBG) Program;

WHEREAS, the primary objective of the Consolidated Plan and CDBG Program is the development of viable urban communities by providing decent housing, a suitable living environment, and expanding economic opportunities, principally for persons of low and moderate income;

WHEREAS, to be eligible for funding, the City of Auburn must submit a Consolidated Plan to serve as a federally required planning document to guide the City of Auburn's human service and community development efforts;

WHEREAS, the planning process to develop the Consolidated Plan involved public participation and guidance from non-profit and governmental agencies serving low income residents in the community;

WHEREAS, the City Council of the City of Auburn heard and considered public comment about the proposed 2025-2029 Consolidated Plan and 2025 Action Plan;

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF AUBURN,
WASHINGTON, RESOLVES as follows:

Section 1. Pursuant to Chapter 24 of the Code of Federal Regulations Part 91, the City adopts the 2025-2029 Consolidated Plan and the 2025 Annual Action Plan.

Section 2. The Mayor is authorized to implement such administrative procedures as may be necessary to carry out directions of the legislation.

Section 3. This Resolution shall be in full force and effect on passage and signatures.

Dated and Signed: _____

CITY OF AUBURN

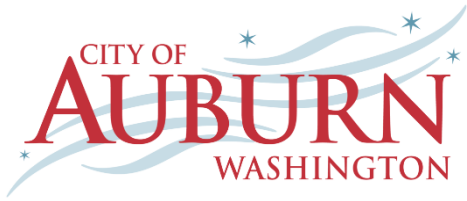
NANCY BACKUS, MAYOR

ATTEST:

APPROVED AS TO FORM:

Shawn Campbell, MMC, City Clerk

Jason Whalen, City Attorney



AGENDA BILL APPROVAL FORM

Agenda Subject:

4th Quarter 2024 Financial Report (Thomas) (20 Minutes)
Financial Report through December 2024

Meeting Date:

April 28, 2025

Department:

Finance

Attachments:

Financial Report through Dec
2024 (FINAL), 2024 Q4 Financial
Update

Budget Impact:

None

Administrative Recommendation:

For discussion only.

Background for Motion:**Background Summary:**

The Financial report summarizes the general state of Citywide financial affairs and highlights significant items or trends that the City Council should be aware of. The attachment provides year-to-date financial activity through December 31, 2024, based on financial data available as of April 1, 2025.

Councilmember: Kate Baldwin

Staff: Jamie Thomas

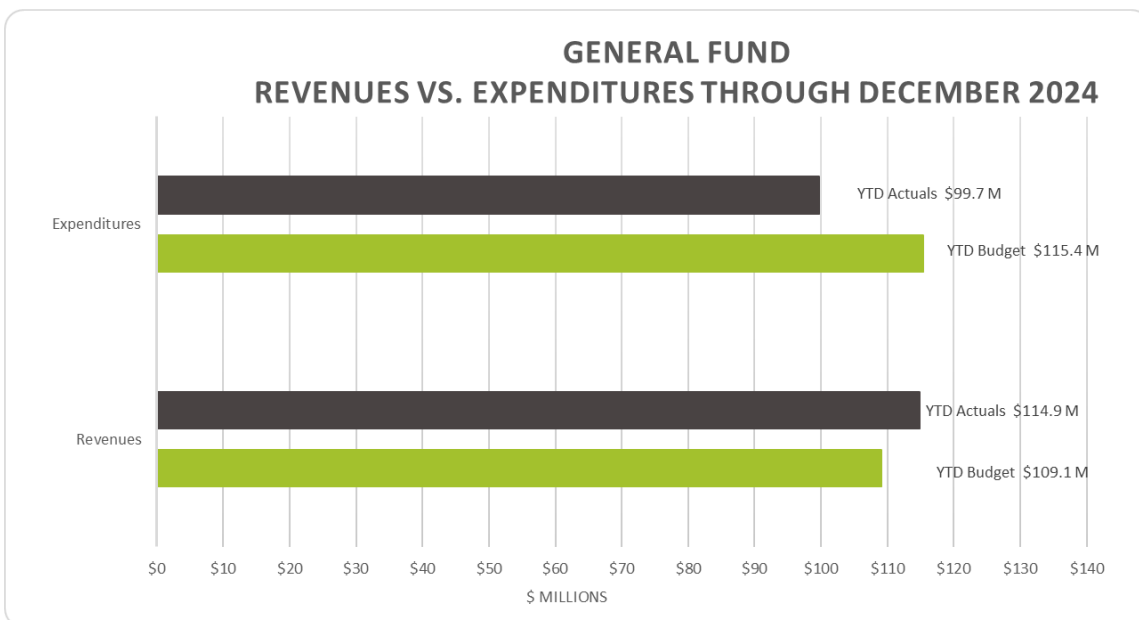
This report provides an overview of the City's overall cash-basis financial position for the fiscal year ending December 31, 2024, reflecting data available as of March 15, 2025. The City's fiscal year is the same as the calendar year. References to budget, actual and prior year amounts reflect year-to-date numbers, unless stated otherwise. Year-to-date performance expectations are generally based on the two prior years of data.

General Fund Overview

As 2024 comes to a close, the City continues to surpass what was a solid financial performance in 2023. General Fund revenues have generally exceeded budget expectations and largely recovered from the impact of COVID-19. With the adoption of Ordinance #6961 in November 2024, the annual budget consists of \$109.1 million in revenues and \$115.4 million in expenditures - a planned decrease in General Fund balance of \$6.3 million. The City Council also approved the biennial budget for the fiscal years of 2025-2026, which had been in development throughout 2024.

Amid nationwide discussions of an economic soft landing, the General Fund continues to outperform revenue expectations. By year-end, the City collected \$4.8 million or 4.4% more revenues in 2024 than in 2023. A large contributor to this outcome was Business and Occupation (B&O) tax revenue; throughout 2024 the City collected \$11.6 million in B&O taxes (including backdated collections), an increase of \$1.0 million from 2023. However, the City anticipates that B&O revenues will decline slightly in the upcoming year as payments related to prior periods decrease. The City also implemented a new photo enforcement program during the second half of 2023, which generated \$2.6 million of revenue through 2024. Mitigating the increases in General Fund revenues, the City also saw expenditures increase from the same period last year by \$6.9 million or 7.5%. This is due to planned increases in overhead costs, professional services and insurance premiums.

Overall, General Fund revenues collected through 2024 totaled \$114.9 million as compared to an annual budget of \$109.1 million, and were \$5.8 million, or **5.3% above** budget expectations. General Fund expenditures through 2024 totaled \$99.7 million compared to an annual budget of \$115.4 million; resulting in a \$15.8 million or **13.7% underspend**.



Revenue: The following factors had the most significant impact on the budget vs. actual revenue collected:

- B&O Tax: Revenues collected through 2024 totaled \$11.6 million, greatly exceeding the annual budget by \$4.6 million or 65.1%. Some of the favorable variance is due to the collection of tax obligations incurred in prior years, which is not expected to continue at the same level in the future. **[page 11]**
- Fines and Penalties: Collections through 2024 were \$3.8 million in total and \$2.7 million favorable to budget. Higher than expected revenues from a photo enforcement program implemented by the City in 2023 contributed \$2.0 million toward the favorable variance. Other non-court fines and penalties are \$660,500 favorable versus budget expectations, mainly due to interest and penalties on B&O tax collection. Civil penalties and criminal costs had an unfavorable variance, slightly reducing the overall favorable variance. **[pages 20-21]**
- Retail Sales Tax: The sales tax report for distributions through 2024 (provided as an attachment to this report) reflects amounts remitted to the City of Auburn based on sales between November 2023 and October 2024. Collections totaled \$22.9 million, approximately \$95,000 lower than last year, driven by lower collections particularly in the construction and retail trade sectors. This is the first time the City has recorded lower year-over-year retail sales tax revenue since 2013. However, compared to the annual budget, sales tax has a favorable variance of \$2.3 million or 10.9%. **[pages 9-11]**
- Interest and Investment Earnings: Throughout 2024, interest and investment earnings have totaled \$2.2 million and hold a \$1.9 million favorable variance to budget. This is largely due to current investments outperforming expectations throughout the year. Multiple investments matured during the remainder of the year, which may reduce the rate of collections in the upcoming year. An in-depth analysis of investments is included as an attachment to this report. **[pages 3-4]**
- General Government Services: Revenues collected during 2024 totaled \$4.5 million, marginally below the expected budget amount of \$5.8 million. This was mainly due to the timing of reimbursements related to SKHHP projects that were scheduled but not completed during the year. However, even with this unfavorable variance to budget in 2024, these revenues surpassed 2023 totals by \$78,000. This is due to a large percentage of these revenues resulting from interfund support services which were fully collected throughout the year. **[page 18]**
- Transfers-in: Transfers into the General Fund were \$9.4 million unfavorable to budget throughout the year. This is mainly due to a budgeted transfer-in amount of \$9.3 million for cash-flow purposes. As the year progressed, the City determined that this transfer was unnecessary in 2024.

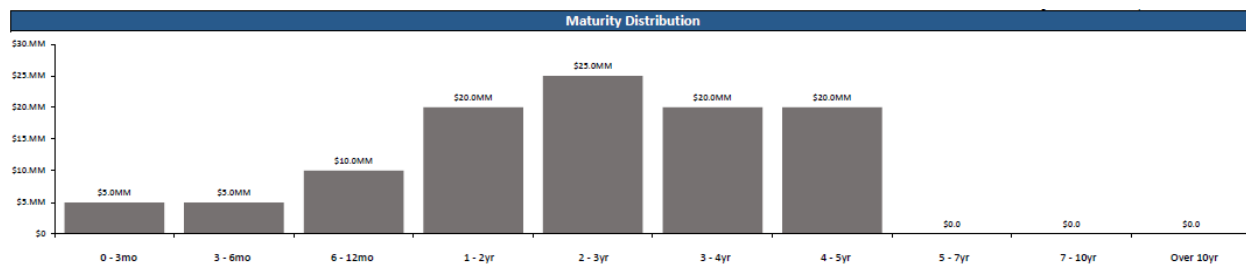
Expenditures: Overall, the favorable variance to the annual expense budget is \$15.8 million. At the close of the year all departments operated within their annual budgets, with some variances due to the timing of professional services payments, as well as expenses related to projects facilitated by ARPA funding. Also contributing to the favorable variance was a savings in salaries and benefits expenses of roughly \$3.5 million; as of the compilation of this report, there were 38 vacant regular full-time positions in the City. Likewise, services and charges were favorable to budget expectations throughout the year by roughly \$7.0 million. This is partially due to the timing of spend on projects in-progress within the City.

Citywide Cash and Investments

As of December 31, 2024, the City of Auburn's Investment Portfolio is comprised of liquid investments in the State's Local Government Investment Pool (LGIP) and cash (60.6%), investments in agencies (26.2%), and treasuries (13.1%).

Liquid balances are comprised of the City's cash balances, plus the amount invested in the LGIP. The LGIP is operated by the State Treasurer, and provides a "safe, liquid, and competitive" investment option for Washington local governments. The City can access and withdraw the entire amount of LGIP and cash balances at any time. As of December 31, the City maintained a balance of \$132.1 million with the LGIP and \$29.6 million in cash.

The City's investment portfolio also includes 21 current investments in agencies and treasuries, each with a par value of \$5 million for a total of \$105 million. As of December 31, the market value of these investments was \$103.9 million. As depicted in the graphic below, all investments mature within a 5-year period, with the highest amount of cash-flow coming in 2-3 years (\$25 million).



The table below details the current position of the City's investments through the end of the year. As illustrated in the unrealized gain/loss column, the City currently holds an overall loss of roughly \$357,000. This is calculated by subtracting the book value (value of investment after liabilities are backed out) against the market value (current price of investment on the market). As the investments move closer to maturity, the unrealized gain/loss will fluctuate based on current market conditions.

Amortization/Accretion Book Calculations													Unrealized
CUSIP/Sec-ID	Sec Desc 1	Cpn	Mat Dt	Par Value	Cost	Purch Px	Book Val	Book Px	Book YTM	Mkt Val	Mkt Px	Mkt YTM	Gain/Loss
3130AP3M5	FEDERAL HOME LOAN BANK N-I	0.55	3/28/2025	5,000,000	5,013,870	100.28	5,000,958	100.02	0.46	4,955,150	99.10	4.25	(45,808)
3135G03U5	FEDL NATL MTG ASSN SER BENI	0.63	4/22/2025	5,000,000	4,999,320	93.99	4,933,484	98.67	4.96	4,945,350	98.91	4.17	11,866
3133EPQ08	FFCB	4.75	7/21/2025	5,000,000	4,990,590	99.81	4,997,147	99.94	4.85	5,011,750	100.24	4.31	14,603
3130AWKM1	FHLB	4.75	12/12/2025	5,000,000	5,011,120	100.22	5,004,551	100.09	4.65	5,023,650	100.47	4.23	19,099
3133EPPR0	FFCB	4.63	4/10/2026	5,000,000	5,012,180	100.24	5,005,756	100.12	4.53	5,024,850	100.50	4.22	19,094
3133EPPR9	FFCB	4.38	7/6/2026	5,000,000	4,989,635	99.79	4,994,533	99.89	4.45	5,006,000	100.12	4.29	11,467
3130AXCP1	FEDERAL HOME LOAN BANK EN-	4.88	9/11/2026	5,000,000	5,029,315	100.59	5,017,882	100.36	4.65	5,049,050	100.98	4.26	31,168
912828YX2	T	1.75	12/31/2026	5,000,000	4,612,470	92.25	4,767,341	95.35	4.20	4,763,850	95.28	4.24	(3,491)
31424WAF9	FAMCA	4.88	4/1/2027	5,000,000	5,026,830	100.54	5,018,127	100.36	4.70	5,061,500	101.23	4.29	43,373
3130AWB22	FHLB	4.13	6/11/2027	5,000,000	4,977,590	99.55	4,985,466	99.71	4.25	4,978,700	99.57	4.31	(6,766)
91282CFH9	TREAS SER AC-202	3.13	8/31/2027	5,000,000	4,862,025	97.24	4,895,290	97.91	3.96	4,855,450	97.11	4.28	(39,840)
31422XH70	FAMCA	3.79	10/4/2027	5,000,000	4,853,535	97.07	4,893,399	97.87	4.62	4,930,500	98.61	4.33	37,101
91282CGC9	TREAS SER AH-202	3.88	12/31/2027	5,000,000	5,045,630	100.91	5,041,601	100.83	3.58	4,942,000	98.84	4.29	(99,601)
91282CB59	TREAS SER J-2028	1.25	3/31/2028	5,000,000	4,365,915	87.32	4,518,260	90.37	4.47	4,540,450	90.81	4.31	22,190
91282CHK0	T	4.00	6/30/2028	5,000,000	5,013,895	100.28	5,011,338	100.23	3.93	4,947,650	98.95	4.33	(63,688)
91282CHX2	TREAS SER AC-202	4.38	8/31/2028	5,000,000	5,096,385	101.93	5,078,398	101.57	3.91	5,003,300	100.07	4.35	(75,098)
3133EPA47	FFCB	4.88	11/1/2028	5,000,000	5,082,540	101.65	5,065,044	101.30	4.50	5,083,400	101.67	4.40	18,356
3133EPA40	FFCB	4.25	2/28/2029	5,000,000	5,051,305	101.03	5,043,425	100.87	4.02	4,979,650	99.59	4.36	(63,775)
31424WHP0	FAMCA	4.65	4/26/2029	5,000,000	5,007,390	100.15	5,006,474	100.13	4.62	5,043,950	100.88	4.42	37,476
31424WNH1	FAMCA FEDERAL	3.63	9/4/2029	5,000,000	5,003,400	100.07	5,003,012	100.06	3.61	4,830,100	96.60	4.44	(172,912)
91282CGB1	TREAS NTS	3.88	12/31/2029	5,000,000	4,935,795	98.72	4,936,266	98.73	4.16	4,884,200	97.68	4.40	(52,066)
TOTAL AND AVERAGES				105,000,000	103,680,735		104,217,754		4.15	103,860,500		4.31	(357,254)

The current cash-flow projections for 2025 can be seen below. Projected collections from investments in the upcoming year total \$23.8 million and average \$6.0 million of collections per quarter. The current structure of maturing investments creates a consistent inflow of cash throughout the year, making it easier for the City to manage its cash flow accordingly.

Extended Cash-Flows															
#	Cusip	Par Value	Jan-25	Feb-25	Mar-25	Apr-25	May-25	Jun-25	Jul-25	Aug-25	Sep-25	Oct-25	Nov-25	Dec-25	Year 1 Total
1	3130AP3M5	5,000,000	0	0	5,013,750	0	0	0	0	0	0	0	0	0	5,013,750
2	3135G03U5	5,000,000	0	0	0	5,015,625	0	0	0	0	0	0	0	0	5,015,625
3	3133EPQN8	5,000,000	118,750	0	0	0	0	0	5,118,750	0	0	0	0	0	5,237,500
4	3130AWKM1	5,000,000	0	0	0	0	0	118,750	0	0	0	0	0	5,118,750	5,237,500
5	3133EP8P0	5,000,000	0	0	0	115,625	0	0	0	0	0	115,625	0	0	231,250
6	3133EP8P9	5,000,000	109,375	0	0	0	0	0	109,375	0	0	0	0	0	218,750
7	3130AXCP1	5,000,000	0	0	121,875	0	0	0	0	0	121,875	0	0	0	243,750
8	912828YK2	5,000,000	0	0	0	0	0	43,750	0	0	0	0	0	43,750	87,500
9	31424WAF9	5,000,000	0	0	0	121,875	0	0	0	0	0	121,875	0	0	243,750
10	3130AWB22	5,000,000	0	0	0	0	0	103,125	0	0	0	0	0	103,125	206,250
11	91282CFH9	5,000,000	0	78,125	0	0	0	0	0	78,125	0	0	0	0	156,250
12	31422XH70	5,000,000	0	0	0	94,750	0	0	0	0	0	94,750	0	0	189,500
13	91282CGC9	5,000,000	0	0	0	0	0	96,875	0	0	0	0	0	96,875	193,750
14	91282CB59	5,000,000	0	0	31,250	0	0	0	0	0	31,250	0	0	0	62,500
15	91282CHK0	5,000,000	0	0	0	0	0	100,000	0	0	0	0	0	100,000	200,000
16	91282CHK2	5,000,000	0	109,375	0	0	0	0	0	109,375	0	0	0	0	218,750
17	3133EPA47	5,000,000	0	0	0	0	121,875	0	0	0	0	0	121,875	0	243,750
18	3133EP4A0	5,000,000	0	106,250	0	0	0	0	0	106,250	0	0	0	0	212,500
19	31424WHP0	5,000,000	0	0	0	116,250	0	0	0	0	0	116,250	0	0	232,500
20	31424WNH1	5,000,000	0	0	90,625	0	0	0	0	0	90,625	0	0	0	181,250
21	91282CG81	5,000,000	0	0	0	0	0	96,875	0	0	0	0	0	96,875	193,750
TOTAL		105,000,000	228,125	293,750	5,257,500	5,464,125	121,875	559,375	5,228,125	293,750	243,750	448,500	121,875	5,559,375	23,820,125

Street Funds Overview

The City's three street funds are special revenue funds wherein the revenue sources and expenditures are legally restricted. These funds are used for street capital construction projects, as well as local and arterial street repair and preservation projects. Historically, most expenditures in all three street funds occur during the second half of the year when weather conditions are optimal for pavement construction. Variances in budget and actuals between years are generally due to the schedule and level of activity on projects in the funds, and the timing of grant reimbursements and other funding. In 2024, many projects in the street funds moved out of the design phase and into the construction phase, triggering increases in expenditure activity as well as revenue collections from grant reimbursements and sales tax.

Arterial Street Fund revenues in 2024 totaled \$6.8 million compared to \$3.0 million in 2023, while expenditures increased \$3.1 million from \$3.4 million in 2023 to \$6.5 million in 2024. There were 26 active projects in this fund in 2024 and, as noted above, the increased activity is due to increase construction activity for these projects throughout the year. **[pages 26–27]**

Local Street Fund revenues through 2024 totaled \$4.6 million compared to \$3.2 million in 2023. This increase is due primarily to increased collections of interfund utilities taxes (+\$963,000), as well as increase interest earnings compared to the prior year (+\$301,000). Expenditures in 2024 totaled \$2.1 million compared to \$210,000 in 2023, which is consistent with the City's expectation given increased construction activity for the eight active projects in the fund. **[pages 28–29]**

Arterial Street Preservation Fund revenues totaled \$4.0 million in 2024 compared to \$3.6 million in 2023. Most of this increase was driven by increased revenues from the Public Transportation Sales & Use Tax, which totaled \$2.7 million in 2024, up \$455,000 from \$2.2 million in 2023. Increased construction activity for 18 active projects in this fund contributed to an increase in expenditures, which totaled \$4.3 million in 2024 compared to \$1.6 million in 2023. **[pages 29–30]**

Enterprise Funds Overview

The City's enterprise funds account for operations with revenues primarily provided from user fees, charges, or contracts for services. In the prior year the City's cash and investment balances had increased significantly, due to increased interest rates and yields to maturity for the City's investment accounts. In 2024, the maturation of investments means the funds which previously saw significant year-over-year increases in interest earnings are continuing to see higher interest income, albeit at a lower growth rate. As such, interest earnings across all enterprise funds through 2024 increased \$292,000 to \$3.5 million compared to \$3.2 million in the prior year.

The **Water Utility Fund** ended 2024 with an operating income of \$7.7 million, which was approximately \$337,000 higher than last year. Revenues for this fund were \$20.2 million through 2024, compared to \$19.5 million through 2023. These revenues were offset by \$12.6 million in expenditures, compared to \$12.2 million in 2023. In total, operating income had a \$2.5 million favorable variance compared to the 2024 budget, due to favorable variances in both revenues (+\$1.2 million) and expenditures (-\$1.3 million lower than budget). However, after factoring in non-operating revenues and expenses such as capital construction and payment of debt service, the Water Utility experienced an overall decrease to working capital of \$1.5 million. [pages 32–33]

The **Sewer Utility Fund** ended 2024 with an operating income of \$5.2 million compared to \$4.7 million in the same period last year. Operating revenues increased \$857,000 from \$11.3 million in 2023 to \$12.1 million in 2024. This increase in revenue was partially offset by a \$335,000 increase in operating expenses. Operating income was \$5.2 million, driven by favorable variances in revenues (+\$2.4 million) and expenditures (-\$3.0 million) compared to budget. Net changes in non-operating income and capital project related activity reduced the overall change in working capital for the Sewer Utility to \$4.2 million. [pages 33]

The **Stormwater Utility Fund** ended 2024 with an operating income of \$3.4 million compared to \$3.3 million last year. Operating revenues in 2024 totaled \$13.4 million compared to \$12.7 million in 2023. Operating expenses increased \$514,000 million from \$9.4 million last year to \$10.0 million in 2024. Compared to the 2024 budget, operating income held a \$2.3 million favorable variance due to favorable variances in both revenues (+\$2.0 million) and expenditures (-\$253,000). Increased expenditures related to capital construction led to an overall reduction in working capital of \$1.6 million. [pages 33-34]

The **Solid Waste Utility Fund** ended 2024 with an operating income of \$620,000, compared to an operating loss of \$549,000 through the same period last year. While operating revenues increased from \$28.9 million through 2023 to \$31.0 million through 2024, operating expenditures also increased. Operating expenditures through 2024 were \$30.3 million, compared to \$29.5 million through the same period last year. Like the other enterprise funds, operating income was favorable to the 2024 budget, due to a \$374,000 favorable variance in revenues and a \$907,000 favorable variance in expenditures. [page 34]

The **Airport Fund** ended 2024 with operating income of \$354,000, slightly lower (-\$22,000) than operating income for the same period last year. Operating revenues decreased \$31,000 from 2023, while operating expenditures also decreased slightly (-\$9,000). Overall, the Airport Fund had a favorable operating income budget variance of \$15,000 in 2024. Factoring in additional expenditures related to capital projects this fund experienced a reduction of \$230,000 in total working capital. [page 34-35]

The **Cemetery Fund** ended 2024 with operating income of \$86,000, a reduction of \$232,000 compared to \$318,000 through the same period last year. This decrease was driven by decreased charges for service (-\$161,000), as well as an overall increase of \$60,000 in operating expenditures. Compared to 2024 budget expectations, the Cemetery Fund had favorable budget variances in both operating revenues (+\$393,000) and expenditures (-\$71,000). Additional expenditures related to capital projects occurring in 2024 contributed to an overall decrease in working capital of \$178,000. [pages 35-36]

Internal Service Funds Overview

Internal service funds provide services to other City departments and include functions such as **Insurance, Worker's Compensation, Facilities, Innovation & Technology, and Equipment Rental**.

The **Innovation & Technology Fund** had budgeted for an operating loss of \$2.4 million in 2024; however, due to timing differences between budgeted expenditures for software replacements and actual spend, the fund recorded operating income of \$111,000. We expect these planned replacements and related expenditures to occur in 2025.

Compared to the prior year, operating revenues increased \$244,000 to \$9.0 million in 2024. This increase was partially offset due to increases in personnel costs (+\$469,000) and supplies (+\$53,000), resulting in a decrease in operating income of \$201,000 compared to 2023.

The **Equipment Rental Fund** also had a \$610,000 favorable budget variance in operating income for the same period, due to higher than anticipated interest earnings (+\$340,000), gains on the sales of fixed assets (+\$187,000), and lower than anticipated operating expenditures (-\$194,000). Operating income in 2024 was \$590,000, which is a \$832,000 decrease compared to the prior year. This fluctuation is driven almost entirely by a decrease in insurance recoveries from 2023 to 2024.

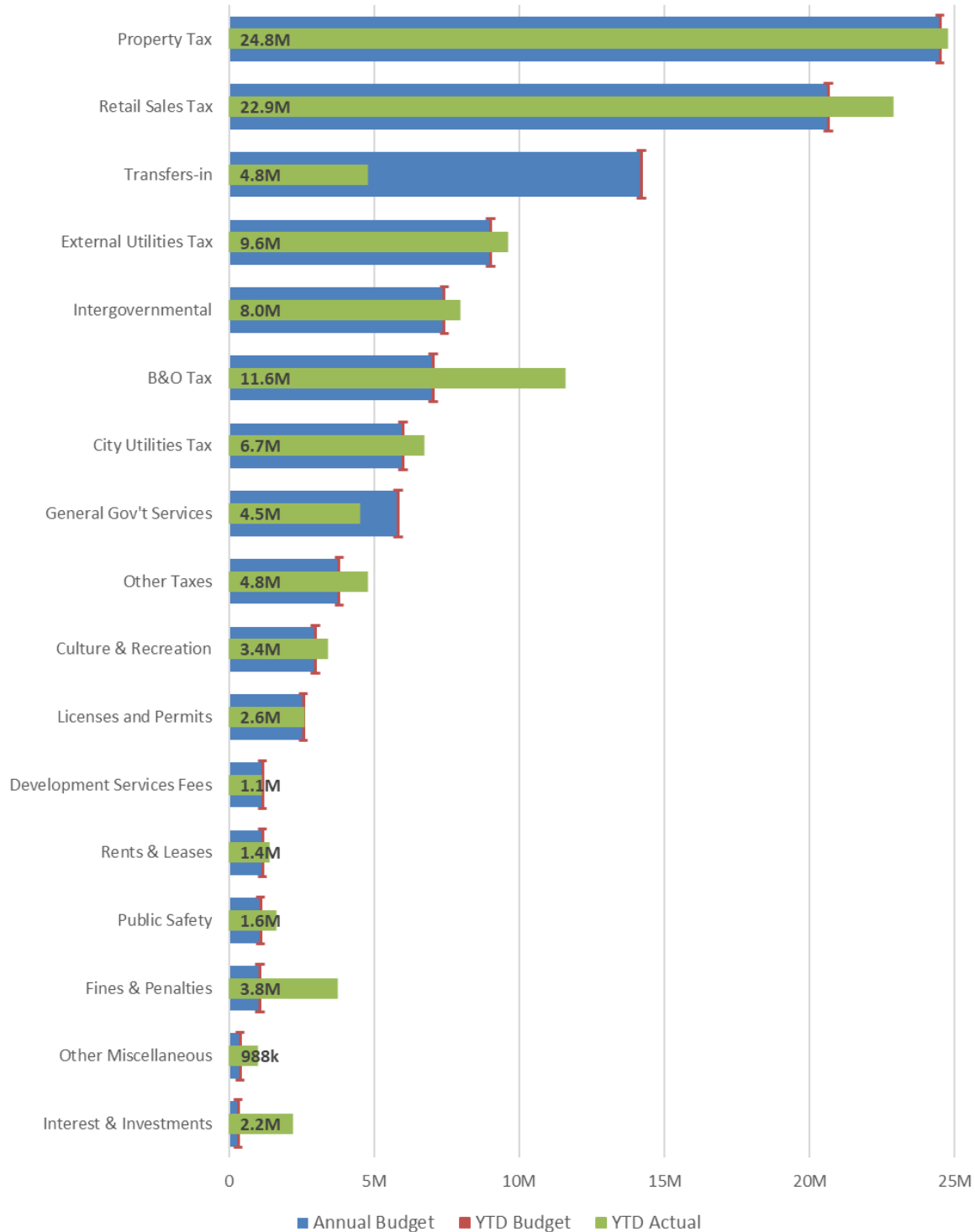
No other significant variances were reported in the Internal Service funds during 2024. **[page 36]**

General Fund Details

The following chart is a detailed breakdown of the General Fund's different sources of revenue and expenditures, broken down by department:

General Fund ces and Uses	2024			2024 YE Budget vs. Actual		2023	2024 YTD Actual vs. 2023 Actual	
	Annual Budget	YE Budget	YE Actual	Favorable (Unfavorable) Amount	Percentage	YE Actual	Favorable (Unfavorable) Amount	Percentage
Operating Revenues								
Property Tax	\$ 24,486,386	\$ 24,486,386	\$ 24,780,732	\$ 294,346	1.2 %	\$ 24,149,996	\$ 630,736	2.6 %
Retail Sales Tax	20,649,700	20,649,700	22,905,129	2,255,429	10.9 %	22,999,943	(94,814)	(0.4) %
Affordable Housing Sales Tax Credit	177,587	177,587	149,352	(28,235)	(15.9) %	150,476	(1,123)	(0.7) %
Sales Tax - Pierce County Parks	130,000	130,000	135,512	5,512	4.2 %	133,326	2,186	1.6 %
Criminal Justice Sales Tax	2,478,000	2,478,000	3,056,862	578,862	23.4 %	3,119,532	(62,669)	(2.0) %
Brokered Natural Gas Tax	150,000	150,000	240,833	90,833	60.6 %	319,286	(78,453)	(24.6) %
City Utilities Tax	5,989,667	5,989,667	6,733,102	743,435	12.4 %	6,238,094	495,009	7.9 %
Business & Occupation Tax	7,029,750	7,029,750	11,605,183	4,575,433	65.1 %	10,625,063	980,120	9.2 %
Admissions Tax	312,445	312,445	702,930	390,485	125.0 %	403,607	299,323	74.2 %
Electric Tax	4,426,743	4,426,743	4,696,372	269,629	6.1 %	4,443,631	252,740	5.7 %
Natural Gas Tax	1,658,523	1,658,523	1,289,448	(369,075)	(22.3) %	1,469,777	(180,329)	(12.3) %
Cable Franchise Fee	880,889	880,889	753,919	(126,970)	(14.4) %	853,521	(99,603)	(11.7) %
Cable Utility Tax	931,981	931,981	798,527	(133,454)	(14.3) %	909,293	(110,765)	(12.2) %
Cable Franchise Fee - Capital	51,539	51,539	39,176	(12,363)	(24.0) %	49,201	(10,025)	(20.4) %
Telephone Tax	435,847	435,847	687,102	251,255	57.6 %	497,600	189,502	38.1 %
Solid Waste Tax (external)	621,973	621,973	1,342,295	720,322	115.8 %	1,919,923	(577,627)	(30.1) %
Leasehold Excise Tax	255,335	255,335	303,727	48,392	19.0 %	268,560	35,168	13.1 %
Gambling Excise Tax	295,300	295,300	212,097	(83,203)	(28.2) %	278,202	(66,105)	(23.8) %
Taxes sub-total	\$ 70,961,665	\$ 70,961,665	\$ 80,432,299	\$ 9,470,634	13.3 %	\$ 78,829,030	\$ 1,603,269	2.0 %
Business License Fees	\$ 461,250	\$ 461,250	\$ 640,082	\$ 178,832	38.8 %	\$ 583,469	\$ 56,613	9.7 %
Building Permits	956,698	956,698	767,031	(189,667)	(19.8) %	904,387	(137,357)	(15.2) %
Other Licenses & Permits	1,150,950	1,150,950	1,199,438	48,488	4.2 %	1,362,462	(163,024)	(12.0) %
Intergovernmental (Grants, etc.)	7,410,275	7,410,275	7,967,969	557,694	7.5 %	5,890,408	2,077,561	35.3 %
Charges for Services:								
General Government Services	5,824,577	5,824,577	4,532,458	(1,292,119)	(22.2) %	4,454,072	78,386	1.8 %
Public Safety	1,094,160	1,094,160	1,644,675	550,515	50.3 %	1,218,117	426,558	35.0 %
Development Services Fees	1,158,080	1,158,080	1,138,214	(19,866)	(1.7) %	1,141,917	(3,702)	(0.3) %
Culture and Recreation	2,975,485	2,975,485	3,399,314	423,829	14.2 %	3,265,931	133,383	4.1 %
Fines and Penalties	1,071,819	1,071,819	3,762,521	2,690,702	251.0 %	2,458,443	1,304,078	53.0 %
Fees/Charges/Fines sub-total	\$ 22,103,294	\$ 22,103,294	\$ 25,051,700	\$ 2,948,406	13.3 %	\$ 21,279,205	\$ 3,772,495	17.7 %
Interest and Investment Earnings	\$ 315,000	\$ 315,000	\$ 2,218,003	\$ 1,903,003	604.1 %	\$ 1,600,133	\$ 617,871	38.6 %
Rents and Leases	1,152,948	1,152,948	1,394,828	241,880	21.0 %	1,229,495	165,333	13.4 %
Contributions and Donations	42,000	42,000	24,030	(17,970)	(42.8) %	29,420	(5,391)	(18.3) %
Other Miscellaneous	258,000	258,000	850,739	592,739	229.7 %	457,129	393,610	86.1 %
Transfers In	14,203,054	14,203,054	4,790,709	(9,412,345)	(66.3) %	6,356,542	(1,565,833)	(24.6) %
Insurance Recoveries - Capital & Operating	82,210	82,210	113,283	31,073	37.8 %	249,217	(135,934)	(54.5) %
Other Revenues sub-total	\$ 16,053,212	\$ 16,053,212	\$ 9,391,592	\$ (6,661,620)	(41.5) %	\$ 9,921,936	\$ (530,344)	(5.3) %
Total Operating Revenues	\$ 109,118,171	\$ 109,118,171	\$ 114,875,590	\$ 5,757,419	5.3 %	\$ 110,030,171	\$ 4,845,420	4.4 %
itures								
Council & Mayor	\$ 1,459,725	\$ 1,459,725	\$ 1,444,985	\$ 14,740	1.0 %	\$ 1,374,567	\$ 70,418	5.1 %
Administration	1,331,394	1,331,394	1,309,653	21,741	1.6 %	1,265,848	43,805	3.5 %
Human Resources	2,527,139	2,527,139	2,521,116	6,023	0.2 %	2,382,597	138,519	5.8 %
Municipal Court & Probation	3,673,544	3,673,544	3,324,616	348,928	9.5 %	2,556,274	768,342	30.1 %
Finance	5,763,940	5,763,940	4,861,292	902,648	15.7 %	4,689,061	172,230	3.7 %
City Attorney	5,063,393	5,063,393	4,692,554	370,839	7.3 %	6,069,324	(1,376,770)	(22.7) %
Community Development	9,070,576	9,070,576	6,649,256	2,421,320	26.7 %	8,128,085	(1,478,829)	(18.2) %
Human Services	4,954,978	4,954,978	3,090,240	1,864,738	37.6 %	-	3,090,240	N/A %
Office of Equity	1,047,360	1,047,360	868,952	178,408	17.0 %	514,218	354,734	69.0 %
Jail - SCORE	5,700,000	5,700,000	4,865,975	834,025	14.6 %	5,169,317	(303,342)	(5.9) %
Police	38,019,143	38,019,143	34,780,325	3,238,818	8.5 %	33,618,197	1,162,128	3.5 %
Public Works	5,242,635	5,242,635	5,044,662	197,973	3.8 %	4,592,820	451,842	9.8 %
Parks, Arts & Recreation	17,010,764	17,010,764	16,689,872	320,892	1.9 %	15,532,210	1,157,662	7.5 %
Streets	5,014,872	5,014,872	4,773,367	241,505	4.8 %	4,366,872	406,495	9.3 %
Non-Departmental	9,535,810	9,535,810	4,734,268	4,801,542	50.4 %	2,469,549	2,264,719	91.7 %
Total Operating Expenditures	\$ 115,415,273	\$ 115,415,273	\$ 99,651,133	\$ 15,764,140	13.7 %	\$ 92,728,940	\$ 6,922,194	7.5 %

General Fund Revenues Budget Vs Actual



Revenue

Tax revenues, including property, sales/use, utility, business & occupation, gambling, and admissions taxes provide over 65% of all resources supporting general governmental activities. Licenses, charges for services, intergovernmental revenue (grants, state shared revenue, etc.) and fines contribute a further 20% of total revenue to the General Fund. The remaining 15% is comprised of a combination of different sources that are considered one-time resources. The following section provides additional information on the most significant tax resource streams.

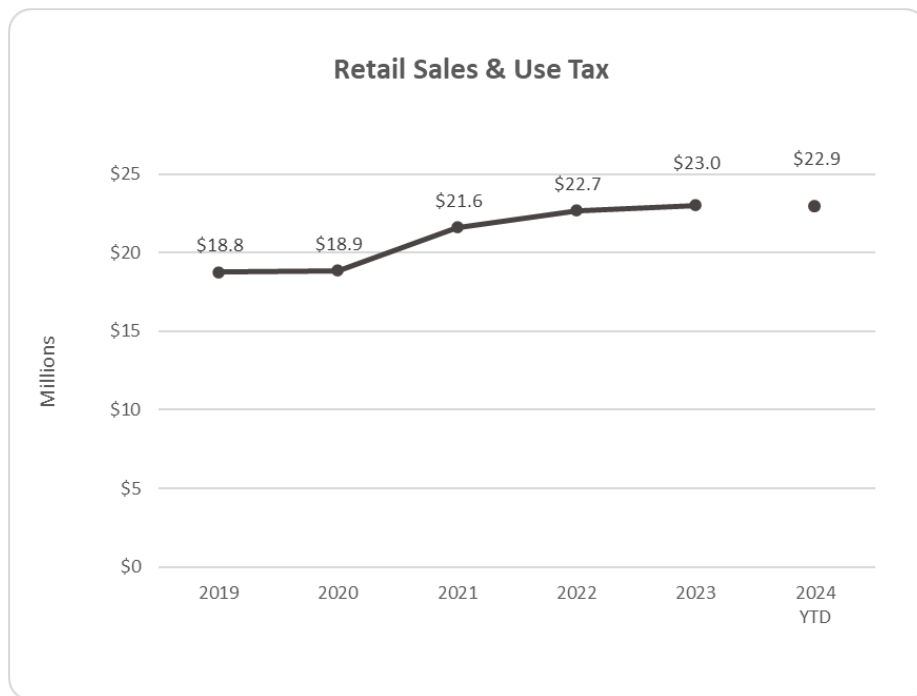
Property Tax collections throughout 2024 totaled \$24.8 million, approximately \$294,000 or 1.2% above budget expectations. Coinciding with the due dates for County property tax billings, the City collects these revenues during the months of April, May, October, and November. Property tax accounts for roughly 21.6% of all revenues collected within the General Fund and is the fund's largest single source of revenue.

The City is legally restricted to a 1% increase on property tax levied annually, plus the tax levied on new construction. This has resulted in an average growth of 2.5% annually since 2017.



Retail Sales Tax collections through 2024 totaled \$22.9 million, representing taxes remitted to the City of Auburn based on sales from November 2023 through October 2024. The City set a retail sales tax budget of \$20.6 million for 2024 and has exceeded expectations by \$2.3 million or 10.9%. Overall, collections were roughly \$95,000 or 0.4% lower throughout the 2024 fiscal year compared to the prior year, which represents the first instance of lower year-over-year sales tax collections since 2013. Two of the three top industries for City sales tax collections experienced a decrease from prior year totals: retail trade (-\$55,277) and automotive (-\$21,513). Likewise, construction sales tax revenues were also lower than 2023 collections (-\$239,981), though the construction industry is highly volatile based on project timelines and the state of the economy. The services industry helped mitigate a large portion of the unfavorable variance with collections of \$202,349 more than last year.

The City has seen consistent growth in recent years, but the rate of growth has generally been in decline since 2019.

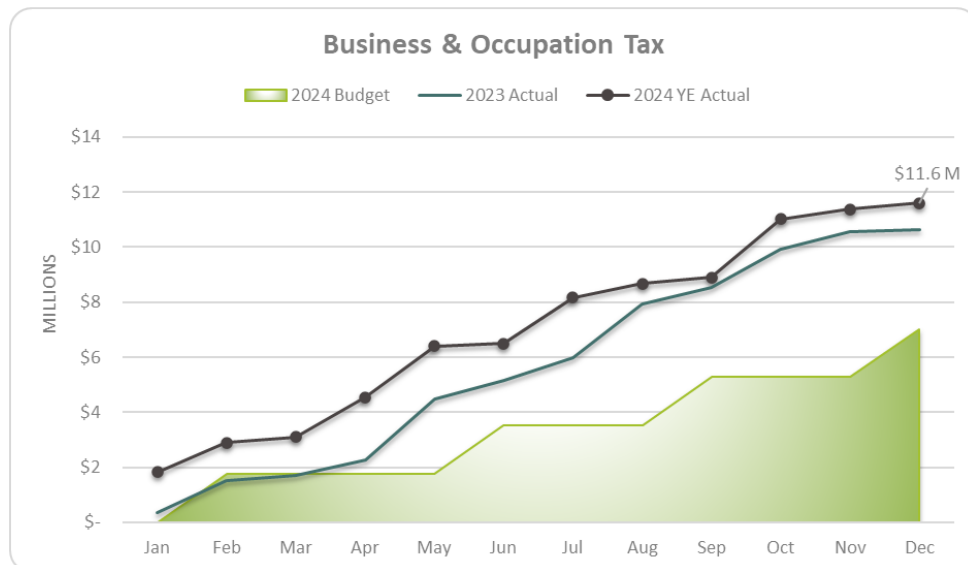


The following table breaks out the City's retail sales tax collections by major business sector.

Comparison of Retail Sales Tax Collections by Group Through December 2024				
Component Group	2023	2024	Change from 2023	
	YE Actual	YE Actual	Amount	Percentage
Construction	\$ 2,950,423	\$ 2,710,442	\$ (239,981)	(8.1) %
Manufacturing	531,277	477,151	(54,126)	(10.2) %
Transportation & Warehousing	224,807	321,173	96,366	42.9 %
Wholesale Trade	1,668,471	1,611,967	(56,504)	(3.4) %
Automotive	4,937,407	4,915,894	(21,513)	(0.4) %
Retail Trade	6,573,018	6,517,742	(55,277)	(0.8) %
Services	5,724,661	5,927,009	202,349	3.5 %
Miscellaneous	389,925	423,751	33,826	8.7 %
YE Total	\$ 22,999,989	\$ 22,905,129	\$ (94,860)	(0.4) %

Business & Occupation (B&O) Taxes were implemented by the City at the beginning of 2022. B&O taxes are collected from businesses based on the value of gross receipts or square footage of occupied warehousing space, subject to certain constraints. While the City receives collections throughout the year, B&O taxes are generally collected on a quarterly basis.

Overall collection throughout 2024 totaled \$11.6 million versus a budgeted amount of \$7.0 million, a \$4.6 million or 65.1% favorable variance. By reconciling against the State's Business Licensing System (BLS), the City was able to identify taxes collectable from prior periods, significantly contributing to the performance of this revenue. Looking forward, the 2025 budget for B&O taxes is \$10.0 million, with base collections remaining strong while collection of back taxes tapers off as businesses become current on tax obligations.



Utility Taxes consist of an 11.5% tax on the gross revenues of water, sewer, storm drainage and solid waste utilities and a 6.0% tax on electric, natural gas, and telephone utilities operating within the City. Of those utilities taxed at 11.5%, the General Fund receives 9.0% while the remaining 2.5% is dedicated to funding City streets projects. The utilities taxed at 6.0% contribute 5.0% to the General Fund and 1.0% to City streets projects.

Overall, utility taxes decreased by \$9,900 or -0.1% from 2023, but ended the year \$1.6 million favorable to budget. Roughly 72% of the utility taxes collected by the City are comprised of the city interfund utility taxes and electric utility taxes. These two revenue sources accounted for \$11.4 million of the collected \$15.8 million throughout 2024.

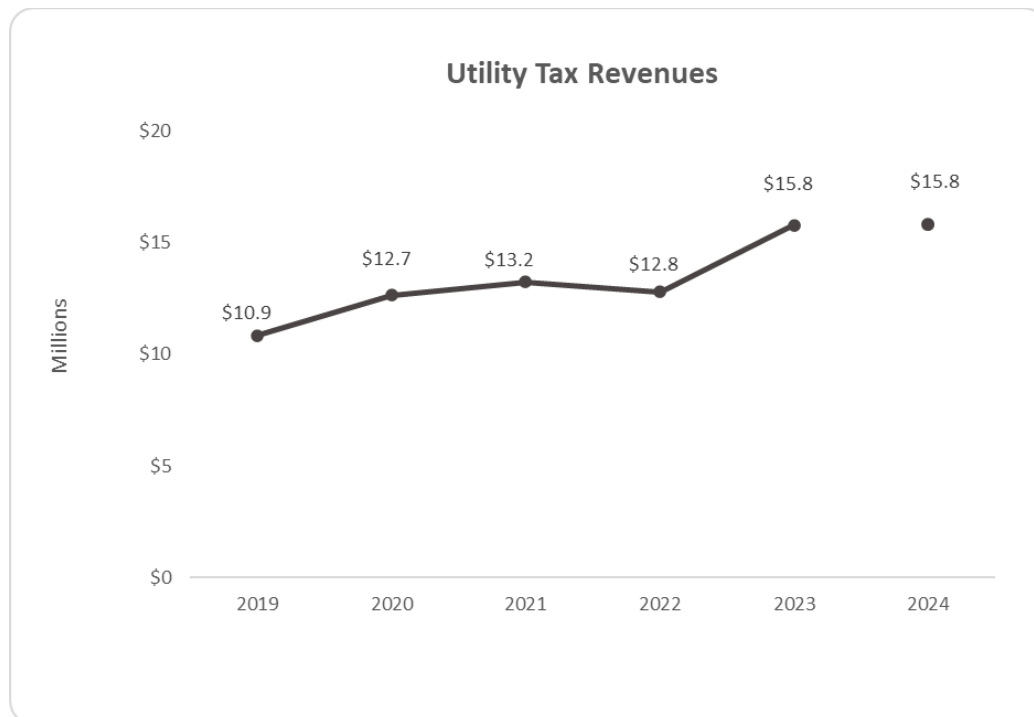
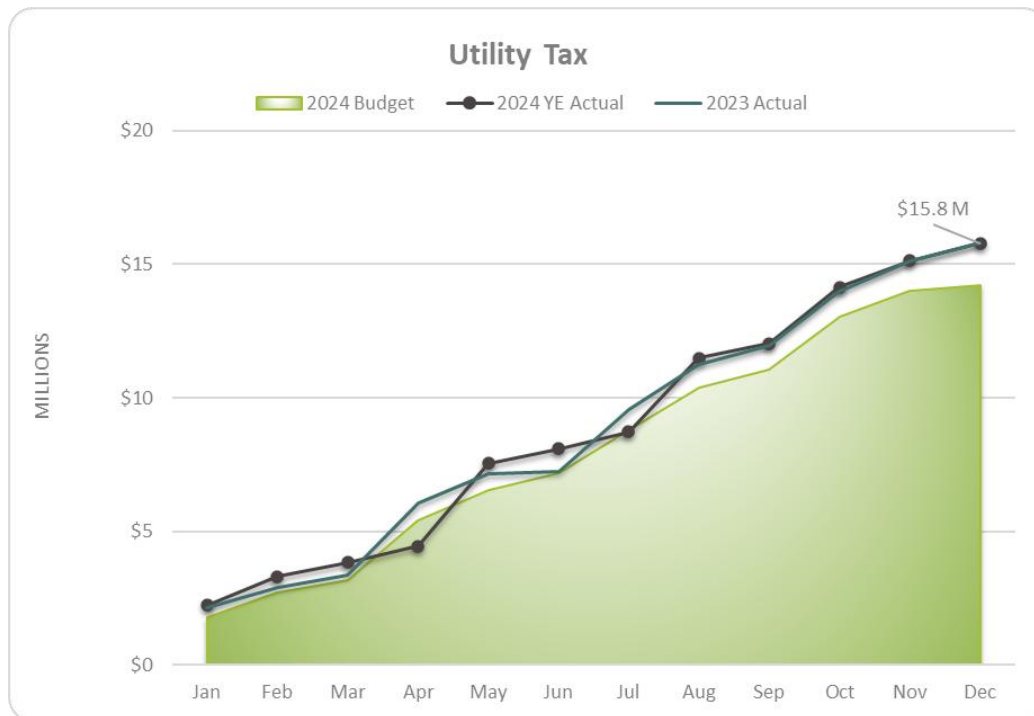
One of the largest contributors to the overall favorable variance to budget is the collection of backdated utility taxes from solid waste haulers. The City anticipates this level of collection to slow as taxes become current, as evidenced by the decrease in overall revenue in this category from last year. Despite this, collections were still well in excess of projections.

Also contributing to the favorable budget variance, telephone taxes have increased from 2023 totals by \$189,500, mainly due to the timing of collections from prior year activity. Telephone taxes are collected in arrears on a quarterly basis, which causes the timing variance from prior year and quarters.

Mitigating the favorable variance to budget and prior year totals, cable utility taxes have been declining year-over-year since 2022. With more households moving to streaming services rather than basic cable, the City anticipates cable utility taxes to continue to decline over time. Natural gas tax revenues also decreased following a three-year period of increases that peaked in 2023, which were the highest collections in more than a decade. Although 2024 revenues declined from the 2023 peak, they still represent the second-highest collections since 2009.

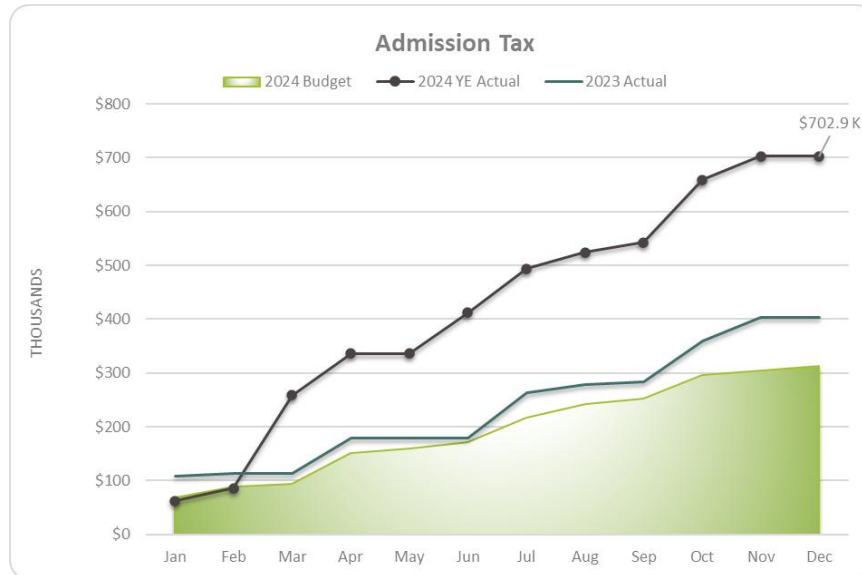
The table and graphics below demonstrate the various utility tax revenues and show actual revenues compared to budget. Note that these amounts represent only the General Fund portion of revenues, and do not contain those revenues allocated for funding City streets projects.

Utility Tax by Type (General Fund Portion) Through December 2024								
Revenue	2024			Favorable (Unfavorable)		2023	2024 Actual vs. 2023 Actual	
	Annual Budget	YE Budget	YE Actual	Amount	Percentage	YE Actual	Amount	Percentage
City Interfund Utility Taxes	\$ 5,989,667	\$ 5,989,667	\$ 6,733,102	\$ 743,435	12.4%	\$ 6,238,094	\$ 495,009	7.9%
Electric	4,426,743	4,426,743	4,696,372	269,629	6.1%	4,443,631	252,740	5.7%
Natural Gas	1,658,523	1,658,523	1,289,448	(369,075)	-22.3%	1,469,777	(180,329)	-12.3%
Telephone	435,847	435,847	687,102	251,255	57.6%	497,600	189,502	38.1%
External Utility Taxes	621,973	621,973	1,342,295	720,322	115.8%	1,919,923	(577,627)	-30.1%
Brokered Natural Gas	150,000	150,000	240,833	90,833	60.6%	319,286	(78,453)	-24.6%
Cable	931,981	931,981	798,527	(133,454)	-14.3%	909,293	(110,765)	-12.2%
Total	\$ 14,214,734	\$ 14,214,734	\$ 15,787,679	\$ 1,572,945	11.1%	\$ 15,797,603	\$ (9,924)	-0.1%



Note: The large increase from 2019 (\$10.9 million) to 2020 (\$12.7 million) is attributed to the City's decision mid-2020 to reallocate 1.0% previously dedicated to the Arterial Street Preservation Fund to support General Fund operations due to the uncertainty of the economic impacts of COVID-19. The Arterial Street Preservation Fund's 1.0% was reinstated in 2021, but 2021 collections continued to increase due to an increase in the City's internal utility tax rate from 7.0% to 10.0%. The significant jump from 2022 (\$12.8 million) to 2023 (\$15.8 million) is largely due to higher service revenue following a rate increase effective in 2023, combined with higher service usage and the collection of B&O taxes on businesses that provide utility services.

An **Admission Tax** of 5.0% is placed on charges for general admission, season tickets, cover charges, etc., which are generally collected on a quarterly basis. Admission tax revenues of \$702,900 were collected throughout 2024, resulting in a favorable variance of \$390,500 to budget and a significant 74.2% increase from 2023 collections. The large increase in collections in March was due to a one-time payment as part of an agreement. Controlling for this non-recurring payment, admission taxes are still reporting a favorable variance to budget by roughly \$283,800. These revenues are dependent on community engagement and highly correlated with general economic conditions.



Gambling Tax applies to all card games, punch board games, pull tabs, bingo games, raffles and amusement games played within City limits. The majority of gambling tax revenues are collected from amusement games (48.7%) and card games (36.6%). At \$212,100 through the year, collections are \$66,100 lower than 2023 totals and report a \$83,200 or -28.2%, unfavorable variance to budget. The primary driver for the unfavorable variance was minimal collections for card games.

As anticipated in previous reports, this was not mitigated by the end of the year due to the timing of collecting backdated taxes (although these have begun to be collected in 2025). Gambling tax revenues historically have high volatility both month-over-month and year-over-year: excluding 2021 (due to COVID-19 restrictions), recent annual revenues average about \$292,500 but have been as high as \$413,000 (2018) and as low as \$110,000 (2020). Lower performance in gambling taxes combined with lower retail sales tax collections potentially indicates a decrease in disposable cash in the area.

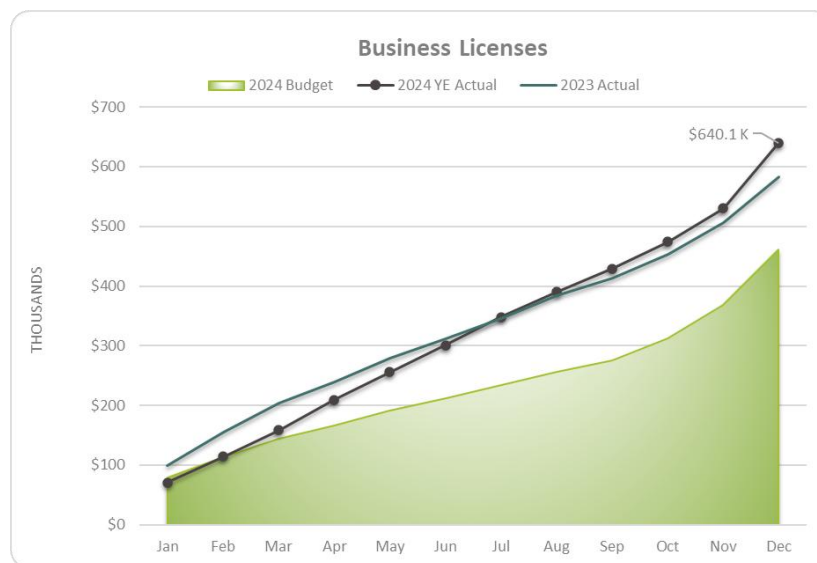


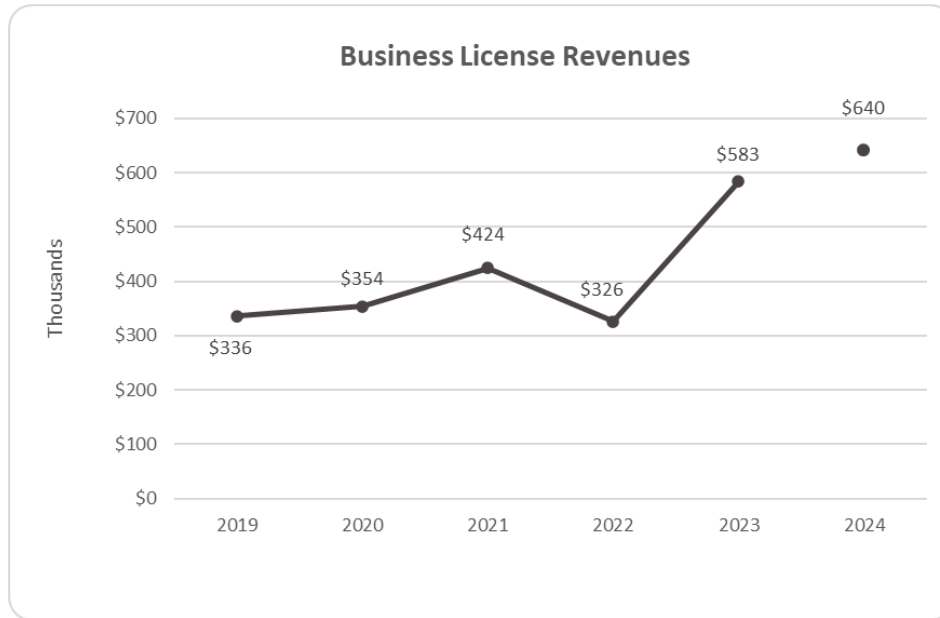
Licenses and Permits include business licenses, building permits, plumbing, electric and other licenses and permit fees. Building permit fees and business licenses typically comprise most of the budgeted revenue in this category, at approximately 60% and 15%, respectively.

The annual **Business License** renewal fee for each business located within the City is \$103, with the renewal cycle for each business beginning on the date the business was originally granted a license.

Annual collections totaled \$640,100 in 2024 compared to \$583,500 in 2023, a 9.7% increase. Historically, business license collections have been a highly volatile revenue source, and as such were budgeted conservatively. Through discovery and B&O tax use of the State's Business Licensing System, these revenues have become more consistent.

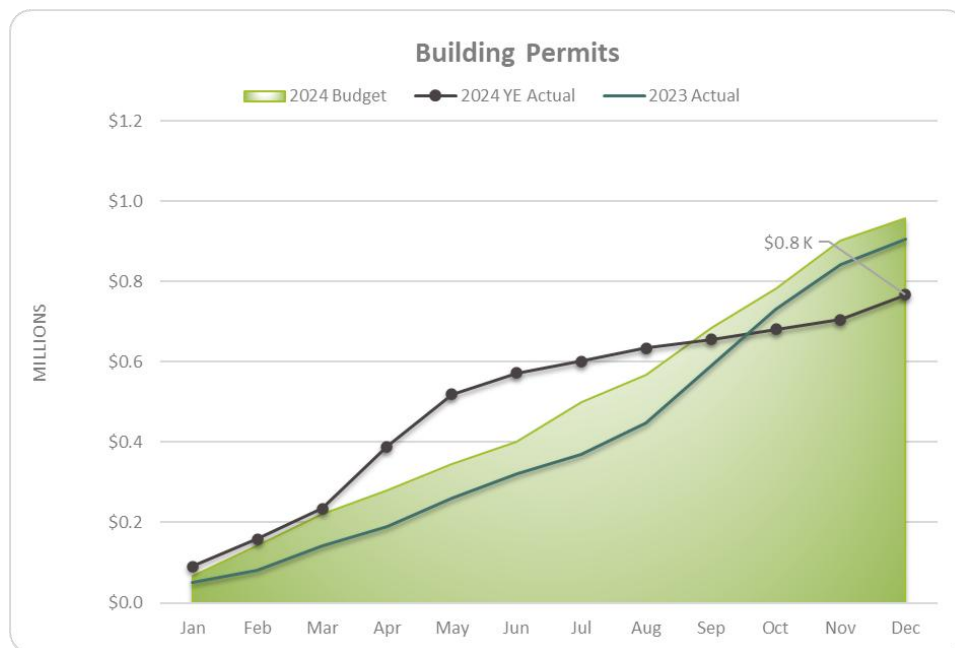
In 2025, the renewal fee will increase from \$103 to \$107.

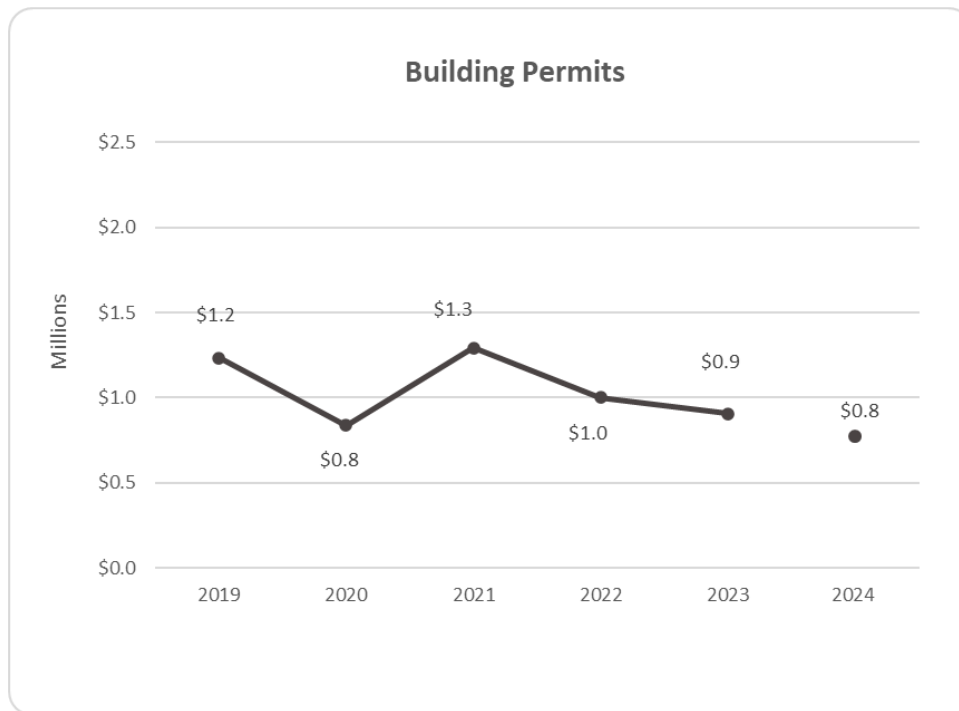




Building Permit revenues collected in 2024 totaled \$767,000, approximately \$137,350 lower than 2023, with an unfavorable variance to budget of \$189,500 (-19.8%). The number of permits submitted throughout the year increased by 41.2% over 2023, representing an increased workload of construction throughout the City. This increase is mainly from one large project within City limits.

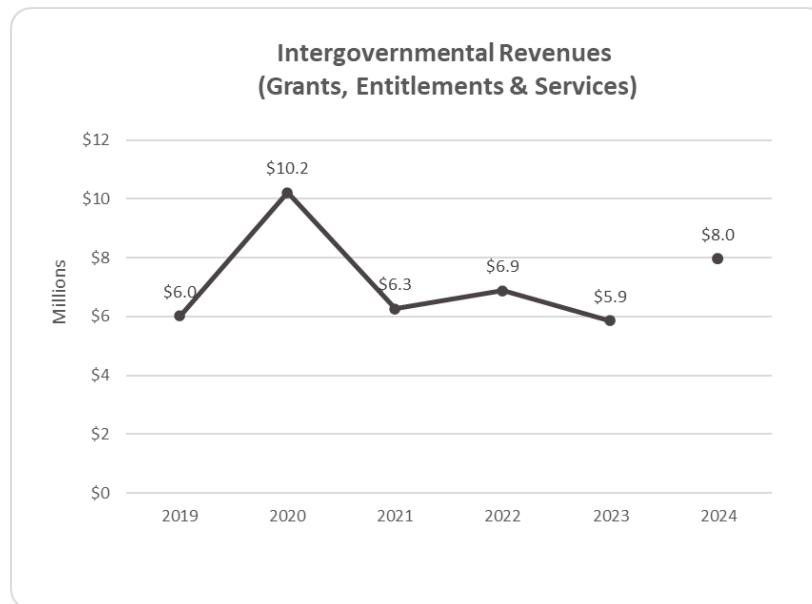
However, a large contributing factor for this unfavorable collection variance versus 2023 totals is the decreased valuation of new tenant improvement permits and repairs.





Intergovernmental revenues include grants and stimulus monies (direct and indirect federal, state, and local), revenue from the Muckleshoot Indian Tribe (MIT) compact, as well as state shared revenues. Collections through 2024 totaled \$8.0 million and were \$558,000 favorable to budget expectations. Much of the favorable variance is due to collecting the approved 2024 Muckleshoot Casino compact request in full along with the final payment of 2023 at the beginning of the year, a total of \$2.7 million. Generally, the City would experience a timing lag of collecting the annual request in the following year. Also contributing to the favorable variance is federal and interlocal grant reimbursements for projects such as the police body-worn camera program. State grants, however, ended 2024 with an unfavorable variance of \$548,000. The incomplete projects related to these grants will be carried-forward into 2025 along with the corresponding grants. Generally speaking, intergovernmental revenues have increased year-over-year by 2% (after backing out the one-time Coronavirus Aid, Relief, and Economic Security Act revenues in late 2020), and the City expects the same to occur in 2025.

Intergovernmental Revenues (Grants, Entitlements & Services) Through December 2024								
Revenue	2024			Favorable (Unfavorable)		2023	2024 YTD Actual vs. 2023 Actual	
	Annual Budget	YE Budget	YE Actual	Amount	Percentage	YE Actual	Amount	Percentage
Federal Grants	\$ 141,246	\$ 141,246	\$ 143,807	\$ 2,561	1.8%	\$ 41,589	\$ 102,219	245.8%
State Grants	1,476,384	1,476,384	928,292	(548,092)	-37.1%	252,504	675,788	267.6%
Interlocal Grants	434,543	434,543	611,104	176,561	40.6%	258,273	352,831	136.6%
Muckleshoot Casino Services	1,712,643	1,712,643	2,652,318	939,675	54.9%	1,404,116	1,248,202	88.9%
State Shared Revenues:								
Streamlined Sales Tax	575,982	575,982	576,091	109	0.0%	720,114	(144,023)	-20.0%
Motor Vehicle Fuel Tax	1,179,887	1,179,887	1,097,029	(82,858)	-7.0%	1,106,315	(9,286)	-0.8%
Criminal Justice - High Crime	289,096	289,096	291,589	2,493	0.9%	284,886	6,703	2.4%
Criminal Justice - Population	20,650	20,650	33,948	13,298	64.4%	32,098	1,849	5.8%
Criminal Justice - Special Prog.	92,924	92,924	119,271	26,347	28.4%	133,769	(14,497)	-10.8%
Marijuana Excise Tax	175,522	175,522	224,867	49,345	28.1%	235,532	(10,665)	-4.5%
State DUI	12,390	12,390	8,647	(3,743)	-30.2%	6,141	2,505	40.8%
Fire Insurance Tax	91,000	91,000	-	(91,000)	-100.0%	114,235	(114,235)	-100.0%
Liquor Excise	495,593	495,593	610,509	114,916	23.2%	622,267	(11,758)	-1.9%
Liquor Profit	712,415	712,415	670,497	(41,918)	-5.9%	678,570	(8,072)	-1.2%
Total State Shared:	3,645,459	3,645,459	3,632,447	(13,012)	-0.4%	3,933,926	(301,479)	-7.7%
YE Total	\$ 7,410,275	\$ 7,410,275	\$ 7,967,969	\$ 557,694	7.5%	\$ 5,890,408	\$ 2,077,561	35.3%



Note: 2020 revenue was higher than normal due to the receipt of \$3.8 million in federal CARES grant money from the Department of Treasury.

Charges for Services consist of general governmental service charges, public safety charges, development service fees, and culture and recreation fees. Total charges for services collected through the 2024 were \$10.7 million and were roughly \$338,000 or -3.1% less than expected for the year. This variance was found primarily in the General Government category.

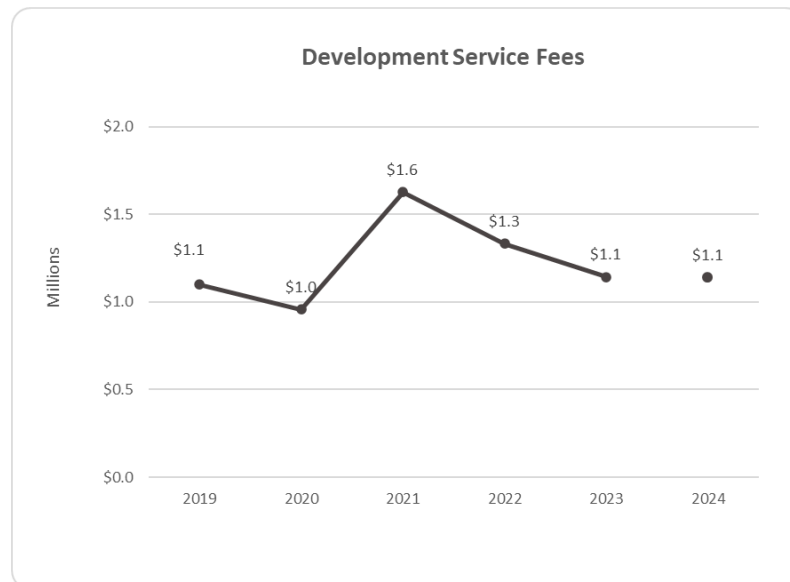
Charges for Services by Type Through December 2024								
Revenue	2024			Favorable (Unfavorable)		2023	2024 Actual vs. 2023 Actual	
	Annual Budget	YE Budget	YE Actual	Amount	Percentage	YE Actual	Amount	Percentage
General Government	\$ 5,824,577	\$ 5,824,577	\$ 4,532,458	\$ (1,292,119)	-22.2%	\$ 4,454,072	\$ 78,386	1.8%
Public Safety	1,094,160	1,094,160	1,644,675	550,515	50.3%	1,218,117	426,558	35.0%
Development Services	1,158,080	1,158,080	1,138,214	(19,866)	-1.7%	1,141,917	(3,702)	-0.3%
Culture & Recreation	2,975,485	2,975,485	3,399,314	423,829	14.2%	3,265,931	133,383	4.1%
Total	\$ 11,052,302	\$ 11,052,302	\$ 10,714,660	\$ (337,642)	-3.1%	\$ 10,080,036	\$ 634,624	6.3%

The *General Government* revenue category primarily includes the interfund assessment for support departments (Finance, Human Resources and Legal). Operating costs for these departments are charged to the respective General Fund home department and the portion of those costs that provide citywide benefit are recouped from other funds via interfund charges. General Government revenues also include fees for passport services, reimbursement from cities participating in the South King Housing and Homelessness Partners (SKHHP), as well as revenues related to certain transportation projects. Approximately \$1.2 million of the \$1.3 million variance is due to the deferral of SKHHP projects from 2024 to 2025. In 2024, these projects were planned to be paid from the General Fund and reimbursed by the SKHHP fiduciary fund; beginning in 2025, all SKHHP operating activity will occur in the fiduciary fund. Looking forward into 2025, the main source of revenues within this category will remain the interfund support department charges.

Public Safety revenues mainly consist of revenues for law enforcement services, which are extra duty security services whereby police officers are contracted for, and reimbursement is made by the hiring agency. This category also includes reimbursements from the Muckleshoot Indian Tribe (MIT) for a full-time dedicated police officer and associated expenditures, as well as funds collected from the Auburn School District for services rendered. Compared to the annual budget, revenues were \$550,500 or 50.3% favorable.

Public safety revenues collected throughout 2024 totaled approximately \$1.6 million and saw a \$427,000 increase from 2023 totals. This is largely attributable to higher than expected law enforcement services revenue collected throughout the year, accounting for \$1.5 million or 94.8% of the total revenue collected in this category, an increase of \$477,600 or 44.2% from last year. DUI emergency response fees decreased from 2023 collections by \$46,800 or -37.5%, which slightly mitigated some of the favorable variance to prior year totals. The City expects continued growth in this revenue category next year.

Development Services fee collections consist primarily of plan check fees, facility extension charges, and zoning and subdivision fees. Through 2024, development service fees collected totaled \$1.1 million but were \$19,900 unfavorable to budget expectations. Within this category, unfavorable variances to annual budget existed in plan check fees (-\$27,000), environmental services (-\$27,000), and fees assessed on projects that require extension of public facilities (-\$13,700). Mitigating a portion of the unfavorable variance, zoning and subdivision fees ended 2024 with a favorable variance (+\$48,000). The overall unfavorable variance is an effect of the revenue regressing to the mean after an exceptional two-year period of high collections from 2021 through 2022. The City is estimating a 7% increase from 2024 budget for these revenues in 2025 due to an anticipated increase of plan check fees throughout next year.



Most of the *Culture and Recreation* revenues are derived from green fees and pro shop sales at the Auburn Golf Course, recreational classes, ticket sales at the Auburn Avenue Theater (currently being held at local high schools), senior programs, and special events. Overall, this category of revenues outperformed budget expectations by \$424,000 or 14.2%.

Over 50% of annual Culture and Recreation revenues have come from the Auburn Golf Course. Green fee revenues have increased by \$113,400 or 7.0% from last year and are favorable to budget by \$145,400 in 2024. The golf course collects roughly 65% of its total revenues during the peak months of May through September. Since 2018, green fee revenues have increased annually, seeing a large spike in 2020 through 2021, followed by modest increases in 2022 and 2023. Continuing this trend, the City anticipates continued modest growth in 2025 based on updated green fee rates.

Recreation classes represent a further 20.0% of annual culture and recreation collections and have generally remained consistent from prior year totals with \$687,500 in collections. Ticket sales for performances held at local school venues (previously held at the Auburn Avenue Theater) have decreased by \$20,000 or 18.0% from prior year totals but carry a favorable variance to budget by \$51,000. This is mainly due to the Performing Arts Center decreasing to two shows annually in 2024 compared to three shows in 2023. With continued community participation in recreational classes the City is expecting a slight increase in these revenues in 2025.



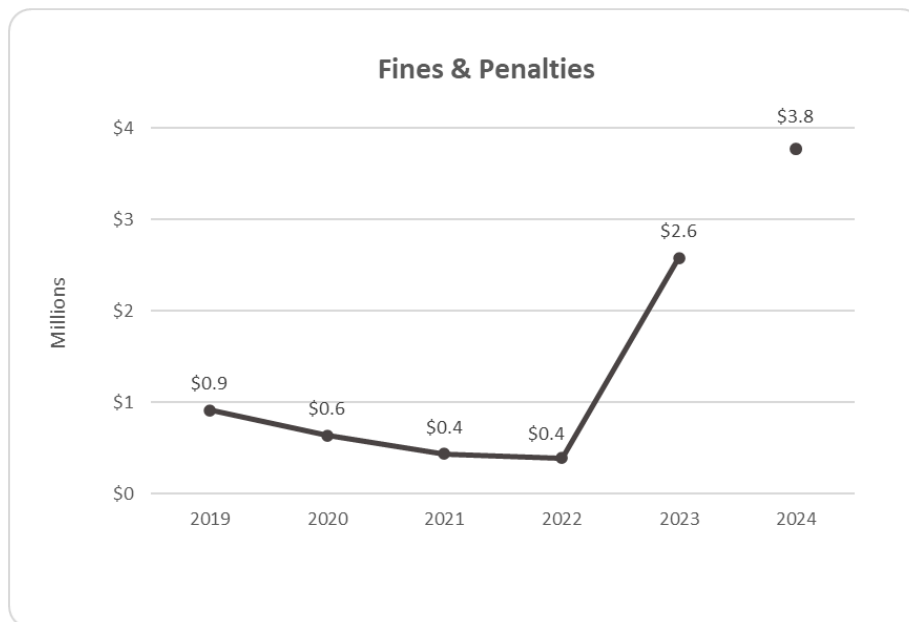
Fines & Penalties include civil penalties (such as code compliance fines), parking and traffic infraction penalties, criminal fines (including criminal traffic, criminal non-traffic, and other criminal offenses) as well as non-court fines such as false alarm fines. The table below shows a detailed breakdown of the different types of fines and penalties collected by the City.

Fines & Penalties by Type Through December 2024								
Revenue	2024			Favorable (Unfavorable)		2023	2024 Actual vs. 2023 Actual	
	Annual Budget	YE Budget	YE Actual	Amount	Percentage	YE Actual	Amount	Percentage
Civil Penalties	\$ 10,000	\$ 10,000	\$ 9,102	\$ (898)	-9.0%	\$ 1,786	\$ 7,316	409.7%
Civil Infraction Penalties	138,313	138,313	183,777	45,464	32.9%	138,221	45,556	33.0%
Photo Enforcement	3,000	3,000	407	(2,593)	-86.4%	1,817	(1,410)	-77.6%
Parking Infractions	733,506	733,506	2,701,857	1,968,351	268.3%	1,134,673	1,567,184	138.1%
Criminal Traffic Misdemeanor	40,000	40,000	46,862	6,862	17.2%	33,449	13,413	40.1%
Criminal Non-Traffic Fines	41,000	41,000	75,213	34,213	83.4%	49,967	25,246	50.5%
Criminal Costs	30,000	30,000	8,790	(21,210)	-70.7%	11,350	(2,559)	-22.5%
Non-Court Fines & Penalties	76,000	76,000	736,511	660,511	869.1%	1,087,180	(350,669)	-32.3%
Total	\$ 1,071,819	\$ 1,071,819	\$ 3,762,521	\$ 2,690,702	251.0%	\$ 2,458,443	\$ 1,304,078	53.0%

Total revenues collected throughout 2024 were \$3.8 million as compared to a budget of \$1.1 million and were 251.0% above budget expectations. This is primarily due to collections from the photo enforcement program (implemented in 2023), which are classified as parking infractions. These revenues were budgeted conservatively during the first full year of the program. Furthermore, the City received an influx of non-court fines & penalties through the first half of the year due to back-pay of B&O taxes.

The City contracts with the King County Court to operate its municipal court services. The number of hearings, judgments, and collections activity began decreasing in 2019 and has continued to decline since that time. Although the graph below shows a large spike in revenue in 2023 and even stronger performance in 2024, this is almost entirely due to photo enforcement and B&O-related collections. Excluding these sources, the remaining court-related collections have declined to \$324,000, approximately one-third of their annual average for the period of 2015-2019, prior to contracting with King County. The City is currently conducting a feasibility study of alternatives to contracting with King County.

Moving into 2025 the City is anticipating a slight decrease in photo enforcement revenues as the program progresses in its desired effect of encouraging safe driving. Furthermore, while the revenues will be receipted into the General Fund, the City will be transferring those funds into the General Transportation Fund that will fund pedestrian and street safety programs.



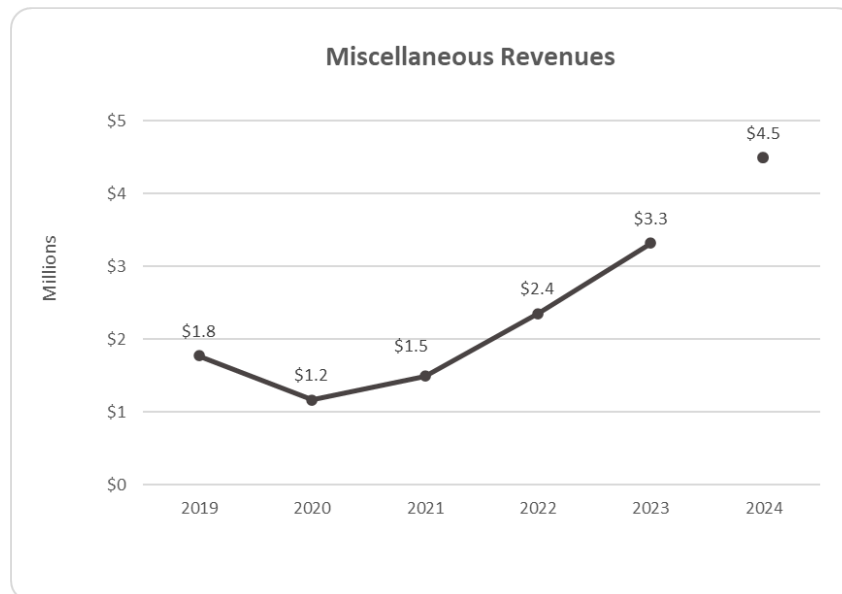
Miscellaneous Revenues consist of investment earnings, income from facility rentals, revenue collected for golf cart rentals at the Auburn Golf Course, contributions and donations, and other income including the quarterly purchasing card (P-card) rebate monies. A breakdown of the most significant miscellaneous revenue categories is listed in the table below.

Miscellaneous Revenues by Type Through September 2024								
Revenue	2024			Favorable (Unfavorable)		2023	2024 Actual vs. 2023 Actual	
	Annual Budget	YE Budget	YE Actual	Amount	Percentage	YE Actual	Amount	Percentage
Interest & Investments	\$ 315,000	\$ 315,000	\$ 2,218,003	\$ 1,903,003	604.1%	\$ 1,600,133	\$ 617,871	38.6%
Rents & Leases	1,152,948	1,152,948	1,394,828	241,880	21.0%	1,229,495	165,333	13.4%
Contributions & Donations	42,000	42,000	24,030	(17,970)	-42.8%	29,420	(5,391)	-18.3%
Other Miscellaneous Revenue	258,000	258,000	850,739	592,739	229.7%	457,129	393,610	86.1%
Total	\$ 1,767,948	\$ 1,767,948	\$ 4,487,600	\$ 2,719,652	153.8%	\$ 3,316,177	\$ 1,171,423	35.3%

Revenues collected throughout 2024 in this category totaled \$4.5 million and were \$2.7 million or 153.8% favorable to budget. Of the overall favorable variance to budget, 70.0% was comprised of interest and investment collections, far exceeding budget expectations due to higher than expected interest rates and the maturation of multiple investments during the third quarter of the year. Referring to the investment portfolio table in this report, four investments are set to mature throughout 2025.

The rents and leases category includes payments for facility rentals, golf cart rentals, and the restaurant lease at the golf course. Rents and leases were favorable by \$242,000 against 2024 budget expectations, with a temporary easement of City property contributing significantly to the variance. Golf carts and other rentals were also favorable to expectations by \$96,000, resulting in a favorable balance of budget to actual for the category. The rents and leases category generally exhibits seasonality, with the peak being in the spring and summer months. Throughout the year, rents and leases were \$165,300 above 2023 collections, as the City has seen increased numbers of events that request the use of City facilities.

The “Other Miscellaneous Revenue” sub-category reported \$394,000 more than last year and was favorable to the annual budget by \$592,700. This category includes \$406,500 in revenue related to a national opioid settlement distribution program.



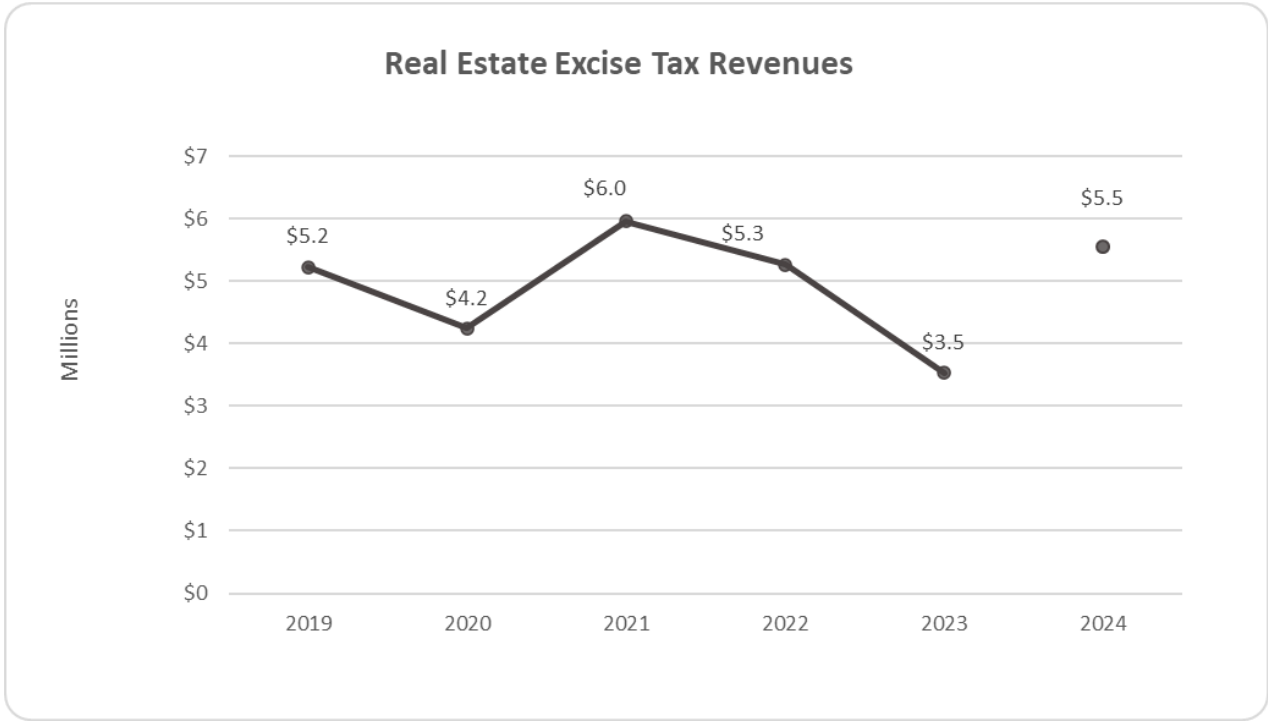
OTHER FUNDS

Real Estate Excise Tax (REET) revenues are taxes on the sale of both commercial properties and single-family residences. These collections are received into the Capital Improvement Projects Fund and used for governmental capital projects.

REET revenues collected during the 2024-year total \$5.5 million, which is roughly \$3.3 million or 59.8% favorable to budget expectations. According to King County assessed valuations of property taxes, the City has increased in property value by 2.3% from 2023 assessments. Accompanied with lower interest rates currently, the current climate for real estate sales is favorable.



Annual REET collections in 2024 significantly outpaced those of last year, and have only been exceeded in the last ten years by 2021 annual collections. This is a sign of recovery after two years of declining annual REET revenues. Collections peaked in 2021 following two years of historic low interest rates maintained by the Federal Reserve in response to COVID-19. However, interest rates were increased throughout 2022 and 2023 to address severe inflation, cooling the market and lowering REET collections in those years. In 2024, the federal funds rate began decreasing September, and the second half of the year saw increased collections compared to the first half. Generally, REET revenues have reflected the overall market volatility in recent years, with a standard deviation of \$960,400 or 29.0% of the average annual collections over the time period of 2017 to 2023.



American Rescue Plan Act (ARPA) Fund

In March 2021, the American Rescue Plan Act (ARPA) was signed into law, with the intent of mitigating the economic impacts related to COVID-19. Through ARPA's State and Local Government Fiscal Recovery Fund program, the City was allocated \$14.75 million in funding. Council approved the City's acceptance of ARPA funds in Resolution #5608, and the general spending categories of those funds (as determined by a Council ad hoc committee) in Ordinance 6832.

The City's plan for using ARPA funding was to mitigate the cost of providing public safety services throughout the City. The City has expended all \$14.75 million as of Q1-2024, as shown in the table below and reported to the Department of the Treasury.

ARPA FUNDING STATUS	
Total ARPA Funding Received	14,751,231
ARPA Funding Used to Mitigate Public Safety Costs	14,751,231
ARPA Funding Remaining	-

As a result of the cost mitigation provided by the ARPA funding, the City has been able to allocate General Fund funding toward projects approved by the Council ad hoc committee. Throughout 2024, the City has been able to spend \$2.5 million, for a total of \$6.9 million since 2021 on the following projects:

Title	Budget	2024		
		Q4 Spend	Lifetime Spend (includes this quarter)	Remaining
Completed Projects	2,745,359	-	2,745,358	-
Neighborhood Street Light Program	1,300,000	244,756	339,292	960,708
Neighborhood Traffic Calming	200,000	(9,032)	9,464	190,536
Recreation Access Grants	150,000	236	886	149,114
Human Services Grants Includes Admin	1,000,000	-	445,882	554,118
Theater	389,700	-	-	389,700
Tyler Tech MUNIS Financial Implementation	301,500	-	-	301,500
Paving Gravel Roads	135,000	114,297	135,000	-
2023 Local Street Preservation	501,886	48,167	48,167	453,719
Translation Services	25,000	-	1,685	23,315
Cyber Security Locks	50,000	-	-	50,000
Auburn Way South Median Landscape Replanting/Irrigation	50,000	-	40,187	9,814
Auburn Way South Roundabout	150,000	33,380	52,840	97,160
Emergency Housing Voucher Program	2,000,000	83,102	575,882	1,424,118
DEI Dashboard (Inclusive Auburn)	130,000	-	92,805	37,195
Duct cleaning in applicable buildings	150,000	184,219	150,000	-
Encampment Cleanup	500,000	4,536	456,403	43,597
Downtown Sidewalk Replacement on Main Street and B Street Plaza Surface Replacement	1,819,409	258,795	612,828	1,206,581
Cameras in qualified census tracts	150,000	137,875	150,000	-
Community Violence Intervention Programs (Drone, SPIDR Tech)	236,248	33,561	204,436	31,812
Arts Culture Center Renovations	100,000	-	-	100,000
Auburn Ave Theater Demolition	490,000	406,071	437,771	52,229
Signing Bonuses for Police Lateral Hires	200,000	22,245	200,000	-
Other Projects (not started)	1,977,130	-	-	1,977,130
Total:	14,751,231	1,562,207	6,798,885	7,952,346

The project *Downtown Sidewalk Replacement on Main Street and B Street Plaza Surface Replacement* (cp2321) will construct infrastructure improvements in Downtown Auburn along Auburn Ave. from East Main St. N to 1st St. NE and on East Main St. from Auburn Ave to B St. NE, including B St. Plaza. The improvements will support existing and future re-development activities

and replace infrastructure that is at or near the end of its useful service life. The project team is finalizing the design of the proposed improvements and anticipates completing the design in the first quarter of 2025, with construction to begin in the second quarter of 2025. Total spend of this project so far is \$612,828 with \$258,795 spent in the fourth quarter.

The *DEI Dashboard* project was initiated in the third quarter, with the Office of Equity entering into a contract with an outside consultant firm for development of the City's DEI data strategy. The purpose of this plan is to outline and roadmap of the City's data practices, aimed at tracking and monitoring key organizational DEI objectives. Overall spend of this project is \$92,805 which was all spent in the third quarter of 2024.

Beginning in 2023, the *Emergency Housing Voucher Program* is budgeted at \$2 million over the life of the program. This program assists residents of Auburn who are experiencing homelessness and drug addiction who are willing to enroll in and complete inpatient treatment. The program will cover the costs of clean and sober housing of participants for up to three years if the participant follows the clean and sober housing agreement. Life-to-date project spend is \$575,882, with \$83,102 occurring in Q4-2024. Throughout 2024, this project helped house 35 individuals.

The *Auburn Avenue Theater Demolition* project was budgeted at \$490,000. The project demolished the existing Auburn Avenue Theater building, provided support to the shared wall with the adjacent building, and disconnected existing utilities. The Auburn Avenue Theater building demolition was completed on November 15, 2024. The lifetime project cost through 2024 is \$437,771.

Street Funds

This section provides a financial overview of the City's three street funds for the period ending December 31, 2024. The City's street funds are the Arterial Street Fund (Fund 102), the Local Street Fund (Fund 103), and the Arterial Street Preservation Fund (Fund 105). As noted in the Street Funds Overview section above, variances between budget and actual amounts are generally driven by the schedule and level of activity on projects in the fund, as well as the timing of grant reimbursements and other funding. As many projects in these funds moved into the construction phase in 2024, it is expected that there would be increased activity in both expenditures and revenues to reflect these progressions.

Fund 102 – Arterial Street Fund

The Arterial Street Fund is a special revenue fund that is funded primarily by transportation grants, traffic impact fees, a portion of the City's gas tax receipts, Public Works Trust Fund loans, and developer contributions. As of December 31, 2024 there were 26 separate street projects budgeted in this fund.

Revenues collected in 2024 totaled \$6.8 million compared to 2023 collections of \$3.0 million. Total expenditures in 2024 were \$6.5 million compared to \$3.4 million in the prior year. These increases year-over-year are consistent based on the status of capital projects at the end of 2023. Variances in revenues and expenditures are largely due to the timing of capital expenditures and any subsequent reimbursement via grants, intergovernmental loans and/or operating transfers. Expenditure timing is generally determined by the current phase of each individual capital project; expenditures tend to increase as projects move from the design phase into the construction phase.

Fund 102 - Arterial Street Fund					
Summary of Sources and Uses Through December 2024					
	2024		Favorable (Unfavorable)		2023
	YE Budget	YE Actual	Amount	Percentage	YE Actual
Revenues					
Federal Grants	\$ 5,296,661	\$ 2,267,341	\$ (3,029,320)	(57.2) %	\$ 312,329
State And Local Grants	7,471,713	1,022,186	(6,449,527)	(86.3) %	517,951
Motor Vehicle Fuel and Multimodal Taxes	620,000	582,810	(37,190)	(6.0) %	645,238
Miscellaneous Revenue	3,020,000	1,394,435	(1,625,565)	(53.8) %	256,353
Operating Transfer In	7,004,370	1,385,912	(5,618,458)	(80.2) %	889,996
Contributions & Donations	125,000	-	(125,000)	(100.0) %	332,000
Investment Income	23,000	103,526	80,526	350.1 %	93,986
Total Revenues	\$ 23,560,744	\$ 6,756,209	\$ (16,804,535)	(71.3) %	\$ 3,047,854
Expenditures					
Salary and Benefits	\$ -	\$ 539,750	\$ (539,750)		\$ 491,171
Capital Outlay	25,192,264	5,433,551	19,758,713	78.4 %	2,543,365
Subtotal - Capital Project Expenditures	25,192,264	5,973,302	19,218,962	76.3 %	3,034,536
Services and Charges	195,000	256,821	(61,821)	(31.7) %	134,186
Interfund Payments for Services	29,000	29,004	(4)	(0.0) %	28,404
Debt Service Principal and Interest	204,800	204,650	150	0.1 %	205,345
Operating Transfer Out	-	-	-		-
Total Expenditures	\$ 25,621,064	\$ 6,463,777	\$ 19,157,287	74.8 %	\$ 3,402,470
Net Change in Fund Balance	\$ (2,060,320)	\$ 292,432	\$ 2,352,752	114.2 %	\$ (354,617)

Beg. Fund Balance, January 2024	\$ 2,279,131
Net Change in Fund Balance, December 2024	292,432
Ending Fund Balance, December 2024	\$ 2,571,563

2024 Budgeted Ending Fund Balance \$ 218,811

The table below presents the status of the projects with the most significant budget impact on the fund. Many capital projects are budgeted over multiple years; what is displayed below is the 2024 portion of each project's budget and annual expenditures.

Fund 102 - Arterial Street				
Capital Projects Status (rounded)				
Name	2024 Budget	YE Actual	Remaining	% of Budget
Regional Growth Center Access Imp	\$ 8,790,000	\$ 1,890,000	\$ 6,900,000	35%
AWS Imp. -Hemlock St SE to Poplar St SE	4,740,000	820,000	3,920,000	19%
A Street Loop	1,830,000	1,610,000	220,000	7%
East Valley Highway Widening	1,570,000	60,000	1,510,000	6%
10th St NW & A St NW Intersection Improv	1,550,000	450,000	1,090,000	6%
All Other Projects (21 Remaining)	6,720,000	1,140,000	5,580,000	27%
Total	\$ 25,200,000	\$ 5,970,000	\$ 19,220,000	

The A Street Loop project was completed in 2024. The remaining projects noted above entered the construction phase in 2024 and are expected to continue into 2025 as planned.

Fund 103 – Local Street Fund

The Local Street Fund is a special revenue fund used for local street repair and is funded by interfund transfers on a project-reimbursement basis, as well as the streets funds portion of utility tax revenue (2.5%).

Revenues collected in 2024 totaled \$4.6 million compared \$3.2 million recorded in 2023. This \$1.4 million increase was driven mainly by increased collections of interfund utility taxes compared to the prior year (+\$963,000) as well as a \$301,000 increase in interest earnings. Total expenditures in 2024 were \$2.1 million compared to \$210,000 in the prior year. Similar to the Arterial Street Fund, this increased activity is consistent with the City's expectation of the status of capital projects at the end of 2024. Most projects entered the construction phase during the year, which is the primary cause of the increase in expenditures and the collection of sales tax related to construction.

Highlighted in the table below and shown in the following graph are the fund's total expenditures related to capital projects.

Fund 103 - Local Street Fund					
Summary of Sources and Uses Through December 2024					
	2024		Favorable (Unfavorable)		2023
	YE Budget	YE Actual	Amount	Percentage	YE Actual
Revenues					
Interfund Utility Taxes	\$ 889,500	\$ 1,870,306	\$ 980,806	110.3 %	\$ 907,435
Electric Utility Tax	\$ 885,300	\$ 939,274	53,974	6.1 %	\$ 888,726
Natural Gas Utility Tax	331,700	257,890	(73,810)	(22.3) %	293,955
Cable TV Tax	176,200	118,005	(58,195)	(33.0) %	-
Telephone Utility Tax	87,200	137,436	50,236	57.6 %	100,088
Garbage Utility Tax (External Haulers)	10,300	201,314	191,014	1854.5 %	412,856
Miscellaneous Revenue	-	2,400	2,400		8,704
Operating Transfer In	1,300,329	699,392	(600,937)	(46.2) %	345,780
Interest Earnings	15,900	300,843	284,943	1792.1 %	210,547
Total Revenues	\$ 3,696,429	\$ 4,526,860	\$ 830,431	22.5 %	\$ 3,168,092
Expenditures					
Capital Salary and Benefits	-	166,710	(166,710)		49,499
Capital Outlay	5,886,738	1,916,554	3,970,184	67.4 %	159,424
Subtotal - Capital Project Expenditures	5,886,738	2,083,264	3,803,474	64.6 %	208,923
Interfund Payments for Services	1,300	1,296	4	0.3 %	1,296
Operating Transfer Out	-	-	-		-
Total Expenditures	\$ 5,888,038	\$ 2,084,560	\$ 3,803,478	64.6 %	\$ 210,219
Net Change in Fund Balance	\$ (2,191,609)	\$ 2,442,300	\$ 4,633,909	211.4 %	\$ 2,957,873

Beg. Fund Balance, January 2024	\$ 6,372,457
Net Change in Fund Balance, December 2024	2,442,300
Ending Fund Balance, December 2024	\$ 8,814,757

2024 Budgeted Ending Fund Balance \$ 4,180,848

The table below presents the status of the five active projects in Fund 103. Many capital projects are budgeted over multiple years; what is displayed below is the 2024 portion of each project's budget and annual expenditures.

Fund 103 - Local Street Capital Projects Status (rounded)				
Name	2024 Budget	YE Actual	Remaining	% of Budget
2023 Local Street Preservation	\$ 2,060,000	\$ 1,080,000	\$ 980,000	35%
Local Street Improvement Prog	1,700,000	-	1,700,000	29%
D St SE & 23rd St SE Storm Improvements	710,000	900,000	(190,000)	12%
2026 Local Street Preservation	520,000	10,000	510,000	9%
2025 Local Street Preservation	350,000	90,000	260,000	6%
All Other Projects (3 Remaining)	460,000	-	460,000	8%
Total	\$ 5,800,000	\$ 2,080,000	\$ 3,720,000	

Both the 2023 Local Street Preservation and D St SE & 23rd St SE Storm Improvements projects were completed as of December 31, 2024. The remaining projects illustrated above are expected to continue or enter the construction phase in 2025.

Fund 105 – Arterial Street Preservation Fund

The Arterial Street Preservation Fund is a special revenue fund that historically had been funded by a portion of the utility tax collected by the City. Beginning in 2023, this funding was replaced by a 0.1% sales and use tax enacted by the City's Transportation Benefit District (TBD) via Ordinance 6881. To ensure that restricted TBD revenues remain in the Arterial Street Preservation Fund, the streets funds' portion of utility tax revenues are now receipted entirely into the Local Street Fund and transferred to the Arterial Street Preservation Fund on an as-needed basis.

As a result of the changes that occurred in 2023, revenues for the Arterial Streets Preservation Fund in 2024 were \$411,000 higher than the previous year's total of \$3.6 million. The Public Transportation Sales & Use Tax (TBD revenue) was \$455,000 higher through December 2024 than through the same period last year, and brought in \$555,000 more revenue than what was anticipated for the current year. Additional sources contributing to this increase included grant revenue, which was \$673,000 higher through December 2024 compared to the prior year.

Expenditures in 2024 totaled \$4.3 million compared to \$1.6 million in 2023. Historically, the majority of this fund's expenditures occur in the second half of each year due to the weather sensitivity of pavement construction, which needs to be done primarily in the summer and early fall. Similar to the other streets funds, many projects entered the construction phase in 2024, which had a direct impact on total expenditures and subsequent grant reimbursements.

Highlighted in the table below and shown in the following graph are the fund's total expenditures related to capital projects.

Fund 105 - Arterial Street Preservation Fund					
Summary of Sources and Uses Through December 2024					
	2024		Favorable (Unfavorable)		2023
	YE Budget	YE Actual	Amount	Percentage	YE Actual
Revenues					
City Utility Tax	\$ 1,334,300	\$ -	\$ (1,334,300)	(100.0) %	\$ 825,368
Cable TV Tax	-	41,701	41,701		181,859
Public Transportation Sales & Use Tax	2,100,000	2,655,210	555,210	26.4 %	2,199,743
Grants	3,992,122	766,752	(3,225,370)	(80.8) %	94,050
Transportation	141,092	361,768	220,676	156.4 %	104,518
Developer Mitigation Fees	288,465	-	(288,465)	(100.0) %	-
Operating Transfer In	-	-	-		-
Interest Earnings	18,800	210,947	192,147	1022.1 %	219,029
Total Revenues	\$ 7,874,779	\$ 4,036,378	\$ (3,838,401)	(48.7) %	\$ 3,625,362
Expenditures					
Salary and Benefits	\$ -	\$ 412,545	\$ (412,545)		\$ 338,138
Capital Outlay	10,202,176	3,751,436	6,450,740	63.2 %	1,248,874
Subtotal - Capital Project Expenditures	10,202,176	4,163,981	6,038,195	59.2 %	1,587,012
Supplies	-	-	-		-
Services and Charges	400,000	125,473	274,527	68.6 %	53,552
Operating Transfer Out	185,000	-	185,000	100.0 %	-
Total Expenditures	\$ 10,787,176	\$ 4,289,454	\$ 6,497,722	60.2 %	\$ 1,640,564
Net Change in Fund Balance	\$ (2,912,397)	\$ (253,075)	\$ 2,659,322	(91.3) %	\$ 1,984,798

Beg. Fund Balance, January 2024	\$ 5,773,021
Net Change in Fund Balance, December 2024	(253,075)
Ending Fund Balance, December 2024	\$ 5,519,946

2024 Budgeted Ending Fund Balance \$ 2,860,624

The table below presents the status of the projects with the most significant budget impact on the fund. Many capital projects are budgeted over multiple years; what is displayed below is the 2024 portion of each project's budget and annual expenditures. As noted above, many projects saw increased expenditure activity in 2024 as they entered the construction phase.

Fund 105 - Arterial Street Preservation				
Capital Projects Status (rounded)				
Name	2024 Budget	YE Actual	Remaining	% of Budget
C St SW Presrv (W Main to GSA Signal)	\$ 3,600,000	\$ 80,000	\$ 3,520,000	37%
R Street SE Preservation	1,920,000	1,970,000	(50,000)	19%
2024 Arterial Street Preservation	1,410,000	1,130,000	290,000	14%
Lake Tapps Pkwy/Sumner -Tapps Hwy E Prsv	1,330,000	840,000	480,000	13%
All Other Projects (14 Budgeted)	1,590,000	150,000	1,440,000	16%
Total	\$ 9,850,000	\$ 4,170,000	\$ 5,680,000	

Fund 124 – Mitigation Fees

The Mitigation Fees Fund is a special revenue fund for fees that are assessed at the time applications are received for development activity. These revenues are used to address costs associated with City growth. The fund houses two types of revenues: mitigation fees and impact fees.

Mitigation fees are variable charges collected as a result of State Environmental Policy Act (SEPA) reviews and the City's determination that a project must pay additional fees to compensate for a unique effect that it has on the community.

Impact fees are set charges collected automatically for a variety of projects. These fees are adopted annually by the City Council based on projects anticipated in the Capital Facilities Plan over the next six years. School and Fire Impact fees are collected and reitmted on behalf of the Valley Regional Fire Authority, Auburn School District, Kent School District, Federal Way School District, and Dieringer School District.

Expenditures from these funds consist of transfers out to capital project funds to help support the cost of transporation and parks capital projects. The projects funded from impact and mitigation fee are new or enhanced services necessary to absorb the impact of development.

In 2024, the City received \$1.7 million in mitigation and impact revenues, largely driven by commercial transportation impact fees (\$799,000), parks impact fees (\$175,000) and interest and investment income (\$678,000).

Overall, the fund experienced a \$9.0 million favorable variance to budget driven by lower-than-budgeted expenditures (-\$8.9 million) and marginally higher than budgeted revenues (+\$73,000). Similar to the various streets funds, expenditure budget-to-actual variances are largely driven by project timing. The underspend in this fund is the result of timing differences of multiple capital projects funded by mitigation and/or impact fee revenues.

Fund 124 - Mitigation Fees Summary of Sources and Uses Through December 2024							
Fee Type	Budget		YE Actuals			Favorable (Unfavorable) Variance	
	Revenues	Expenditures	Revenues	Expenditures	Ending Fund Balance	Revenues	Expenditures
Transportation Impact Fees	\$ 1,300,000	\$ 6,470,159	\$ 798,683	\$ 1,166,604	\$ 10,501,980	\$ (501,317)	\$ 5,303,555
Traffic Mitigation Fees	-	150,000	-	150,000	(3,286)	-	-
Fire Impact Fees	125,000	75,000	17,891	-	398,907	(107,109)	75,000
Fire Mitigation Fees	-	-	-	-	81	-	-
Parks Impact Fees	150,000	4,236,630	175,000	645,355	4,125,653	25,000	3,591,275
Parks Mitigation Fees	-	-	-	-	198,397	-	-
School Impact Admin Fees	5,000	-	2,804	-	110,180	(2,196)	-
Wetland Mitigation Fees	-	-	-	-	2,190	-	-
Truck Impact Fees	-	-	152	-	41,053	152	-
Interest and Investment Income	20,100	-	678,241	-	678,241	658,141	-
Fees in Lieu of Improvements	-	-	-	-	28,882	-	-
Permit Processing Fees	-	-	-	-	-	-	-
Total	\$ 1,600,100	\$ 10,931,789	\$ 1,672,771	\$ 1,961,959	\$ 16,082,278	\$ 72,671	\$ 8,969,830

Beginning Fund Balance, January 2024 \$ 16,371,466

Net Change in Fund Balance, December 2024 (289,188)

Estimated Ending Fund Balance, December 2024 \$ 16,082,278

Enterprise Funds

Detailed income and expense statements for Enterprise and Internal Service funds can be found in an attachment at the end of this report. The attachment provides operating and – as applicable – capital fund reports for these funds showing budget, actuals, and variances.

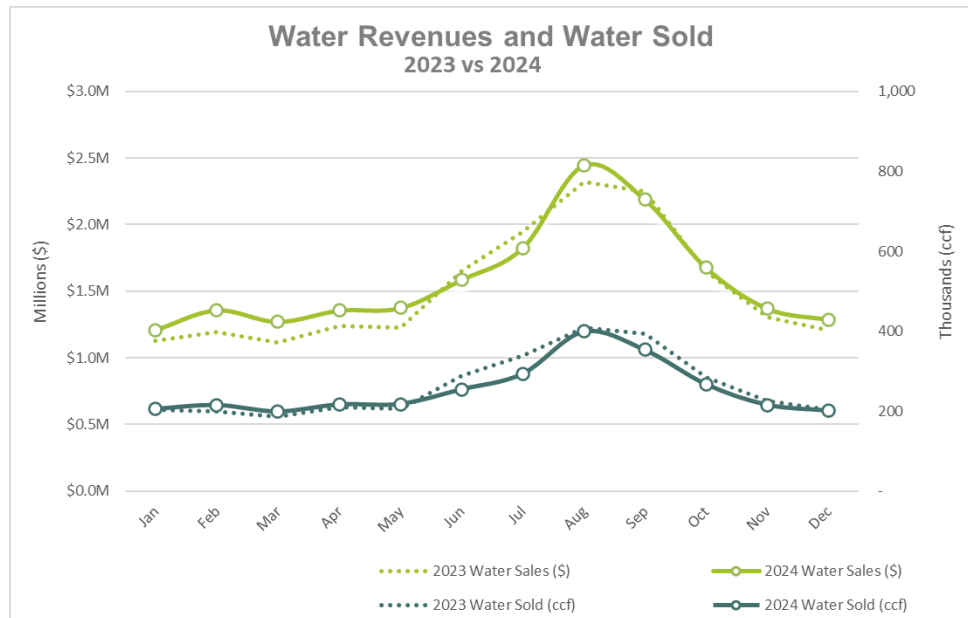
Utility activities are divided between operating funds and capital sub-funds. Operating funds house all the operating costs along with debt service and financing obligations. Capital funds show costs associated with capital acquisition and construction. Both the operating and capital funds have a working capital balance, which is equivalent to current assets minus current liabilities. This approach isolates those funds available for capital and cash flow needs for daily operations and provides project managers information on the availability of working capital for current and planned projects. When considering the utility as a whole, both the operating fund and capital sub-fund must be taken into account.

Through December 2024, the **Water Utility Fund** outperformed budget expectations with a favorable variance of \$1.2 million in revenues. Water sales increased \$663,000 from \$18.5 million in 2023 to \$19.2 million in 2024. Interest earnings increased \$55,000 compared to the prior year, which is consistent with overall continued increases in the City's cash and investments balances.

The Water Utility Fund also experienced a \$1.3 million favorable variance to budget for operating expenditures across all categories, except for supplies (-79,000). Compared to expenditures reported in 2023, operating expenditures increased by \$337,000, mainly due to increases in personnel costs (+\$75,000), public utilities charges (+\$122,000), utilities interfund and excise taxes (+\$120,000), and interfund allocations (+\$53,000).

In 2024, the Water Utility Fund had operating income (operating revenues less operating expenditures) of \$7.7 million, approximately \$337,000 above the same period last year. When combined with non-operating income and the activities of the capital sub-fund, the utility's total working capital decreased by \$1.5 million. Despite the reduction, ending working capital for the Water Utility Fund was \$13.3 million favorable to budget, due to the favorable variances noted above in operating revenues (+\$1.3 million), operating expenditures (-\$1.3 million), and lower than anticipated capital project spend due to scheduling delays (-\$14.0 million). Given the lower project spend in 2024, actual grant revenues received were also lower than budgeted (-\$2.5 million), which partially offset these favorable variances.

Billable water consumption in 2024 totaled 3.0 million ccf (ccf = hundred cubic feet), approximately 112,000 ccf, or 4%, lower than consumption volume through 2023. Compared to the prior year, the largest volume decreases occurred in irrigation and single-family accounts. Note that increased water rates contributed to the increase in water sales revenue compared to the prior year, despite the slight decreases in consumption.



Through the end of 2024, the **Sewer Utility Fund** finished with operating income of \$5.2 million, a \$522,000 increase compared to \$4.7 million through the same period last year. Net of non-operating activity, to include increased capital project activity, the utility experienced an overall increase in working capital of \$4.2 million.

Operating revenues were up \$857,000, or 7.6%, from the same period last year due to stronger performance in charges for City sewer service and interest earnings. Charges for service increased \$541,000 from \$10.3 million through 2023 to \$10.8 million through 2024, and interest earnings increased \$317,000 during that same period. This increase in activity is also reflected in a favorable to budget variance in revenues of \$2.4 million.

Operating expenditures were favorable to budget by \$3.0 million in 2024, driven primarily by a favorable to budget variance in other service charges of \$2.7 million due to the elimination of utility tax charges on pass-through revenues for King County Metro Sewer service.

Although total operating expenditures were favorable to budget in 2024, actual expenditures did increase from \$6.6 million in 2023 to \$6.9 million in 2024. This was due in part to increased personnel costs (+\$54,000), supplies (+\$40,000), other miscellaneous expenditures such as utility taxes (+\$116,000), while interfund support charges decreased slightly (-\$29,000).

Ending working capital for the Sewer Utility Fund was \$14.8 million favorable to budget, due to the favorable variances noted above in operating revenues (+\$2.4 million), operating expenditures (-\$3.0 million), and lower than anticipated capital project spend due to scheduling delays (-\$8.6 million).

In 2024, the **Stormwater Utility Fund** had a favorable budget variance in operating revenues of \$2.0 million, driven by charges for service (+\$1.5 million) and interest revenue (+\$667,000). Compared to 2023, operating revenues were up \$688,000, driven by an increase in charges for storm service (+\$815,000) and partially offset by decreases in miscellaneous revenues (-\$20,000) and interest earnings (-\$82,000). As most stormwater service charges are based on a flat rate, there are not typically seasonal fluctuations in this revenue. Accordingly, service charge

revenues reported throughout 2024 generated on average \$3.1 million each quarter for a total of \$12.6 million through December 2024.

Operating expenditures saw a \$253,000 favorable variance to budget, due to lower than budgeted expenditures in other service charges and personnel costs. In 2024, operating expenditures of \$9.9 million were \$513,000 higher compared to the same period last year. Most of this increase is due to higher personnel (+\$414,000), and miscellaneous other service charges (+\$78,000) such as utility and excise taxes compared to 2023.

Overall, the Stormwater Utility recorded operating income of \$3.4 million compared with \$3.3 million in the same period last year. The fund finished the year with an overall reduction in net working capital of \$1.6 million, due to increased capital project expenditures. Ending working capital for the Stormwater Utility Fund was \$14.4 million favorable to budget, due to the favorable variances noted above in operating revenues (+\$2.0 million), operating expenditures (-\$253,000), and lower than anticipated capital project spend due to scheduling delays (-\$12.0 million).

The **Solid Waste Utility Fund** finished 2024 with a favorable operating income budget variance of \$1.3 million, due to favorable variances in revenues (+\$374,000) and expenditures (-\$907,000).

Service charges generated the majority of \$31.0 million in operating revenues for 2024, which increased \$2.0 million compared to 2023 mainly due to increased service rates. Operating income for the year was \$620,000, a significant increase compared to the operating loss of \$549,000 in 2023.

Operating expenditures increased \$875,000 from \$29.5 million in 2023 to \$30.3 million in 2024. This increase was driven by an increase in payments to the City's contracted solid waste provider (+\$817,000) along with litter crew services (+\$461,000). These increased costs were partially offset by decreases in personnel costs due to the dissolution of the City's internal litter crew (-\$181,000).

The current mix of solid waste customer account types is:

- 92.4% Residential
- 6.0% Commercial
- 1.6% Multifamily

In total, tonnage collected decreased from 68,344 in 2023 to 65,914 in 2024. The "diversion rate" is a measure of how much generated waste is not sent to the landfill, i.e., waste that is either recycled or collected yard waste. Through December 2024, the total diversion rate was 27.4%, which represents a total of 18,060 tons of waste that was diverted from landfills.

In the **Airport Fund**, there is a direct correlation between supply costs for fuel for resale and revenues for fuel sales, and that is reflected in the fund's activity in the current year. In 2024, the Airport Fund experienced an unfavorable budget variance of \$110,000 in operating revenues and a favorable variance of \$124,000 in operating expenditures, resulting in an overall favorable variance of \$15,000. The unfavorable revenue variance was driven by lower-than-anticipated charges for service revenue (-\$171,000) and was partially offset by higher interest earnings (+\$46,000). The favorable to budget operating expenditure variance was driven by cost savings in supplies, primary fuel for resale (-\$137,000).

Operating income was \$354,000, approximately \$22,000 lower than operating income in the previous year. The primary driver of this decrease is lower interest earnings (-\$39,000), which were offset by decreased operating expenses (-\$9,000). Charges for service were \$1.9 million in 2024, which is a minimal increase (+\$3,000) from the prior year. While personnel costs increased \$41,000 compared to the previous year, along with miscellaneous service charges (+\$13,000), these increases were offset by cost savings in supplies (-\$69,000). In all, the Airport Fund saw a reduction in working capital of \$230,000 in 2024, due mainly to increased activity related to the fund's capital projects.



The **Cemetery Fund** saw favorable budget variances both operating revenues (+\$393,000) and expenditures (-\$71,000) in 2024, resulting in a favorable operating income budget variance of \$464,000.

In 2024, the Cemetery Fund saw a decrease of \$178,000 in working capital, compared to an increase of \$104,000 in the prior year. This decrease was driven in part by increased activity related to the fund's capital projects, which were substantially completed in 2024. Total operating income decreased \$232,000 from \$318,000 in 2023 to \$86,000 in 2024, driven primarily by a decrease of \$161,000 in charges for service, as well as a \$12,000 decrease in interest earnings.

Additionally, the fund saw increases in operating expenditures (+\$60,000) compared to the prior year. The increase in operating expenditures from 2023 was driven by increases in personnel costs (+\$91,000), other service charges (+\$36,000) and interfund cost allocation for support services (+\$9,000). These increased expenses were partially offset by savings in supplies expenditures (-\$76,000).



Internal Service Funds

Compared to the prior year, operating revenues in the **Innovation & Technology Fund** increased \$262,000 from \$8.8 million in 2023 to \$9.0 million in 2024. As an internal service fund, these revenues are generated through charges to other City departments to sufficiently cover anticipated expenditures.

Overall, this fund had a budgeted operating loss of \$2.4 million in 2024; however, due to timing differences between budgeted expenditures for software replacements and actual spend, the fund recorded operating income of \$111,000 instead. We expect these planned replacements and related expenditures to occur in 2025.

The **Equipment Rental Fund** saw an \$832,000 reduction in operating income from 2023, due almost entirely to a decrease in insurance recoveries from 2023 to 2024. Given the unexpected nature of insurance recoveries, it is not unusual for there to be wide fluctuations year-over-year in these accounts.

The fund also saw a \$610,000 favorable budget variance in operating income for the same period, due to higher than anticipated interest earnings (+\$340,000), gains on the sales of fixed assets (+\$187,000), and lower than anticipated operating expenditures (-\$194,000).

No significant variances were reported in the **Workers' Compensation, Insurance, or Facilities Funds** through 2024.

Contact Information

This report is prepared by the Finance Department. Additional financial information can also be viewed on the City's website: <http://www.auburnwa.gov/>. For any questions about this report please contact Jamie Thomas at jdthomas@auburnwa.gov.

City of Auburn 4th Quarter 2024 Financial Report

CITY COUNCIL STUDY SESSION

APRIL 28, 2025

General Fund Revenue Overview

Summary

- Collected 5% more revenue compared to budget and 4% more than YTD last year
- Underspent the budgeted expenditures by 14% and have spent 7% more compared to YTD last year

Revenue	2023 YTD Actual	2024 YTD Budget	2024 YTD Actual	Variance to Budget Favorable (Unfavorable)	%	Variance to 2023 Favorable (Unfavorable)	%
Property Tax	\$ 24,149,996	\$ 24,486,386	\$ 24,780,732	\$ 294,346		\$ 630,736	
Sales Tax	22,999,943	20,649,700	22,905,129	2,255,429		(94,814)	
Utility Tax	15,797,604	14,214,734	15,787,679	1,572,945		(9,925)	
B&O Tax*	10,625,063	7,029,750	11,605,183	4,575,433		980,120	
Other Tax	5,256,424	4,581,095	5,353,576	772,481		97,152	
Licenses and Permits	2,850,318	2,568,898	2,606,551	37,653		(243,767)	
Intergovernmental	5,890,408	7,410,275	7,967,969	557,694		2,077,561	
Charges for Services	10,080,037	11,052,302	10,714,961	(337,341)		634,924	
Other	6,023,837	2,921,977	8,363,404	5,441,427		2,339,567	
Transfers In	6,356,542	14,203,054	4,790,709	(9,412,345)		(1,565,833)	
Total Revenue	\$ 110,030,172	\$ 109,118,171	\$ 114,875,893	\$ 5,757,722	5%	\$ 4,845,721	4%
Total Expenditures	\$ 92,728,940	\$ 115,415,273	\$ 99,651,133	\$ 15,764,140	14%	\$ (6,922,193)	-7%

Tax Revenue

2024 budgeted taxes account for \$70.96 million, or 67% of the General Fund budget

Property Tax (34% of taxes)

- \$24.4 million 2024 budget
- Collected 100% at year-end

Retail Sales and Use Tax (29% of taxes)

- \$20.6 million 2024 budget
- **\$95,000 (.4%) under** prior YTD actual
- **\$2.3 million (11%) over** YTD budget

Tax Revenue

Comparison of Retail Sales Tax Collections by Group Through December 2024				
Component Group	2023	2024	Change from 2023	
	YE Actual	YE Actual	Amount	Percentage
Construction	\$ 2,950,423	\$ 2,710,442	\$ (239,981)	(8.1) %
Manufacturing	531,277	477,151	(54,126)	(10.2) %
Transportation & Warehousing	224,807	321,173	96,366	42.9 %
Wholesale Trade	1,668,471	1,611,967	(56,504)	(3.4) %
Automotive	4,937,407	4,915,894	(21,513)	(0.4) %
Retail Trade	6,573,018	6,517,742	(55,277)	(0.8) %
Services	5,724,661	5,927,009	202,349	3.5 %
Miscellaneous	389,925	423,751	33,826	8.7 %
YE Total	\$ 22,999,989	\$ 22,905,129	\$ (94,860)	(0.4) %

Construction: Decrease from completion of school construction projects

Manufacturing: Decrease related to printing and related services

Transportation: Increase in support activities and couriers

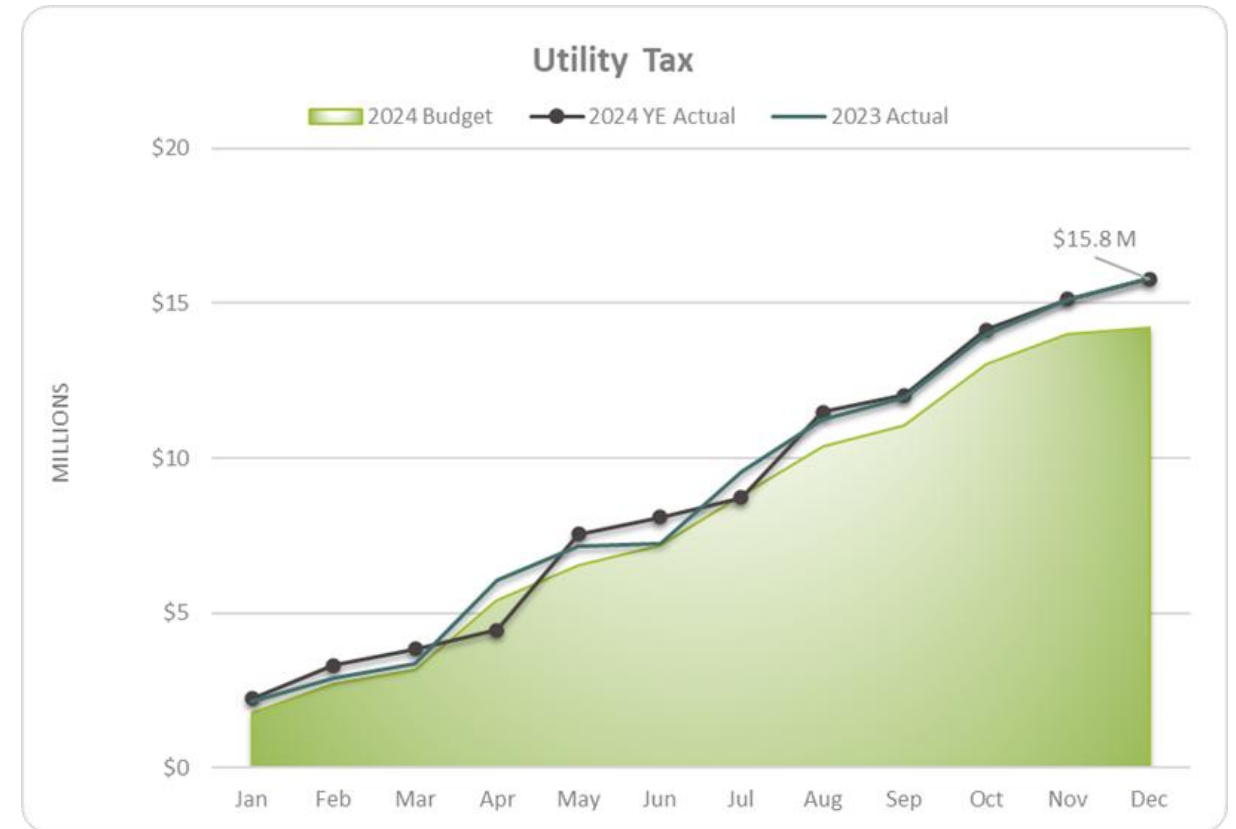
Retail Trade: Decreases in almost all sub-categories – building materials, general merch, health and personal care, furniture, and sporting goods.

Services: Increase mostly related to an audit, fitness centers, music venues, and home delivery

Tax Revenue

Utility Tax (20% of taxes)

- \$14.1 million 2024 budget
 - Water, Sewer, Storm, Solid Waste Utility Tax rate 9% (\$6.8 million of total budget)
 - Electric, Natural Gas, Cable, and Telephone Utility Tax rate 5% (\$7.6 million of total budget)
- **\$1.6 million (11%) over budget**
 - Higher than expected water, sewer, storm collections
 - Higher than expected collections from external utilities (water, sewer, and solid waste)
- **\$10,000 (0%) under prior year**
 - Higher than expected water, sewer, storm collections
 - Offset by a large decrease in external utilities related to back taxes paid in 2023



Tax Revenue

Business and Occupation Tax (B&O) (10% of total taxes)

- \$7.0 million 2024 budget
- \$11.6 million collected YTD
 - \$6.3 million in gross receipts tax (54%)
 - \$5.3 million in square foot tax (46%)
 - Includes Q4 2023, Q1 2024, Q2 2024, Q3 2024, 2023 Annual Filings
- **\$4.6 million (65%) over YTD budget**
 - \$1.0 million in delinquent taxes included

Other Taxes (7% of total taxes)

- \$4.7 million 2024 budget
- Criminal justice sales tax, admissions tax, gambling tax, leasehold excise tax, franchise fees
- **\$772,000 (17%) over** 2024 YTD budget
- **\$97,000 (2%) over** 2023 YTD collections
- Both variances are mostly due to higher sales tax collection and admission tax collection (delinquent taxes received), and Leasehold Excise Tax

Licenses and Permits

Accounts for 2% of the total General Fund Resources

\$2.6 million budgeted in 2024

- Half of this (\$1.0 million building permit revenue)

\$38,000 (1%) over budget

\$244,000 (9%) under prior year

- Business license revenue is outperforming prior year and budget
- Offset by decreases in building permit and licenses



Intergovernmental

Revenues include: Federal/State/Interlocal Grants, Muckleshoot Indian Tribe (MIT) Compact, State Shared Revenue

- State Shared Revenue:
 - Streamlined Sales Tax, Motor Vehicle Excise Tax (MVET), Marijuana/Liquor excise taxes, Criminal Justice Sales Tax

\$558,000 (7.5%) over 2024 YTD budget

- Timing of contribution payment from the MIT compact, higher collection of grants

\$2.0 million (35%) over 2023 YTD collections

- Timing of contribution payment from the MIT compact, higher collection of grants and offset by reduced state shared revenue contributions

Charges for Services

General Government - **\$1.3 million below** budget (22%)

- Timing of SKHHP Payments – Reimbursement basis

Public Safety - **\$550,000 above** budget (50%)

- Extra duty services

Development Services - **\$20,000 below** budget (1.7%)

Culture and Recreation - **\$424,000 above** budget (14%)

- Green fees and pro shop sales account for \$145k, other recreation program revenues account for remaining amount

Other

Fines and Penalties

- \$2.7 million over 2024 YTD budget (251%)
- School zone speed enforcement (\$1.9 million) and B&O fines and penalties (\$660,000)

Interest and Investment Earnings

- \$1.9 million over 2024 YTD budget (604%)

General Fund Expenditures by Department

Department	2023 YTD Actual	2024 YTD Budget	2024 YTD Actual	Budget vs Actual	
				\$	%
Council, Mayor, Admin	2,640,415	2,791,119	2,754,638	36,481	1%
Office of Equity	514,218	1,047,360	868,952	178,408	17%
Municipal Court	2,556,274	3,673,544	3,324,616	348,928	9%
Community Development	8,128,085	9,070,576	6,649,256	2,421,320	27%
Human Services	2,031,009	4,954,978	3,090,240	1,864,738	38%
Public Works	4,592,820	5,242,635	5,044,662	197,973	4%
Streets (M&O)	4,366,872	5,014,872	4,773,367	241,505	5%
Parks, Art, and Recreation	15,532,210	17,010,764	16,689,872	320,892	2%
Police	33,618,197	38,019,143	34,780,325	3,238,818	9%
SCORE	5,169,317	5,700,000	4,865,975	834,025	15%
Internal Services (HR, Finance, Legal, Nondepartment)	13,579,522	22,890,282	16,809,230	6,081,052	27%
Total	\$ 92,728,939	\$115,415,273	\$ 99,651,133	\$ 15,764,140	14%

ARPA Update

Title	Budget	2024	Lifetime Spend	
		Q4 Spend	(includes this quarter)	Remaining
Completed Projects	2,745,359	-	2,745,358	-
Neighborhood Street Light Program	1,300,000	244,756	339,292	960,708
Neighborhood Traffic Calming	200,000	(9,032)	9,464	190,536
Recreation Access Grants	150,000	236	886	149,114
Human Services Grants Includes Admin	1,000,000	-	445,882	554,118
Theater	389,700	-	-	389,700
Tyler Tech MUNIS Financial Implementation	301,500	-	-	301,500
Paving Grave l Roads	135,000	114,297	135,000	-
2023 Local Street Preservation	501,886	48,167	48,167	453,719
Translation Services	25,000	-	1,685	23,315
Cyber Security Locks	50,000	-	-	50,000
Auburn Way South Median Landscape Replanting/Irrigation	50,000	-	40,187	9,814
Auburn Way South Roundabout	150,000	33,380	52,840	97,160
Emergency Housing Voucher Program	2,000,000	83,102	575,882	1,424,118
DEI Dashboard (Inclusive Auburn)	130,000	-	92,805	37,195
Duct cleaning in applicable buildings	150,000	184,219	150,000	-
Encampment Cleanup	500,000	4,536	456,403	43,597
Downtown Sidewalk Replacement on Main Street and B Street Plaza Surface Replacement	1,819,409	258,795	612,828	1,206,581
Cameras in qualified census tracts	150,000	137,875	150,000	-
Community Violence Intervention Programs (Drone, SPIDRTech)	236,248	33,561	204,436	31,812
Arts Culture Center Renovations	100,000	-	-	100,000
Auburn Ave Theater Demolition	490,000	406,071	437,771	52,229
Signing Bonuses for Police Lateral Hire s	200,000	22,245	200,000	-
Other Projects (not started)	1,977,130	-	-	1,977,130
Total:	14,751,231	1,562,207	6,798,885	7,952,346

Non-General Fund Highlights – Capital

Real Estate Excise Tax (REET)

YTD Collections: \$5.5 million

\$2.0 million over prior year

\$3.3 million over YTD budget

Park Impact Fees

\$4.1 million 2024 Fund Balance

100% Committed through 2026

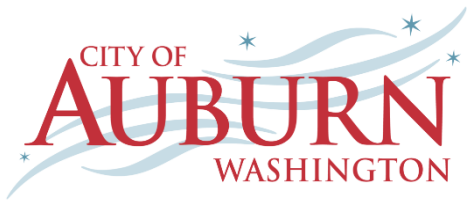
Transportation Impact Fees

\$10.5 million 2024 Fund Balance

100% Committed through 2026



Questions



AGENDA BILL APPROVAL FORM

Agenda Subject:

Ordinance No. 6974 (Gaub) (10 Minutes)
An Ordinance granting to Level 3 Communications, LLC, a franchise for
fiber optic telecommunications

Meeting Date:

April 28, 2025

Department:

Public Works

Attachments:

DRAFT Ordinance No. 6974

Budget Impact:**Administrative Recommendation:**

For discussion only.

Background for Motion:**Background Summary:**

Section 20.02.040 of the Auburn City Code requires a franchise for any utility or telecommunications carrier or operator to use public ways of the City and to provide services to persons or areas inside or outside of the City.

Level 3 Communications, LLC has applied for a new Franchise Agreement to continue to operate their existing fiber optic telecommunications located in the public way in seven east/west road crossings through the Union Pacific Rail Road property that runs north/south through the City. Level 3 currently provides telecommunications services including but not limited to telecommunication capacity, dark fiber, transmission of voice, data or other electronic information, or other high capacity fiber optic transmission services to firms, businesses or institutions from the existing facilities. The proposed agreement is consistent with the City's standard Franchise Agreement language.

A Public Hearing to consider this application and take public comment is scheduled before the City Council on May 5, 2025, in accordance with Auburn City Code 20.04.040.

Councilmember: Tracy Taylor

Staff: Ingrid Gaub

ORDINANCE NO. 6974

AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, GRANTING TO LEVEL 3 COMMUNICATIONS, LLC, A FRANCHISE FOR FIBER OPTIC TELECOMMUNICATIONS

WHEREAS, Level 3 Communications, LLC (“Franchisee”) has applied for a non-exclusive Franchise for the right of entry, use, and occupation of certain public ways within the City of Auburn (“City”), expressly to install, construct, erect, operate, maintain, repair, relocate and remove its facilities in, on, over, under, along and/or across those public ways; and

WHEREAS, following proper notice, the City Council held a public hearing on Franchisee’s request for a Franchise; and

WHEREAS, based on the information presented at such public hearing, and from facts and circumstances developed or discovered through independent study and investigation, the City Council now deems it appropriate and in the best interest of the City to grant the Franchise to Franchisee.

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF AUBURN WASHINGTON, DO ORDAIN as follows:

Section 1. Definitions

For the purpose of this Franchise and the interpretation and enforcement thereof, definitions of words and phrases shall be in accordance with the definitions set forth in this Franchise and in Auburn City Code 20.02.020. If there is a conflict between any of the definitions set forth in this Franchise and the definitions set forth in Auburn City Code 20.02.020, the definitions in this Franchise shall govern to the extent of such conflict.

- A. “ACC” means the Auburn City Code.
- B. “Franchise” means this agreement approved by Ordinance No. 6974 of the City which authorizes Franchisee Facilities to provide Franchisee Services in the Franchise Area.
- C. “Franchise Area” means the public ways specified in Exhibit “A”.

D. “Franchisee’s Facilities” means fiber optic and broad band communications services constructed and operated within the public ways including all cables, wires, conduits, ducts, pedestals, and any associated converter equipment or other items necessary for Telecommunications Services as defined in RCW 35.99.010(7), that are located in the Franchise Area.

Franchisee’s Facilities do not include facilities used to provide wireless services, including antennas or other equipment, appliances, attachments and appurtenances associated with wireless telecommunications facilities. Franchisee’s facilities do not include small wireless facilities, microcell, minor facility, or small cell facilities, as defined in RCW 80.36.375. Franchisee’s facilities do not include any facilities that are not located within the Franchise Area or that are covered under a separate franchise agreement or agreement.

E. “Franchisee’s Services” means any telecommunications service, telecommunications capacity, or dark fiber, provided by the Franchisee using its Facilities, including, but not limited to, the transmission of voice, data or other electronic information, or other subsequently developed technology that carries a signal over fiber optic cable. Franchisee’s Services will also include non-switched, dedicated and private line, high capacity fiber optic transmission services to firms, businesses or institutions within the City and other lawful services not prohibited by this Ordinance. However, Franchisee’s Services will not include the provision of “cable services”, as defined by 47 U.S.C. §522, as amended, for which a separate franchise would be required.

Section 2. Grant of Right to Use Franchise Area

A. Subject to the terms and conditions stated in this Franchise, the City grants to the Franchisee general permission to enter, use, and occupy the Franchise Area, located within the incorporated area of the City. Franchisee may locate the Franchisee’s Facilities within the Franchise Area subject to all applicable laws, regulations, and permit conditions.

B. The Franchisee is authorized to install, remove, construct, erect, operate, maintain, relocate, upgrade, replace, restore, and repair Franchisee’s Facilities to provide Franchisee’s Services in the Franchise Area.

C. This Franchise does not authorize the use of the Franchise Area for any facilities or services other than Franchisee Facilities and Franchisee Services, and it extends no rights or privilege relative to any facilities or services of any type, including Franchisee Facilities and Franchisee Services, on public or private property elsewhere within the City.

D. This Franchise is non-exclusive and does not prohibit the City from entering into other agreements, including franchise agreements, impacting the Franchise Area, for any purpose that does not interfere with Franchisee's rights under this Franchise.

E. Except as explicitly set forth in this Franchise, this Franchise does not waive any rights that the City has or may acquire with respect to the Franchise Area or any other City roads, public ways, or property. This Franchise will be subject to the power of eminent domain, and in any proceeding under eminent domain, the Franchisee acknowledges its use of the Franchise Area shall have no value.

F. The City reserves the right to change, regrade, relocate, abandon, or vacate any public way within the Franchise Area. If, at any time during the term of this Franchise, the City vacates any portion of the Franchise Area containing Franchisee Facilities, the City may reserve an easement for public utilities within that vacated portion, pursuant to Chapter 35.79.030 RCW, within which the Franchisee may continue to operate any existing Franchisee Facilities under the terms of this Franchise for the remaining period set forth under Section 4.

G. The Franchisee agrees that its use of Franchise Area shall at all times be subordinated to and subject to the City and the public's need for municipal infrastructure, travel, and access to the Franchise Area, except as may be otherwise required by law.

H. The Franchisee agrees to provide the City with complete contact information for any client, lessee, sub-lessee, customer, or other entity that Franchisee allows to utilize, control, access, or otherwise provides services to, who will also use the Franchisee Facilities to provide services to their clients and customers either inside or outside the City limits. Such contact information shall be provided to the City a minimum of sixty (60) days prior to the start of such anticipated use so that the City may determine if Franchisee's client, lessee, sub-lessee, customer, or other entity is required to obtain a franchise agreement with the City prior to such use. If the client, lessee, sub-lessee, customer, or other entity is required to obtain a franchise agreement with the City, then the Franchisee shall not allow use, control, access, or otherwise provide services to such entity until the required franchise agreement has been obtained.

Section 3. Notice

A. Written notices to the parties shall be sent by a nationally recognized overnight courier or by certified mail to the following addresses, unless a different address is designated in writing and delivered to the other party. Any such notice

shall become effective upon receipt by certified mail, confirmed delivery by overnight courier, or the date stamped received by the City. Any communication made by e-mail or similar method will not constitute notice pursuant to this Franchise, except in case of emergency notification.

City: Right-of-Way Specialist,
Public Works Department - Transportation
City of Auburn
25 West Main Street
Auburn, WA 98001-4998
Telephone: (253) 931-3010
Email Address: rowusepermit@auburnwa.gov

with a copy to: City Clerk
City of Auburn
25 West Main Street
Auburn, WA 98001-4998

Franchisee: Level 3 Communications, LLC
Attn: James Nickerson
5325 Zuni Street
Denver, CO 80221
Telephone: (720) 888-4429
Email Address: james.nickerson@lumen.com

with a copy to: Level 3 Communications, LLC
Attn: James Nickerson
931 14th Street
Denver, CO 80202
Telephone: (720) 888-4429
Email Address: james.nickerson@lumen.com

B. Any changes to the above-stated Franchisee information shall be sent to the City's Right-of-Way Specialist, Public Works Department – Transportation Division, with copies to the City Clerk, referencing the title of this Franchise.

C. The above-stated Franchisee voice telephone numbers shall be staffed at least during normal business hours, Pacific time zone. The City may contact Franchisee at the following number for emergency or other needs outside of normal business hours of the Franchisee: (877) 453-8353.

Section 4. Term of Franchise

A. This Franchise shall run for a period of fifteen (15) years, from the date of Franchise Acceptance as described in Section 5 of this Franchise.

B. Automatic Extension. If the Franchisee fails to formally apply for a new franchise agreement prior to the expiration of this Franchise's term or any extension thereof, this Franchise automatically continues month to month until a new franchise agreement is applied for and approved under the then current process or until either party gives written notice at least one hundred and eighty (180) days in advance of intent to cancel this Franchise.

Section 5. Acceptance of Franchise

A. This Franchise will not become effective until Franchisee files with the City Clerk (1) the Statement of Acceptance (Exhibit "B"), (2) all verifications of insurance coverage specified under Section 16, (3) the financial security specified in Section 17, and (4) payment of any outstanding application fees required in the City Fee Schedule. These four items will collectively be the "Franchise Acceptance". The date that such Franchise Acceptance is filed with the City Clerk will be the effective date of this Franchise.

B. If the Franchisee fails to file the Franchise Acceptance with the City Clerk within thirty (30) days after the effective date of the ordinance approving the Franchise as described in Section 28 of this Franchise, the City's grant of the Franchise will be null and void.

Section 6. Construction and Maintenance

A. The Franchisee shall apply for, obtain, and comply with the terms of all permits required under applicable law for any work done within the City. Franchisee will comply with all applicable City, State, and Federal codes, rules, regulations, and orders in undertaking such work.

B. Franchisee agrees to coordinate its activities with the City and all other utilities located within the public way within which Franchisee is undertaking its activity.

C. The City expressly reserves the right to prescribe how and where Franchisee's Facilities will be installed within the public way and may require the removal, relocation and/or replacement thereof in the public interest and safety at the expense of the Franchisee as provided for in Chapter 35.99 RCW.

D. Before beginning any work within the public way, the Franchisee will comply with the One Number Locator provisions of Chapter 19.122 RCW to identify existing utility infrastructure.

E. Tree Trimming. Upon prior written approval of the city the Franchisee shall have the authority to trim trees upon and overhanging streets, public ways and places in the Franchise Area so as to prevent the branches of such trees from coming in physical contact with the Franchisee's Facilities. Franchisee shall be responsible for debris removal from such activities. If such debris is not removed within 24 hours, the City may, at its sole discretion, remove such debris and charge the Franchisee for the cost thereof. This section does not, in any instance, grant automatic authority to clear vegetation for purposes of providing a clear path for radio signals. Any such general vegetation clearing will require other permits as necessary from the City.

Section 7. Trench Repair for Street Restorations

A. At any time during the term of this Franchise, if a Franchisee Facility or trench within the Franchise Area causes a street to crack, settle, or otherwise fail, the City will notify Franchisee of the deficiency and Franchisee agrees to restore the deficiency and repair the damage within thirty (30) days of written notice by the City.

B. For purposes of the Section, "street" shall mean all City owned improvements within a public way, including, but not limited to, the following: pavement, sidewalks, curbing, above and below-ground utility facilities, and traffic control devices.

Section 8. Repair and Emergency Work

In the event of an emergency, the Franchisee may commence repair and emergency response work as required under the circumstances. The Franchisee will notify the City telephonically during normal business hours (at 253-931-3010) and during non-business hours (at 253-876-1985) as promptly as possible, before such repair or emergency work commences, and in writing as soon thereafter as possible. Such notification shall include the Franchisee's emergency contact phone number for corresponding response activity. The City may commence emergency response work, at any time, without prior written notice to the Franchisee, but will notify the Franchisee in writing as promptly as possible under the circumstances. Franchisee will reimburse the City for the City's actual cost of performing emergency response work.

Section 9. Damages to City and Third-Party Property

Franchisee agrees that if any of its actions, or the actions of any person, agent, or contractor acting on behalf of the Franchisee under this Franchise impairs or damages any City property, survey monument, or property owned by a third-party, Franchisee will restore, at its own cost and expense, the property to a safe condition. Upon returning the property to a safe condition, the property shall then be returned to the condition it was in immediately prior to being damaged (if the safe condition of the property is not the same as that which existed prior to damage). All repair work shall be performed and completed to the satisfaction of the City Engineer.

Section 10. Location Preference

A. Any structure, equipment, appurtenance or tangible property of a utility or other franchisee, other than the Franchisee's, which was installed, constructed, completed or in place prior in time to Franchisee's application for a permit to construct or repair Franchisee's Facilities under this Franchise shall have preference as to positioning and location with respect to the Franchisee's Facilities. However, to the extent that the Franchisee's Facilities are completed and installed before another utility or other franchisee's submittal of a permit for new or additional structures, equipment, appurtenances, or tangible property, then the Franchisee's Facilities will have priority. These rules governing preference shall continue when relocating or changing the grade of any City road or public way. A relocating utility or franchisee will not cause the relocation of another utility or franchisee that otherwise would not require relocation. This Section will not apply to any City facilities or utilities that may in the future require the relocation of Franchisee's Facilities. Such relocations will be governed by Section 11 and Chapter 35.99 RCW.

B. Franchisee will maintain a minimum underground horizontal separation of five (5) feet from City water, sanitary sewer and storm sewer facilities and ten (10) feet from above-ground City water facilities; provided, that for development of new areas, the City, in consultation with Franchisee and other utility purveyors or authorized users of the public way, will develop guidelines and procedures for determining specific utility locations.

Section 11. Relocation of Franchisee Facilities

A. Except as otherwise so required by law, Franchisee agrees to relocate, remove, or reroute its facilities as ordered by the City Engineer at no expense or liability to the City, except as may be required by Chapter 35.99 RCW. Pursuant to the provisions of Section 15, Franchisee agrees to protect and save

harmless the City from any customer or third-party claims for service interruption or other losses in connection with any such change, relocation, abandonment, or vacation of the public way.

B. If a readjustment or relocation of the Franchisee Facilities is necessitated by a request from a party other than the City, that party shall pay the Franchisee the actual costs associated with such relocation.

Section 12. Abandonment and or Removal of Franchisee Facilities

A. Within one hundred and eighty days (180) of Franchisee's permanent cessation of use of the Franchisee's Facilities, the Franchisee will, at the City's discretion, either abandon in place or remove the affected facilities.

B. Franchisee may ask the City in writing to abandon, in whole or in part, all or any part of the Franchisee's Facilities. Any plan for abandonment of Franchisee Facilities must be approved in writing by the City.

C. The parties expressly agree that this Section will survive the expiration, revocation or termination of this Franchise.

Section 13. Undergrounding

A. The parties agree that this Franchise does not limit the City's authority under federal law, state law, or local ordinance, to require the undergrounding of utilities.

B. Whenever the City requires the undergrounding of aerial utilities in the Franchise Area, the Franchisee will underground the Franchisee's Facilities in the manner specified by the City Engineer at no expense or liability to the City, except as may be required by Chapter 35.99 RCW. Where other utilities are present and involved in the undergrounding project, Franchisee will only be required to pay its fair share of common costs borne by all utilities, in addition to the costs specifically attributable to the undergrounding of Franchisee's Facilities. Common costs will include necessary costs for common trenching and utility vaults. Fair share will be determined in comparison to the total number and size of all other utility facilities being undergrounded.

Section 14. Franchisee Information

A. Franchisee agrees to supply, at no cost to the City, any information reasonably requested by the City to coordinate municipal functions with Franchisee's activities and fulfill any municipal obligations under state law. Said

information will include, at a minimum, as-built drawings of Franchisee's Facilities, installation inventory, and maps and plans showing the location of existing or planned facilities within the City. Said information may be requested either in hard copy or electronic format, compatible with the City's data base system, including the City's Geographic Information System (GIS) data base. Franchisee will keep the City informed of its long-range plans for coordination with the City's long-range plans.

B. The parties understand that Chapter 42.56 RCW and other applicable law may require public disclosure of information given to the City.

Section 15. Indemnification and Hold Harmless

A. Franchisee shall defend, indemnify, and hold harmless the City, its officers, officials, employees and volunteers from and against any and all claims, suits, actions, or liabilities for injury or death of any person, or for loss or damage to property, which arises out of Franchisee's acts, errors or omissions, or from the conduct of Franchisee's business, or from any activity, work or thing done, permitted, or suffered by Franchisee arising from or in connection with this Franchise, except only such injury or damage as shall have been occasioned by the sole negligence of the City, its officers, officials, employees, and volunteers.

However, should a court of competent jurisdiction determine that this Franchise is subject to RCW 4.24.115, then, in the event of liability for damages arising out of bodily injury to persons or damages to property caused by or resulting from the concurrent negligence of the Franchisee and the City, its officers, officials, employees, and volunteers, the Franchisee's liability hereunder shall be only to the extent of the Franchisee's negligence. It is further specifically and expressly understood that the indemnification provided herein constitutes the Franchisee's waiver of immunity under Industrial Insurance, Title 51 RCW, solely for the purposes of this indemnification. This waiver has been mutually negotiated by the parties. The provisions of this section shall survive the expiration or termination of this Franchise.

B. The Franchisee will hold the City harmless from any liability arising out of or in connection with any damage or loss to the Franchisee's Facilities caused by maintenance and/or construction work performed by, or on behalf of, the City within the Franchise Area or any other City road, public way, or other property, except to the extent any such damage or loss is directly caused by the negligence of the City, or its agents, its officers, officials, employees, and volunteers performing such work.

C. The Franchisee acknowledges that neither the City nor any other public agency with responsibility for firefighting, emergency rescue, public safety or similar duties within the City has the capability to provide trench, close trench or confined space rescue. The Franchisee, and its agents, assigns, successors, or contractors, will make such arrangements as Franchisee deems fit for the provision of such services. The Franchisee will hold the City harmless from any liability arising out of or in connection with any damage or loss to the Franchisee for the City's failure or inability to provide such services, and, pursuant to the terms of Section 15(A), the Franchisee will indemnify the City against any and all third-party costs, claims, injuries, damages, losses, suits, or liabilities based on the City's failure or inability to provide such services.

Section 16. Insurance

A. The Franchisee shall procure and maintain for the duration of this Franchise and as long as Franchisee has Facilities in the public way, insurance against claims for injuries to persons or damage to property which may arise from or in connection with the Franchise and use of the public way.

B. No Limitation. The Franchisee's maintenance of insurance as required by this Franchise shall not be construed to limit the liability of the Franchisee to the coverage provided by such insurance or otherwise limit the City's recourse to any remedy available at law or in equity.

C. Minimum Scope of Insurance. The Franchisee shall obtain insurance of the types and coverage described below:

1. Commercial General Liability insurance shall be at least as broad as Insurance Services Office (ISO) occurrence form CG 00 01 and shall cover liability arising from premises, operations, stop gap liability, independent contractors, products-completed operations, personal injury and advertising injury, and liability assumed under an insured contract. There shall be no exclusion for liability arising from explosion, collapse or underground property damage. The City shall be included as an additional insured under the Franchisee's Commercial General Liability insurance policy with respect this Franchise using ISO endorsement CG 20 12 05 09 if the Franchise is considered a master permit as defined by RCW 35.99.010, or CG 20 26 07 04 if it is not, or substitute endorsement providing at least as broad coverage.

2. Automobile Liability insurance covering all owned, non-owned, hired and leased vehicles. Coverage shall be at least as broad as ISO form CA 00 01.

3. Contractors Pollution Liability insurance shall be in effect throughout the entire Franchise covering losses caused by pollution conditions that arise from the operations of the Franchisee. Contractors Pollution Liability shall cover bodily injury, property damage, cleanup costs and defense, including costs and expenses incurred in the investigation, defense, or settlement of claims.

4. Workers' Compensation coverage as required by the Industrial Insurance laws of the State of Washington.

5. Excess or Umbrella Liability insurance shall be excess over and at least as broad in coverage as the Franchisee's Commercial General Liability and Automobile Liability insurance. The City shall be included as an additional insured on the Franchisee's Excess or Umbrella Liability insurance policy.

D. Minimum Amounts of Insurance. The Franchisee shall maintain insurance that meets or exceeds the following limits:

1. Commercial General Liability insurance shall be written with limits no less than \$5,000,000 each occurrence, \$5,000,000 general aggregate.

2. Automobile Liability insurance with a minimum combined single limit for bodily injury and property damage of \$5,000,000 per accident.

3. Contractors Pollution Liability insurance shall be written in an amount of at least \$2,000,000 per loss, with an annual aggregate of at least \$2,000,000.

4. Workers' Compensation coverage as required by the Industrial Insurance laws of the State of Washington and employer's liability insurance with limits of not less than \$1,000,000.

5. Excess or Umbrella Liability insurance shall be written with limits of not less than \$5,000,000 per occurrence and annual aggregate. The Excess or Umbrella Liability requirement and limits may be satisfied instead through Franchisee's Commercial General Liability and Automobile Liability insurance, or any combination thereof that achieves the overall required limits.

E. Other Insurance Provisions. Franchisee's Commercial General Liability, Automobile Liability, Excess or Umbrella Liability, Contractors Pollution Liability insurance policy or policies are to contain, or be endorsed to contain, that they shall be primary insurance as respect to the City. Any insurance, self-insurance, or self-insured pool coverage maintained by the City shall be excess of the Franchisee's insurance and shall not contribute with it.

F. Acceptability of Insurers. Insurance is to be placed with insurers with a current A.M. Best rating of not less than A: VII.

G. Subcontractors. The Franchisee shall cause each and every Subcontractor to provide insurance coverage that complies with all applicable requirements of the Franchisee-provided insurance as set forth herein, including limits no less than what is required of Franchisee under this Franchise. The Franchisee shall ensure that the City is an additional insured on each and every Subcontractor's Commercial General liability insurance policy using an endorsement as least as broad as ISO CG 20 26.

H. Verification of Coverage. The Franchisee shall furnish the City with certificates and a copy of the amendatory endorsements, including but not necessarily limited to the additional insured endorsement, evidencing the insurance requirements of this Franchise. Upon request by the City in the event of a claim giving rise to a coverage dispute, the Franchisee shall furnish certified copies of all required applicable insurance policies involved in such dispute, including endorsements, required in this Franchise and evidence of all subcontractors' coverage.

I. Notice of Cancellation. Franchisee shall provide the City with written notice of any policy cancellation within two business days of their receipt of such notice.

J. Failure to Maintain Insurance. Failure on the part of the Franchisee to maintain the insurance as required shall constitute a material breach of the Franchise, upon which the City may, after giving five business days' notice to the Franchisee to correct the breach, terminate the Franchise.

K. City Full Availability of Franchisee Limits. If the Franchisee maintains higher insurance limits than the minimums shown above, the City shall be insured for the full available limits of Commercial General and Excess or Umbrella liability maintained by the Franchisee, irrespective of whether such limits maintained by the Franchisee are greater than those required by this Franchise or whether any certificate of insurance furnished to the City evidences limits of liability lower than those maintained by the Franchisee.

L. Franchisee – Self-Insurance. Franchisee will have the right to self-insure any or all of the above-required insurance. Any such self-insurance is subject to approval by the City. If the Franchisee is self-insured or becomes self-insured during the term of the Franchise, Franchisee or its affiliated parent entity shall comply with the following: (i) Franchisee shall submit a letter to the City stating which of the above required insurance provisions in this Section 15 Franchisee proposes to self-insure; (ii) provide the City, upon request, a copy of Franchisee's or its parent company's most recent audited financial statements, if such financial statements are not otherwise publicly available; (iii) Franchisee or its parent company is responsible for all payments within the self-insured retention; and (iv) Franchisee assumes all defense and indemnity obligations as outlined in Section 15.

Section 17. Financial Security

The Franchisee will provide the City with a financial security in the amount of Fifty Thousand Dollars (\$50,000.00) running for, or renewable for, the term of this Franchise, in a form and substance acceptable to the City. If Franchisee fails to substantially comply with any one or more of the provisions of this Franchise, the City may recover jointly and severally from the principal and any surety of that financial security any damages suffered by the City as a result Franchisee's failure to comply, including but not limited to staff time, material and equipment costs, compensation or indemnification of third parties, and the cost of removal or abandonment of facilities. Franchisee specifically agrees that its failure to comply with the terms of Section 20 will constitute damage to the City in the monetary amount set forth in that section. Any financial security will not be construed to limit the Franchisee's liability to the security amount, or otherwise limit the City's recourse to any remedy to which the City is otherwise entitled at law or in equity.

Section 18. Successors and Assignees

A. All the provisions, conditions, regulations and requirements contained in this Franchise are binding upon the successors, assigns of, and independent contractors of the Franchisee, and all rights and privileges, as well as all obligations and liabilities of the Franchisee will inure to its successors, assignees and contractors equally as if they were specifically mentioned herein wherever the Franchisee is mentioned.

B. This Franchise will not be leased, assigned or otherwise alienated without the express prior consent of the City by ordinance, which shall not be unreasonably denied, conditioned or delayed.

C. Franchisee and any proposed assignee or transferee will provide and certify the following to the City not less than ninety (90) days prior to the proposed date of transfer: (1) Complete information setting forth the nature, term and conditions of the proposed assignment or transfer; (2) All information required by the City of an applicant for a Franchise with respect to the proposed assignee or transferee; and, (3) An application fee in the amount established by the City's fee schedule, plus any other costs actually and reasonably incurred by the City in processing, and investigating the proposed assignment or transfer.

D. Before the City's consideration of a request by Franchisee to consent to a Franchise assignment or transfer, the proposed Assignee or Transferee will file with the City a written promise to unconditionally accept all terms of the Franchise, effective upon such transfer or assignment of the Franchise. The City is under no obligation to undertake any investigation of the transferor's state of compliance and failure of the City to insist on full compliance before transfer does not waive any right to insist on full compliance thereafter.

Section 19. Dispute Resolution

A. In the event of a dispute between the City and the Franchisee arising by reason of this Franchise, the dispute will first be referred to the operational officers or representatives designated by City and Franchisee to have oversight over the administration of this Franchise. The officers or representatives will meet within thirty (30) calendar days of either party's request for a meeting, whichever request is first, and the parties will make a good faith effort to achieve a resolution of the dispute.

B. If the parties fail to achieve a resolution of the dispute in this manner, either party may then pursue any available judicial remedies. This Franchise will be governed by and construed in accordance with the laws of the State of Washington. If any suit, arbitration, or other proceeding is instituted to enforce any term of this Franchise, the parties specifically understand and agree that venue will be exclusively in King County, Washington. The prevailing party in any such action will be entitled to its attorneys' fees and costs.

Section 20. Enforcement and Remedies

A. If the Franchisee willfully violates or fails to comply with any of the provisions of this Franchise through willful or unreasonable negligence or fails to comply with any notice given to Franchisee under the provisions of this Franchise, the City may, at its discretion, provide Franchisee with written notice to cure the breach within thirty (30) days of notification. If the parties determine the breach cannot be cured within thirty days, the City may specify a longer cure period and

condition the extension of time on Franchisee's submittal of a plan to cure the breach within the specified period, commencement of work within the original thirty-day cure period, and diligent prosecution of the work to completion. If the breach is not cured within the specified time, or the Franchisee does not comply with the specified conditions, the City may, at its discretion, either (1) revoke the Franchise with no further notification, or (2) claim damages of Two Hundred Fifty Dollars (\$250.00) per day against the financial guarantee set forth in Section 17 for every day after the expiration of the cure period that the breach is not cured.

B. If the City determines that Franchisee is acting beyond the scope of permission granted in this Franchise for Franchisee Facilities and Franchisee Services, the City reserves the right to cancel this Franchise and require the Franchisee to apply for, obtain, and comply with all applicable City permits, franchises, or other City permissions for such actions, and if the Franchisee's actions are not allowed under applicable federal and state or City laws, to compel Franchisee to cease those actions.

Section 21. Compliance with Laws and Regulations

A. This Franchise is subject to, and the Franchisee will comply with all applicable federal and state or City laws, regulations and policies (including all applicable elements of the City's comprehensive plan), in conformance with federal laws and regulations, affecting performance under this Franchise. The Franchisee will be subject to the police power of the City to adopt and enforce general ordinances necessary to protect the safety and welfare of the general public in relation to the rights granted in the Franchise Area.

B. The City reserves the right at any time to amend this Franchise to conform to any federal or state statute or regulation relating to the public health, safety, and welfare, or relating to roadway regulation, or a City Ordinance enacted pursuant to such federal or state statute or regulation enacted, amended, or adopted after the effective date of this Franchise if it provides Franchisee with thirty (30) days written notice of its action setting forth the full text of the amendment and identifying the statute, regulation, or ordinance requiring the amendment. The amendment will become automatically effective on expiration of the notice period unless, before expiration of that period, the Franchisee makes a written call for negotiations over the terms of the amendment. If the parties do not reach agreement as to the terms of the amendment within thirty (30) days of the call for negotiations, the City may enact the proposed amendment, by incorporating the Franchisee's concerns to the maximum extent the City deems possible.

C. The City may terminate this Franchise upon thirty (30) days written notice to the Franchisee, if the Franchisee fails to comply with such amendment or modification.

Section 22. License, Tax and Other Charges

This Franchise will not exempt the Franchisee from any future license, tax, or charge which the City may adopt under authority granted to it under state or federal law for revenue or as reimbursement for use and occupancy of the Franchise Area.

Section 23. Consequential Damages Limitation

Notwithstanding any other provision of this Franchise, in no event will either party be liable for any special, incidental, indirect, punitive, reliance, consequential or similar damages.

Section 24. Severability

If any portion of this Franchise is deemed invalid, the remainder portions will remain in effect.

Section 25. Titles

The section titles used are for reference only and should not be used for the purpose of interpreting this Franchise.

Section 26. Implementation

The Mayor is authorized to implement those administrative procedures necessary to carry out the directions of this legislation.

Section 27. Entire Franchise

This Franchise, as subject to the appropriate city, state, and federal laws, codes, and regulations, and the attachments hereto represent the entire understanding and agreement between the parties with respect to the subject matter and it supersedes all prior oral negotiations between the parties. All previous franchises between the parties pertaining to Franchisee's operation of its Facilities are hereby superseded.

Section 28. Effective Date.

This Ordinance will take effect and be in force five days from and after its passage, approval and publication as provided by law.

INTRODUCED: _____

PASSED: _____

APPROVED: _____

NANCY BACKUS, MAYOR

ATTEST:

APPROVED AS TO FORM:

Shawn Campbell, MMC, City Clerk

Jason Whalen, City Attorney

PUBLISHED: _____

EXHIBIT "A"

FRANCHISE AREA

Level 3 Communications LLC Franchisee Facilities are located in the Union Pacific Railroad Road property that runs north/south through the City and occupies City public way through seven east/west road crossings installed pursuant to City of Auburn Public Way Agreement No. 99-04, Ordinance No. 5333 effective January 13, 2000. The specific crossing locations that make up the Franchise Area are adjacent to the Union Pacific Rail line and are as follows:

1. Crossing at S 277th Street, 60 Feet.
2. Crossing S 285th Street (aka 44th Street NW), 60 feet.
3. Crossing 37th Street NW, 60 feet.
4. Crossing 29th Street NW, 50 feet.
5. Crossing 15th Street NW, 260 feet.
6. Crossing West Main Street, 60 feet.
7. Crossing 15th Street SW, 100 feet.

EXHIBIT "B"

STATEMENT OF ACCEPTANCE

Level 3 Communications, LLC, for itself, its successors and assigns, hereby accepts and agrees to be bound by all lawful terms, conditions and provisions of the Franchise attached hereto and incorporated herein by this reference.

Franchisee Name: Level 3 Communications, LLC

Address: _____

City, State, Zip: _____

By: _____
Signature

Date: _____

Name: _____

Title: _____

STATE OF _____)
)ss.

COUNTY OF _____)

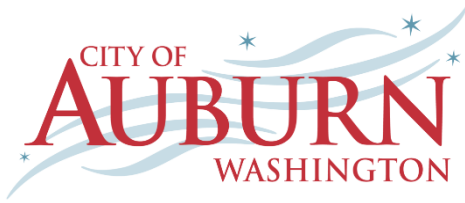
On this ____ day of _____, 20____, before me the undersigned, a Notary Public in and for the State of _____, duly commissioned and sworn, personally appeared, _____ of _____, the company that executed the within and foregoing instrument, and acknowledged the said instrument to be the free and voluntary act and deed of said company, for the uses and purposes therein mentioned, and on oath stated that they are authorized to execute said instrument.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal on the date hereinabove set forth.

Signature

NOTARY PUBLIC in and for the State of _____, residing at _____

MY COMMISSION EXPIRES: _____



AGENDA BILL APPROVAL FORM

Agenda Subject:

Ordinance No. 6978 (Krum) (30 Minutes)

An Ordinance relating to adoption of a temporary 6-month moratorium on the acceptance, processing, and/or approval of applications for Building and Land Use Development Permits and related Land Use Decisions for Energy Storage System Facilities proposed to be located within the City of Auburn

Meeting Date:

April 28, 2025

Department:

Community Development

Attachments:

Ord No. 6978 Moratorium on Energy Storage Systems, Exhibit A BESS Moratorium PowerPoint, Exhibit B Greening the Grid, US-AID, Exhibit C VRFA Response to BESS Incident, Exhibit D Canyon County Incident Response Report, Exhibit E City of Covington Moratorium, Exhibit F SB 1216 Clean Energy Siting Coordinating Council, Exhibit G Comprehensive Review of Energy Storage Systems, Exhibit H PSE Siting Scores, Exhibit I PSE Service Area Map

Budget Impact:**Administrative Recommendation:**

For discussion only.

Background for Motion:**Background Summary:**

Staff has identified the following unknown risks and economic factors, that may be relevant in assessing the desirability of, and siting concerns associated with, ESS in the City. The City currently does not have specific zoning or development standards applicable to these projects. ESS can be facilities of any type that store electrical energy in potential, kinetic, mechanical energy, or electrochemical energy when demand on the grid is low and can discharge back into the grid when demand for electricity is high, or electrical energy production is low (Exhibit B).

Battery or electrochemical (BESS) energy storage systems primarily contain lithium-ion batteries due to their availability, capacity, efficiency, and general reliability (Exhibit G). The chemical composition

of lithium-ion batteries may pose increased risk to life and property. If a cell is not properly cooled, the cell can rapidly increase in temperature causing thermal runaway. Thermal runaway at a BESS presents a significant burden to emergency personnel as fires may burn for an inordinate amount of time, release toxic gasses, or explode. A response may require a regional response, potentially depleting resources and leaving other areas of the city vulnerable to high response times. If a battery cell or cells combust, a report (Exhibit C) from Valley Regional Fire Authority (VRFA) indicated a multi-shift would be required to manage the emergency.

As a result, VRFA and other first responders present would continuously pour water into the compromised battery area; this cool water which would regulate the heat and aid to prevent other cells from becoming compromised. Water used to cool the compromised cells will become contaminated with hazardous materials within the battery. If the contaminated water is not properly contained, it may leach into the City's stormwater system or critical areas. It is unknown if the local water district, or City could support the water demand for a period of 12 or more hours in the event of an emergency.

In the event of an emergency, the impacts to regional transportation routes, businesses, and residents are unknown if an evacuation zone is established as a hazard mitigation plan may need to be established.

Separately from an emergent response, it is not known what the operational impacts a BESS facility may have. These impacts include, but are not limited to, visual, noise, habitat, airport glare, land use or long-term ecological impacts resulting from decommissioning of the aged lithium-ion batteries.

Presently, land use code is not clear and may be up to a director's interpretation for the compatibility of a BESS facility with the land use category of "Utility facilities and substations" in ACC 18.07.030 and "Utility transmission or distribution line or substation" in ACC 18.23.030. These uses are not intended to include recent technological changes and business models in Energy Storage Systems or supporting infrastructure. "Utility Facilities and Substations" are intended to include public utilities with marginal impacts to the surrounding community, environment, and services.

ESS including BESS facilities are much larger than a local or regional substation, are privately developed and leased to the public utility. While ESS are becoming more popular as a source of reliable energy storage and relief, jurisdictions across the region are developing standards to help manage the siting, construction, and operation of these facilities (Exhibit E). The proposed moratorium under Ordinance No. 6978 prevents development for a finite amount of time as the City studies the impacts and develops regulatory language for siting, construction, and operation.

The Washington State Department of Ecology has initiated studies into ESS and is working to provide guidance on how ESS may impact the surrounding environment. The City wishes to study the results of Ecology's efforts before updating its zoning and other regulations applicable to ESS facilities. The Washington State Legislature adopted House Bill 1216 in 2023 (Exhibit F) which established the Interagency Clean Energy Siting Coordinating Council to identify actions to improve siting and permitting of clean energy projects within the State.

It is unknown what fiscal or economic development benefits would flow to the City if ESS facilities were permitted within the City, or which zone(s) would be suitable for siting them. The City needs to investigate and analyze potential economic impacts and tax revenues associated with such projects.

Councilmember: Tracy Taylor

Staff: Jason Krum

ORDINANCE NO. 6978

AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF AUBURN, WASHINGTON, RELATING TO ADOPTION OF A TEMPORARY 6-MONTH MORATORIUM ON THE ACCEPTANCE, PROCESSING, AND/OR APPROVAL OF APPLICATIONS FOR BUILDING AND LAND USE DEVELOPMENT PERMITS AND RELATED LAND USE DECISIONS FOR ENERGY STORAGE SYSTEM FACILITIES PROPOSED TO BE LOCATED WITHIN THE CITY OF AUBURN

WHEREAS, Energy Storage Systems (ESS) including Battery Energy Storage Systems (BESS) are defined as installations designed to store critical electrical energy for later use, typically consisting of batteries, power conversion systems, and control equipment, a primary function of Energy Storage Systems is to store excess electricity generated by the grid during periods of low demand or high renewable energy production, such as from solar or wind sources, the stored energy can then be discharged when demand is high or when renewable energy generation is low, stabilizing the electrical grid and improving overall efficiency and reliability;

WHEREAS, the City's development regulations, specifically the land use category of "Utility facilities and substations" in ACC 18.07.030 and "Utility transmission or distribution line or substation" in ACC 18.23.030, are not currently defined to include the recent technological changes and business models in Energy Storage Systems or supporting infrastructure;

WHEREAS, the City's development regulations, specifically the land use category of "Utility facilities and substations" in ACC 18.07.030 and "Utility transmission or distribution line or substation" in ACC 18.23.030, are understood to include public regional

utility (PSE) agencies that provide public services such as transformers, substations, pumpstations and smaller scale grid infrastructure;

WHEREAS, ESS are primarily financed and constructed by private corporations and leased to energy utilities for maintenance and operation;

WHEREAS, applying the current regulations in Title 18 ACC to new technologies and business models could lead to approval of ESS projects that are undesirable, unsafe, and/or inconsistent with long-term planning goals and objectives of the City, particularly when the existing regulations have not been reviewed and updated for the best practices nor reconsidered in light of technological changes and potential impacts ESS facilities have on the surrounding areas and community resources;

WHEREAS, thermal runaway is a primary risk related to lithium-ion batteries, a phenomenon in which lithium-ion cells enter an uncontrollable, self-heating state, resulting in ejection of gas, shrapnel, and/or particulates, extremely high temperatures, smoke, and fire;

WHEREAS, the Auburn City Council makes the following findings of fact in support of a moratorium under RCW 36. 70A.390, and identified the following unknown risks and economic factors, that may be relevant in assessing the desirability of, and siting concerns associated with, ESS in the City:

- A. The City currently does not have specific zoning or development standards applicable to ESS;
- B. ESS can be facilities of any type that store electrical energy in potential kinetic energy, mechanical energy or electrochemical energy when demand

on the grid is low and can discharge back into the grid when demand for electricity is high, or electrical energy production is low;

- C. In the instance of electrochemical or battery energy storage systems (BESS), lithium-ion batteries are commonly used due to their availability, capacity, efficiency, and general reliability, the chemical composition of lithium-ion batteries may pose increased risk to life and property in the event of thermal runaway or gaseous vapors being released during an emergency;
- D. Thermal runaway at a BESS presents a significant burden to emergency personnel as fires may burn for an inordinate amount of time, requiring increased lengths for monitoring and containment, leaving other areas of the City vulnerable due to longer response times;
- E. Exceptional amounts of water is required in the event of a thermal runaway to protect other cells from reaching a critical temperature and to suppress the compromised cell, the water used to control the emergency may contain hazardous chemicals and materials such as cyanide and hydrofluoric acid that may leach into the City's protected critical areas identified in Chapter 16.10 ACC;
- F. Due to the exceptional amounts of water required to suppress a thermal event, it is not known if the City, or the surrounding water districts have the capacity to provide a constant flow of high-volume water;
- G. BESS may create potentially hazardous air quality concerns in the event of

an emergency;

- H. In the event of an emergency, the response may pose a strain on the first responder personnel that is not fully understood;
- I. In the event of an emergency, it is unknown what the impacts to regional transportation routes, businesses, and residents if an evacuation zone is established;
- J. ESS may produce noise and visual impacts that are not currently well understood;
- K. ESS may produce impacts to wildlife that are not currently well understood;
- L. ESS facilities located within the L-F Airport Landing Field District may pose a significant risk to public health, safety, and welfare if an aircraft collision occurs;
- M. ESS facilities and their supporting infrastructure may be more appropriate for the industrial (M-1 and M-2) zones in the City due to their scale, land use, and potential impacts to life and safety of the general public;
- N. The Washington State Department of Ecology has initiated studies into ESS and is working to provide guidance on how ESS may impact the surrounding environment, and the City wishes to study the results of Ecology's efforts before updating its zoning and other regulations applicable to ESS facilities;
- O. The Washington State Legislature adopted House Bill 1216 in 2023 which established the Interagency Clean Energy Siting Coordinating Council to identify actions to improve siting and permitting of clean energy projects

within the State;

P. Puget Sound Energy (PSE), hired PSC (Power Systems Consultants) to conduct an Energy Storage System Location Study detailing locations of potential BESS facilities connected via high-voltage transmission lines to PSE's regional substations, siting (Exhibit H) the Christopher Substation for initial low risk ESS interconnection;

Q. It is unknown what fiscal or economic development benefits would be realized by the City if ESS facilities were permitted within the City or which zone(s) would be suitable for siting them. Further investigation and analysis of the potential economic impacts and tax revenues associated with such projects is warranted;

R. The City does not currently have ESS facilities or locations incorporated or accounted for in an emergency management response plan. ESS present unique emergency management needs that require coordination between the City, its departments, and outside entities;

WHEREAS, the unique characteristics of ESS facilities, certain existing requirements in Code may not be appropriately address or mitigate the community impacts and risks such facilities may present;

WHEREAS, the City Council held a public hearing on 7:00 PM on May 5, 2025, and is adopting the findings contained herein after the conclusion of said public hearing;

WHEREAS, to promote public health, safety, and welfare, the City Council deems it necessary and proper to impose a moratorium on land use and development permit

applications related to ESS for a period of six (6) months;

WHEREAS, processing applications for land use approvals, development permits, and related applications or code interrelations for ESS facilities under existing zoning code regulations and other official controls could potentially result in approvals of undesirable and incompatible development until such time that the City has properly reviewed its regulations and implemented any zoning code revisions or additional controls deemed necessary and proper for the health, safety, and general welfare of the City and its residents;

WHEREAS, it would be an efficient use of resources and an appropriate exercise of its planning authority under the Growth Management Act and Chapter 35A.63 RCW for the City to analyze whether, and under what regulatory parameters, ESS Energy Storage Systems should be allowed uses within the City;

WHEREAS, the City possesses land use jurisdiction and regulatory authority over the City's incorporated lands;

WHEREAS, the adoption of this moratorium is exempt from the threshold determination requirements under the State Environmental Policy Act;

WHEREAS, the potential adverse impacts on public health, property, safety, and welfare of the City and its citizens if this moratorium does not take effect immediately, further justifies a moratorium under RCW 36.70A.410 and the designation of this ordinance as necessary for the protection of public health, public property, or the public peace by the Council, the moratorium imposed herein promotes the public good and is necessary for the protection of public health, property, safety, and welfare; and

NOW THEREFORE, THE CITY COUNCIL OF THE CITY OF AUBURN,
WASHINGTON, DO ORDAIN AS FOLLOWS:

Section 1. Findings of Fact.

The recitals set forth above as well as Exhibits A through I are hereby adopted as the City Council's findings of fact in support of the moratorium established by this ordinance.

Section 2. Moratorium Imposed.

Pursuant to RCW 35A.63.220, and RCW 36.70A.390, a temporary moratorium is hereby imposed upon Tier II and Tier III ESS facilities in any zone within the City of Auburn. This moratorium also applies to the City's acceptance, processing, or approval of any applications, building permits, and land use permits for ESS facilities including without limitation;

- A. Administrative Use permits;
- B. Conditional Use permits;
- C. Building permits;
- D. Grading permits;
- E. Short plats;
- F. Subdivisions;
- G. Binding site plans;
- H. Reasonable use exceptions;
- I. Variances from Title 18 ACC regulations;
- J. Deviations from any City of Auburn engineering design and

construction standards or other technical codes for ESS facility within the City or any other type of development permit, approval, or code interpretation in connection with the same; and

K. Any other development permits related to ESS facilities.

The moratorium codified herein shall not apply to Tier I residential Battery Energy Storage Systems that serve as a back-up source of energy, load shedding, and storage of solar energy. Fires and other emergencies typically seen from Tier I BESS are limited in their impacts to the safety, welling, and health of Citizens.

Section 3. Term of Moratorium.

The moratorium imposed by this Ordinance shall become effective on the date described in Section 8, and shall continue in effect for an initial period of six (6) months, unless repealed, extended or modified by the City Council after subsequent public hearing(s) and entry of appropriate findings of fact pursuant to RCW 35A.63.220, provided that the moratorium shall automatically expire upon the effective date of zoning and land use regulations adopted by City Council to address siting, construction, and operation of ESS located within the City of Auburn.

Section 4. Public Hearing.

Pursuant to RCW 35A.63.220 and RCW 36.70A.390, the City Council has held a public hearing at the City Council's regular meeting at 7:00 PM on May 5, 2025, in order to take public testimony on this moratorium.

Section 5. Severability, Constitutionality and Invalidity.

If any section, subsection sentence, clause, finding, phrase, or portion of this Ordinance,

is for any reason held invalid or unconstitutional by any Court of competent jurisdiction such portion shall be deemed a separate, distinct and independent provision, and such holding shall not affect the validity of the remaining portions thereof.

Section 6. Corrections.

Upon the approval of the City Attorney the City Clerk and the codifiers of this ordinance are authorized to make any necessary corrections to this ordinance including, but not limited to, the correction of scrivener's/clerical errors, references, ordinance numbering, section/subsection numbers, and any reference thereto.

Section 7. Implementation. The Mayor is authorized to implement such administrative procedures as may be necessary to carry out the directions of this legislation.

Section 8. Effective Date.

This Ordinance shall take effect and be in force five (5) days from and after its passage, approval and publication as provided by law.

Section 9. Ordinance Transmitted to State.

Pursuant to RCW 36.70A.106, a copy of this ordinance shall be transmitted to the Washington State Department of Commerce.

INTRODUCED: _____

PASSED: _____

APPROVED: _____

NANCY BACKUS, MAYOR

ATTEST:

APPROVED AS TO FORM:

Shawn Campbell, MMC, City Clerk

Jason Whalen, City Attorney

Published: _____

COUNCIL STUDY SESSION

**ENERGY STORAGE SYSTEM
MORATORIUM ORDINANCE
NO. 6978**

**PRESENTED BY
GABRIEL CLARK, PLANNER II
APRIL 28, 2025**

Department of Community Development
Planning • Building • Development Engineering • Permit Center
Economic Development • Code Enforcement

AUBURN
VALUES

S E R V I C E
E N V I R O N M E N T
E C O N O M Y
C H A R A C T E R
S U S T A I N A B I L I T Y
W E L L N E S S
C E L E B R A T I O N

WHAT ARE ENERGY STORAGE SYSTEMS?

- Energy Storage Systems (ESS) vary widely in their uses and installation types; their primary function is to store electrical energy during periods of low demand and discharge at periods of high demand.
 - Battery Energy Storage Systems (BESS) are a type of ESS which uses battery technology to provide storage and improve the overall stability of the electrical grid.
- Other functions include:
 - Load Shedding
 - Load Sharing
 - Smoothing and dispatching from renewable energy sources
 - Emergency power storage
- The moratorium covers all ESS, BESS is the primary concern for Staff.

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WHY A LITHIUM-ION BATTERY?

- Lithium-ion batteries are a very common method of storing electrical energy for usage and may be charged and discharged reliably.
- Examples:
 - Phone batteries
 - Laptop computers
 - Electric Vehicles



WHAT ARE THE DIFFERENT TYPES?

Residential



Commercial



Moratorium

Grid



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PRIMARY FUNCTIONS VISUALIZED

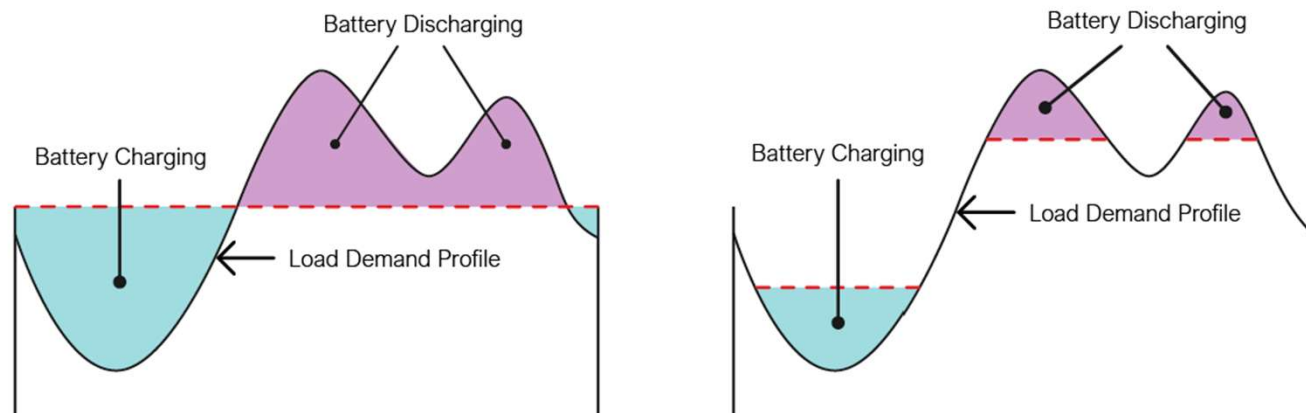
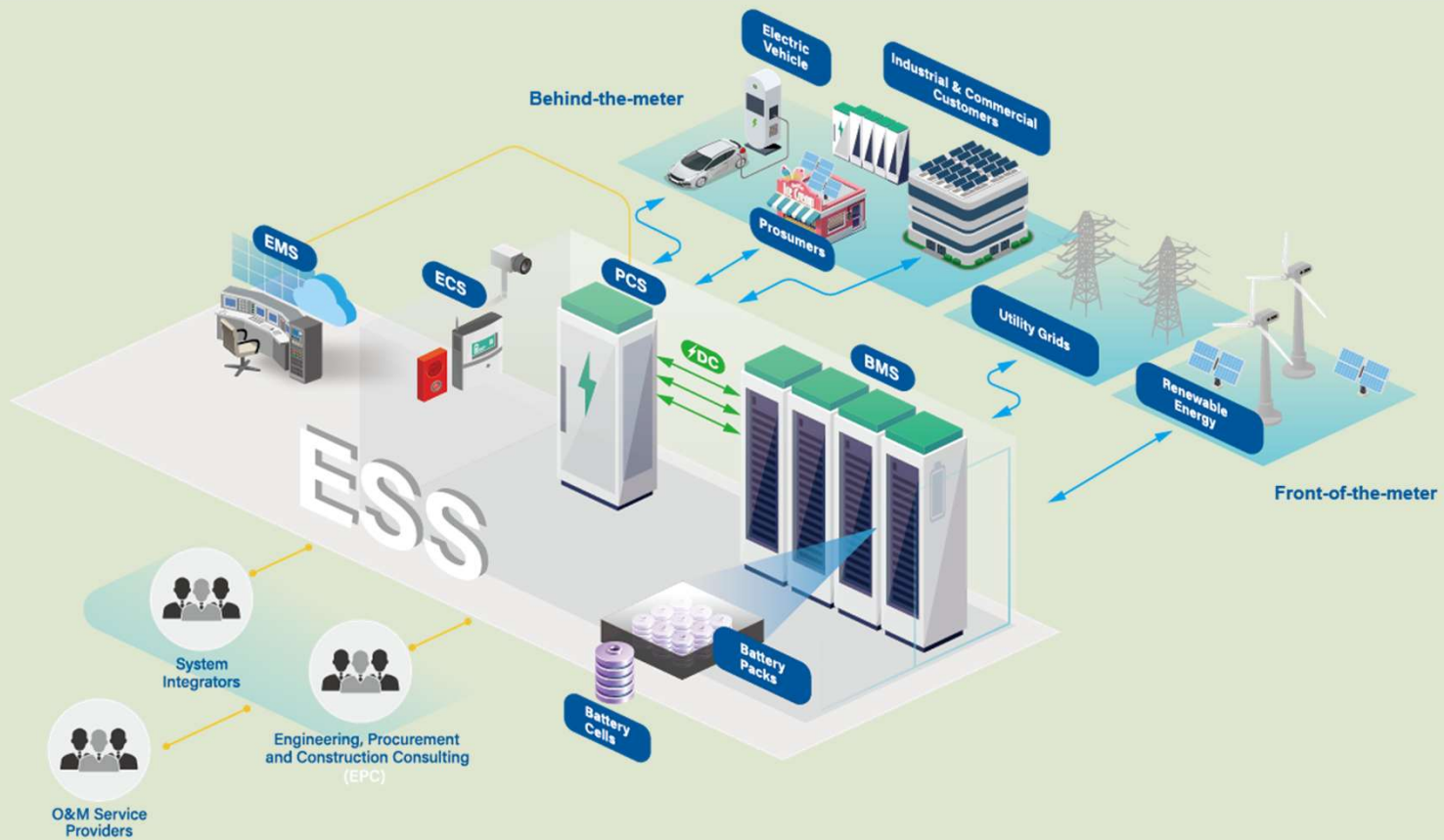


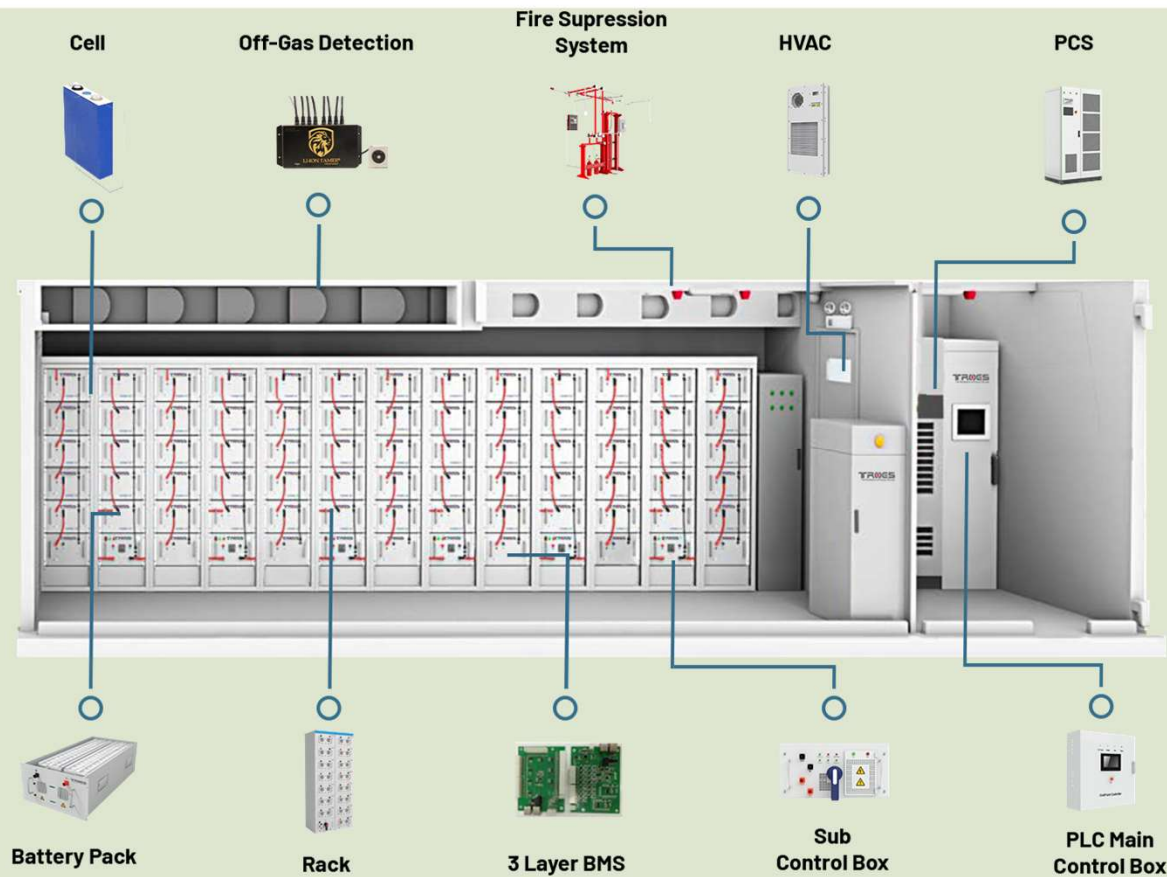
Table 14
General technical specifications of energy storage techniques [1,10,186,187].

Energy storage system	Power Rating	Discharge	Energy density Wh/kg	Energy cost €/KWh	Lifetime Efficiency
PHSS	100–4000 MW	1 hr–24 h	0.5–1.5	50–150	70–85 %
FES	0.002–20 MW	msec to 40 Min	5–130	1000–3500	90–95 %
CAES	50–300 MW	1he- 24 h	30–60	10–120	70–80 %
Ni-CD	0.001–0.1 MW	0.0003–1 h	40–60	200–1000	60–91 %
Li-ion	0.001–0.1 MW	0.0167–1 h	75–250	200–1800	85–100 %
Nas	0.5–50 MW	0.0003–2 h	150–240	200–900	85–90 %
Hydrogen	0.001–50 MW	14 hr- 24 h	800–10000	1–15	20–50 %
Supercapacitor	0.01–1 MW	msec to minute	0.1–15	300–4000	90–95^
SMES	10 kW–10MW	msec to seconds	0.5–5	700–7000	80–90 %

FLOW MAP OF TIER II AND III SYSTEMS



CROSS SECTION OF A BESS CABINET



WHAT ARE THE IMPACTS OF BESS SYSTEMS?

■ Primary Impact: Thermal Runaway



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TEX

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to the fire in

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branes, to monitor temperatures and manage the fire in a controlled manner, and water to prevent heat transfer. The crews handed the scene over to the site management on the next day.

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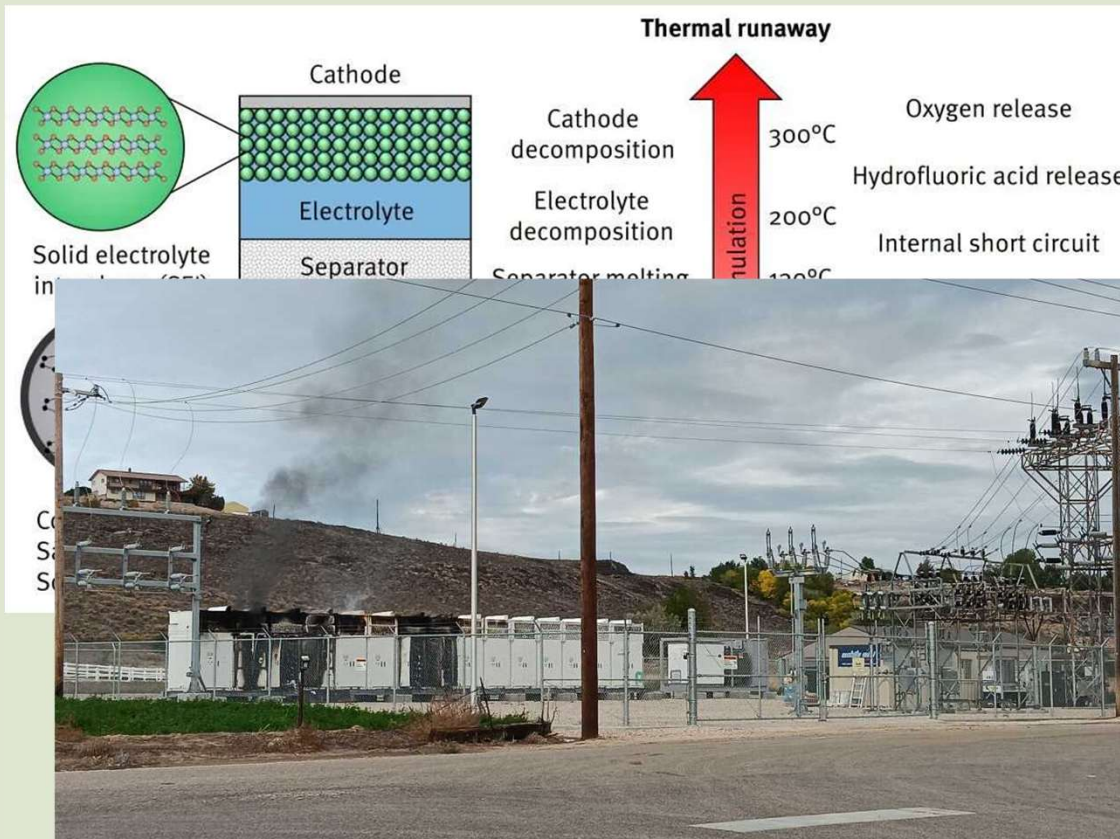
WHAT IS THE CAUSE OF THESE FIRES?

■ Thermal Runaway:

- “A primary risk related to Lithium-ion batteries. It is a phenomenon in which the Lithium-ion cell enters an uncontrollable, self-heating state.” –

[UL Research Institutes](#)

- To reduce the likelihood of thermal runaway, the batteries need to be isolated, cooled, and monitored.



WHAT IS THE DEMAND?

- PSE Hired Power Systems Consultants to report the most viable sites in the service area.
 - Christopher Substitution cited as “low risk”
- Puget Sound Energy announcing two BESS projects in the State.
 - Appaloosa Solar Project (Garfield County)
 - Greenwater BESS Project (Sumner)



JU8426 – PSC Report for Puget Sound Energy ESS Locations

3.1.1. Candidate Stations

Table 3.1 lists the 20 PSE stations that were analyzed in detail. These stations were visually inspected with recent overhead imagery and are organized by color for low risk and medium risk substations. As previously stated, the substation configuration metrics were not used for the initial candidate stations and will be addressed later in the report. Substations that are of a main bus configuration are highlighted in red.

Table 3.1 Qualitative Results for Low Risk (Green) and Medium Risk (Yellow) Stations

Puget Sound Energy adds two new clean energy projects in Washington

The new projects will add almost 350 MW of clean energy from utility scale solar and battery energy storage

BELLEVUE, Wash. (9/24/2024) Puget Sound Energy (PSE) is proud to announce two large projects in Washington state that will help add more clean energy to its portfolio.

The first is the development of a utility-scale solar facility known as Appaloosa Solar Project that PSE will own and operate. The second is a power purchase agreement signed with BrightNight for a Battery Energy Storage System (BESS) known as the Greenwater project.

Together, the projects can generate up to 342 MW of energy to help PSE's commitment to diversify its renewable resource mix and meet the state's Clean Energy Transformation Act (CETA) targets.

Since the passage of CETA in 2019, PSE has added more than 3,800 MW of renewable energy resources to its resource mix. More than half (2,033 MW) of that comes from new resources from 11 projects built to serve the energy needs of our customers.

WHAT IS THE REASON FOR THE MORATORIUM?

- Tier I (residential) BESS installations have limited negative impacts and will not be considered under this moratorium.
- Tier II and Tier III facilities may pose impacts to the safety, well-being and health to the residents and business in Auburn.
- The moratorium will provide needed time for the City to research these impacts and develop regulatory standards.
- Community Development and Public Works need to develop effective siting, construction, and operation regulations.

WHAT IS THE JURISDICTIONAL RESPONSE?

- Meetings with Valley Regional Fire Authority (VRFA) concluded the main method of extinguishing fires at BESS facilities is to continually douse the compromised rack with cool water.
- VRFA would be required to post several units at the site, for a multi shift response (12+ hours) and treated as a hazardous materials response.
- A fire would require a significant response. VRFA, Auburn Police, Department of Ecology, Puget Sound Clean Air Agency and other agencies.
- Community Development Staff are developing a new chapter in Title 18 to facilitate the siting, construction, and operation of BESS projects.

WHAT STANDARDS?

Existing

- **International Fire Code (IFC) and National Fire Protection Association (NFPA)**
 - Chapter 12 of the Washington State IFC (Est. March 2024)
 - 2023 edition of the NFPA 855 Standard Installation of Stationary Energy Storage Systems
- **International Building Code (IBC) siting and construction standards.**

Absent

- **Comprehensive guidance on siting, construction, and operation of ESS facilities.**
 - Title 18 Zoning for siting and operation.
 - Engineering Design Standards (EDS)

PROPOSED TIMELINE

May

- Adopt Moratorium

Jun

- Research and program development

Jul

- Prepare zoning text amendment

Aug

- Present proposed text amendment to planning commission

Sep

- Present proposed text amendment to City Council

Oct

- Adopt amended code and moratorium expires

AUBURN VALUES

S E R V I C E
E N V I R O N M E N T
E C O N O M Y
C H A R A C T E R
S U S T A I N A B I L I T Y
W E L L N E S S
C E L E B R A T I O N

Department of Community Development
Planning • Building • Development Engineering • Permit Center
Economic Development • Code Enforcement

Grid-Scale Battery Storage

Frequently Asked Questions

What is grid-scale battery storage?

Battery storage is a technology that enables power system operators and utilities to store energy for later use. A battery energy storage system (BESS) is an electrochemical device that charges (or collects energy) from the grid or a power plant and then discharges that energy at a later time to provide electricity or other grid services when needed. Several battery chemistries are available or under investigation for grid-scale applications, including lithium-ion, lead-acid, redox flow, and molten salt (including sodium-based chemistries).¹ Battery chemistries differ in key technical characteristics (see [What are key characteristics of battery storage systems?](#)), and each battery has unique advantages and disadvantages. The current market for grid-scale battery storage in the United States and globally is dominated by lithium-ion chemistries (Figure 1). Due to technological innovations and improved manufacturing capacity, lithium-ion chemistries have experienced a steep price decline of over 70% from 2010-2016, and prices are projected to decline further (Curry 2017).

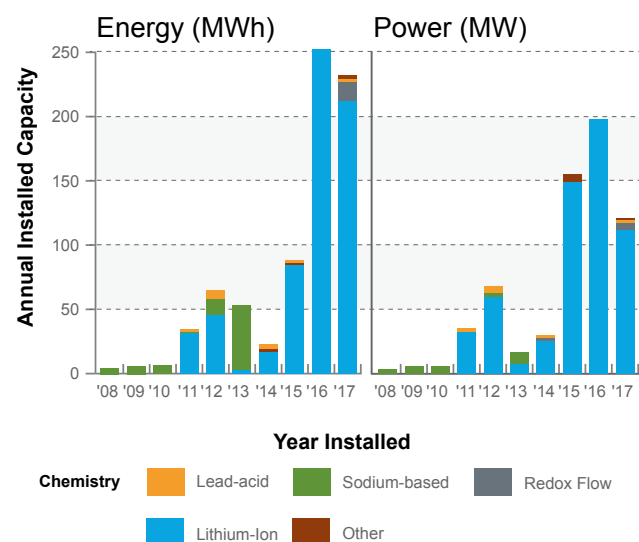


Figure 1: U.S. utility-scale battery storage capacity by chemistry (2008-2017). Data source: U.S. Energy Information Administration, Form EIA-860, [Annual Electric Generator Report](#)

Increasing needs for system flexibility, combined with rapid decreases in the costs of battery technology, have enabled BESS to play an increasing role in the power system in recent years. As prices for BESS continue to decline and the need for system flexibility increases with wind and solar deployment, more policymakers, regulators, and utilities are seeking to develop policies to jump-start BESS deployment.

Is grid-scale battery storage needed for renewable energy integration?

Battery storage is one of several technology options that can enhance power system flexibility and enable high levels of renewable energy integration. Studies and real-world experience have demonstrated that interconnected power systems can safely and reliably integrate high levels of renewable energy from variable renewable energy (VRE) sources without new energy storage resources.² There is no rule-of-thumb for how much battery storage is needed to integrate high levels of renewable energy. Instead, the appropriate amount of grid-scale battery storage depends on system-specific characteristics, including:

- The current and planned mix of generation technologies
- Flexibility in existing generation sources
- Interconnections with neighboring power systems
- The hourly, daily, and seasonal profile of electricity demand, and
- The hourly, daily, and seasonal profile of current and planned VRE.

In many systems, battery storage may not be the most economic resource to help integrate renewable energy, and other sources of system flexibility can be explored. Additional sources of system flexibility include, among others, building additional pumped-hydro storage or transmission, increasing conventional generation flexibility, and changing operating procedures (Cochran et al. 2014).

1. For information on battery chemistries and their relative advantages, see Akhil et al. (2013) and Kim et al. (2018).

2. For example, Lew et al. (2013) found that the United States portion of the Western Interconnection could achieve a 33% penetration of wind and solar without additional storage resources. Palchak et al. (2017) found that India could incorporate 160 GW of wind and solar (reaching an annual renewable penetration of 22% of system load) without additional storage resources.

What are the key characteristics of battery storage systems?

- **Rated power capacity** is the total possible instantaneous discharge capability (in kilowatts [kW] or megawatts [MW]) of the BESS, or the maximum rate of discharge that the BESS can achieve, starting from a fully charged state.
- **Energy capacity** is the maximum amount of stored energy (in kilowatt-hours [kWh] or megawatt-hours [MWh])
- **Storage duration** is the amount of time storage can discharge at its power capacity before depleting its energy capacity. For example, a battery with 1 MW of power capacity and 4 MWh of usable energy capacity will have a storage duration of four hours.
- **Cycle life/lifetime** is the amount of time or cycles a battery storage system can provide regular charging and discharging before failure or significant degradation.
- **Self-discharge** occurs when the stored charge (or energy) of the battery is reduced through internal chemical reactions, or without being discharged to perform work for the grid or a customer. Self-discharge, expressed as a percentage of charge lost over a certain period, reduces the amount of energy available for discharge and is an important parameter to consider in batteries intended for longer-duration applications.
- **State of charge**, expressed as a percentage, represents the battery's present level of charge and ranges from completely discharged to fully charged. The state of charge influences a battery's ability to provide energy or ancillary services to the grid at any given time.
- **Round-trip efficiency**, measured as a percentage, is a ratio of the energy charged to the battery to the energy discharged from the battery. It can represent the total DC-DC or AC-AC efficiency of the battery system, including losses from self-discharge and other electrical losses. Although battery manufacturers often refer to the DC-DC efficiency, AC-AC efficiency is typically more important to utilities, as they only see the battery's charging and discharging from the point of interconnection to the power system, which uses AC (Denholm 2019).

What services can batteries provide?

Arbitrage: Arbitrage involves charging the battery when energy prices are low and discharging during more expensive peak hours. For the BESS operator, this practice can provide a source of income by taking advantage of electricity prices that may vary throughout the day. One extension of the energy arbitrage service is **reducing renewable energy curtailment**. System operators and project developers have an interest in using as much low-cost, emissions-free renewable energy generation as possible; however, in systems with a growing share of VRE, limited flexibility of conventional generators and temporal mismatches between renewable energy supply and electricity demand (e.g., excess wind

generation in the middle of the night) may require renewable generators to curtail their output. By charging the battery with low-cost energy during periods of excess renewable generation and discharging during periods of high demand, BESS can both reduce renewable energy curtailment and maximize the value of the energy developers can sell to the market. Another extension of arbitrage in power systems without electricity markets is **load-leveling**. With load-leveling, system operators charge batteries during periods of excess generation and discharge batteries during periods of excess demand to more efficiently coordinate the dispatch of generating resources.

Firm Capacity or Peaking Capacity: System operators must ensure they have an adequate supply of generation capacity to reliably meet demand during the highest-demand periods in a given year, or the peak demand. This peak demand is typically met with higher-cost generators, such as gas plants; however, depending on the shape of the load curve, BESS can also be used to ensure adequate peaking generation capacity. While VRE resources can also be used to meet this requirement, these resources do not typically fully count toward firm capacity, as their generation relies on the availability of fluctuating resources and may not always coincide with peak demand. But system operators can improve VRE's ability to contribute to firm capacity requirements through pairing with BESS. Pairing VRE resources with BESS can enable these resources to shift their generation to be coincident with peak demand, improving their capacity value (see text box below) and system reliability.

Firm Capacity, Capacity Credit, and Capacity Value are important concepts for understanding the potential contribution of utility-scale energy storage for meeting peak demand.

Firm Capacity (kW, MW): The amount of installed capacity that can be relied upon to meet demand during peak periods or other high-risk periods. The share of firm capacity to the total installed capacity of a generator is known as its **capacity credit (%)**.³

Capacity Value (\$): The monetary value of the contribution of a generator (conventional, renewable, or storage) to balancing supply and demand when generation is scarce.

Operating Reserves and Ancillary Services: To maintain reliable power system operations, generation must exactly match electricity demand at all times. There are various categories of operating reserves and ancillary services that function on different timescales, from subseconds to several hours, all of which are needed to ensure grid reliability. BESS can rapidly charge or discharge in a fraction of a second, faster

3. See Mills and Wiser (2012) for a general treatment on the concept of capacity credit.

than conventional thermal plants, making them a suitable resource for short-term reliability services, such as Primary Frequency Response (PFR) and Regulation. Appropriately sized BESS can also provide longer-duration services, such as **load-following and ramping** services, to ensure supply meets demand.

Transmission and Distribution Upgrade Deferrals: The electricity grid's transmission and distribution infrastructure must be sized to meet peak demand, which may only occur over a few hours of the year. When anticipated growth in peak electricity demand exceeds the existing grid's capacity, costly investments are needed to upgrade equipment and develop new infrastructure. Deploying BESS can help defer or circumvent the need for new grid investments by meeting peak demand with energy stored from lower-demand periods, thereby reducing congestion and improving overall transmission and distribution asset utilization. Also, unlike traditional transmission or distribution investments, mobile BESS installations can be relocated to new areas when no longer needed in the original location, increasing their overall value to the grid.

Black Start: When starting up, large generators need an external source of electricity to perform key functions before they can begin generating electricity for the grid. During normal system conditions, this external

electricity can be provided by the grid. After a system failure, however, the grid can no longer provide this power, and generators must be started through an on-site source of electricity, such as a diesel generator, a process known as black start. An on-site BESS can also provide this service, avoiding fuel costs and emissions from conventional black-start generators. As system-wide outages are rare, an on-site BESS can provide additional services when not performing black starts.

Table 1 below summarizes the potential applications for BESS in the electricity system, as well as whether the application is currently valued in U.S. electricity markets (Denholm 2018). Figure 2 shows the cumulative installed capacity (MW) for utility-scale storage systems in the United States in 2017 by the service the systems provide.

Where should batteries be located?

Utility-scale BESS can be deployed in several locations, including: 1) in the transmission network; 2) in the distribution network near load centers; or 3) co-located with VRE generators. The siting of the BESS has important implications for the services the system can best provide, and the most appropriate location for the BESS will depend on its intended-use case.

In many cases, a BESS will be technically capable of providing a broad range of services in any of the locations described in the next section. Therefore, when siting storage, it is important to analyze the costs and benefits of multiple locations to determine the optimal siting to meet system needs. Considering all combinations of services the BESS can provide at each potential site will provide a better understanding of the expected revenue streams (see [What is value-stacking?](#)) and impact on the grid.

In the Transmission Network

BESS interconnected to the transmission system can provide a broad range of ancillary and transmission-related services. These systems can be deployed to replace or defer investments of peaking capacity, provide operating reserves to help respond to changes in generation and demand, or they can be used to defer transmission system upgrades in regions experiencing congestion from load or generation growth. Figure 3 below shows the configuration of a utility-scale storage system interconnected at the transmission substation level.

In the Distribution Network Near Load Centers

Storage systems located in the distribution network can provide all of the services as transmission-sited storage, in addition to several services related to congestion and power quality issues. In many areas, it may be difficult to site a conventional generator near load in order to provide peaking capacity, due to concerns about emissions or land use. Due to their lack of local emissions and their scalable nature, BESS systems can be co-located near load with fewer siting challenges than conventional generation. Placing storage near load can reduce transmission and distribution losses and relieve congestion, helping defer transmission and distribution upgrades. Distribution-level BESS systems can also provide local power quality services and support improved resilience during extreme weather events.

Most storage systems in the United States provide operating reserves and ancillary services. Despite this current focus, the total U.S. market for these services is limited, and utility-scale storage may begin providing more firm and peak capacity in the near future.

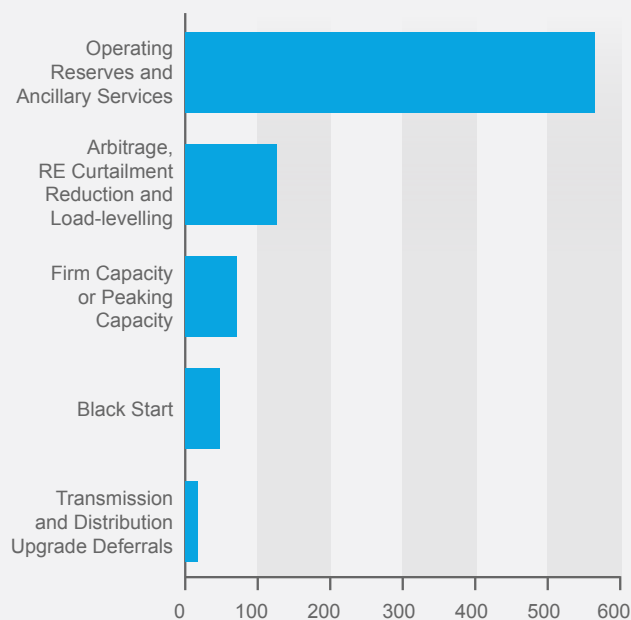


Figure 2: U.S. Utility-scale battery storage capacity by service. Data source: U.S. Energy Information Administration, Form EIA-860, [Annual Electric Generator Report](#)

Table 1: Applications of Utility-Scale Energy Storage

Application	Description	Duration of Service Provision	Typically Valued in U.S. Electricity Markets?
Arbitrage	Purchasing low-cost off-peak energy and selling it during periods of high prices.	Hours	Yes
Firm Capacity	Provide reliable capacity to meet peak system demand.	4+ hours	Yes, via scarcity pricing and capacity markets, or through resource adequacy payments.
Operating Reserves			
• Primary Frequency Response	Very fast response to unpredictable variations in demand and generation.	Seconds	Yes, but only in a limited number of markets.
• Regulation	Fast response to random, unpredictable variations in demand and generation.	15 minutes to 1 hour	Yes
• Contingency Spinning	Fast response to a contingency such as a generator failure.	30 minutes to 2 hours	Yes
• Replacement/ Supplemental	Units brought online to replace spinning units.	Hours	Yes, but values are very low.
• Ramping/Load Following	Follow longer-term (hourly) changes in electricity demand.	30 minutes to hours	Yes, but only in a limited number of markets.
Transmission and Distribution Replacement and Deferral	Reduce loading on T&D system during peak times.	Hours	Only partially, via congestion prices.
Black-Start	Units brought online to start system after a system-wide failure (blackout).	Hours	No, typically compensated through cost-of-service mechanisms.

Co-Located with VRE Generators

Renewable resources that are located far from load centers may require transmission investments to deliver power to where it is needed. Given the variable nature of VRE resources, the transmission capacity used to deliver the power may be underutilized for large portions of the year. A BESS can reduce the transmission capacity needed to integrate these resources and increase the utilization of the remaining capacity by using storage to charge excess generation during periods of high resource availability and discharge during periods of low resource availability. The same BESS can be used to reduce the curtailment of VRE generation, either due to transmission congestion or a lack of adequate demand, as well as provide a broad range of ancillary services.

What is value-stacking? What are some examples of value-stacking opportunities and challenges?

BESS can maximize their value to the grid and project developers by providing multiple system services. As some services are rarely called for (i.e., black start) or used infrequently in a given hour (i.e., spinning reserves), designing a BESS to provide multiple services enables a higher overall battery utilization. This multi-use approach to BESS is known as **value-stacking**. For example, a BESS project can help defer the need for new transmission by meeting a portion of the peak demand with stored energy during a select few hours in the year. When not meeting peak demand, the BESS can earn revenue by providing operating reserve services for the transmission system operator.

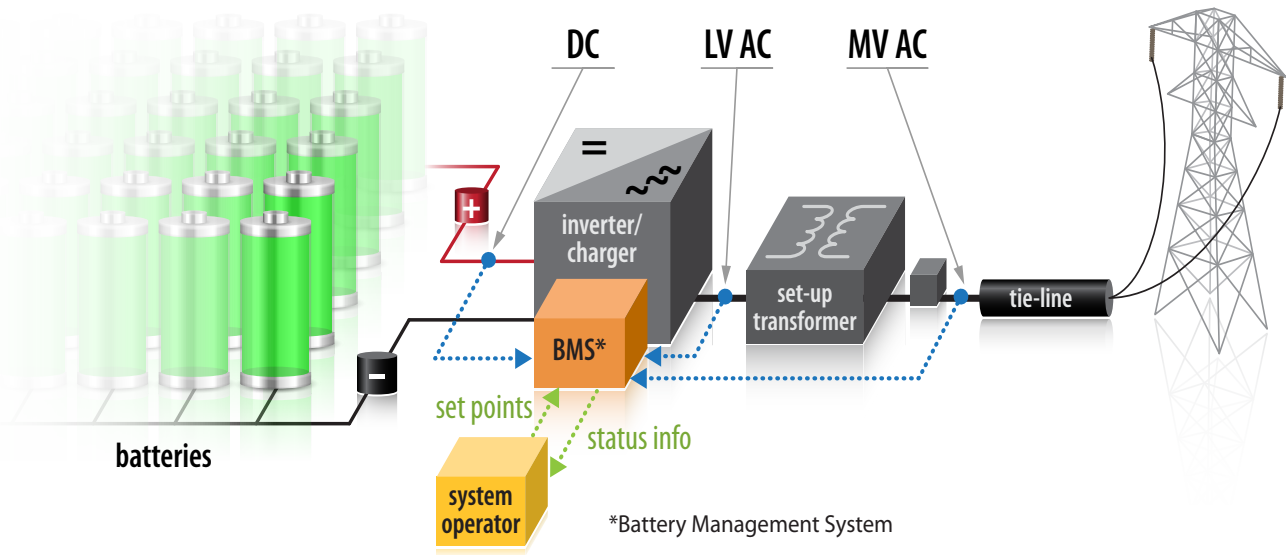


Figure 3: Key components of BESS interconnected at the transmission substation level. LV AC represents a low-voltage AC connection, while MV AC represents a medium-voltage AC connection.⁴ Source: Denholm (2019)

Some system services may be mutually exclusive depending on the BESS design (e.g., a short duration storage device used to supply regulating reserves would have limited value for deferring transmission or distribution upgrades). Even if a BESS is technically capable of providing multiple services, the additional cycling of the battery (charging and discharging) may degrade the battery and shorten its lifetime and economic viability. Finally, a BESS can only provide a limited duration of any set of services before it runs out of charge, which means batteries must prioritize the services they provide.

Regulators have a variety of options to enable BESS to maximize its economic potential through value-stacking. For example, the California Public Utilities Commission (CPUC) developed categories of services BESS can provide based on their importance for reliability and location on the grid, as well as 12 rules for utilities when procuring services from BESS (CPUC 2018). The CPUC rules:

- Dictate that BESS projects can only provide services at the voltage level to which they are interconnected or higher, but not lower⁵;
- Prioritize reliability services over non-reliability services and ensure storage cannot contract for additional services that would interfere with any obligation to provide reliability services;
- Require that a BESS project comply with all performance and availability requirements for services it provides and that noncompliance penalties be communicated in advance;
- Require that a BESS project inform the utility of any services it currently provides or intends to provide; and
- Take measures to prevent double compensation to BESS projects for services provided.

These CPUC rules are just one example of how regulators can help ensure BESS projects can select the most cost-effective combinations of services to provide without negatively impacting the reliability of the grid.

How are BESS operators compensated?

BESS operators can be compensated in several different ways, including in the wholesale energy market, through bilateral contracts, or directly by the utility through a cost-of-service mechanism. In a wholesale energy market, the BESS operator submits a bid for a specific service, such as operating reserves, to the market operator, who then arranges the valid bids in a least-cost fashion and selects as many bids as necessary to meet the system's demands. If the BESS operator's bid is selected and the BESS provides the service, the operator will receive compensation equal to the market price. This process ensures transparent prices and technology-agnostic consideration; however, many services are currently not available in the market, such as black start or transmission and distribution upgrade deferrals. Alternatively, BESS operators can enter into bilateral contracts for services directly with energy consumers, or entities which procure energy for end-consumers. This process does not ensure transparency and contracts can differ widely in both prices and terms. Finally, some BESS are owned directly by the utilities to whom they provide services, such as upgrade deferrals. In these cost-of-service cases, the utility pays the BESS operator at the predetermined price and recovers the payments through retail electricity rates. In some jurisdictions, however, BESS may be prevented from extracting revenues through both wholesale markets and cost-of-service agreements (Bhatnagar et al. 2013).

4. ANSI C84.1: Electric Power Systems and Equipment—Voltage Ratings (60 Hz) defines a low-voltage system as having a nominal voltage less than 1 kV and medium voltage as having a nominal voltage between 1 kV and 100 kV.

5. BESS interconnected at the distribution level can provide distribution or transmission level services, but BESS interconnected at the transmission level can only provide transmission-level services.

How does the value of batteries change with renewable energy deployment and increased VRE penetration?

The amount of renewable energy on the grid can influence the value and types of the services provided by a BESS. Increased levels of renewable energy may increase the need for frequency control services to manage increased variability and uncertainty in the power system. Increased levels of VRE penetration can also change the shape of the net load, or the load minus the VRE generation, influencing BESS projects that provide load following, arbitrage, peaking capacity, or similar services.

Models of the California system have shown a strong relationship between solar PV deployment and BESS' ability to replace conventional peaking capacity, also known as the BESS capacity credit (Denholm and Margolis 2018). As the shape of the load curve affects the ability of storage to provide peaking capacity, resources such as PV that cause load peaks to be shorter will enable shorter duration batteries, which are less expensive, to displace conventional peaking capacity.

Initially, low levels of PV penetration may flatten the load curve, reducing BESS' ability to cost-effectively offset the need for conventional peaking plants.⁶ At higher levels of solar PV penetration, however, the net load curve becomes peakier, increasing the ability and value of BESS to reduce peak demand. Figure 4 illustrates how increasing levels of PV generation change the shape of the net load, causing it to become peakier. The shaded areas above and under the net load curves indicate BESS charging and discharging, while the text boxes show the amount of net load peak reduction (MW) and the total amount of energy met by BESS during the net load peak (MWh).

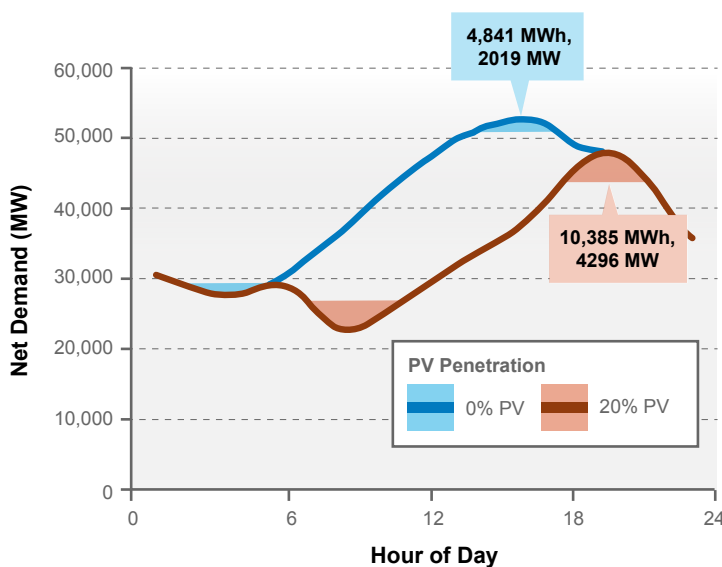


Figure 4: Change in California net load shape due to PV.
Adapted from Denholm and Margolis (2018)

6. This is demonstrated by Denholm and Margolis (2018) for the California system.

What are the key barriers to BESS deployment?

Barriers to energy storage deployment can be broadly grouped into three different categories: regulatory barriers, market barriers, and data and analysis capabilities.

1. Regulatory Barriers

- **Lack of rules and regulations to clarify the role of BESS.**

Although storage may be technically able to provide essential grid services, if no regulations or guidelines explicitly state that storage can provide these services, utilities and market operators may be unwilling to procure services from BESS. Furthermore, without a guarantee that services provided by a BESS project will be compensated, storage developers and financing institutions may be unwilling to make the necessary capital investments. Federal Energy Regulatory Commission (FERC) Order 841 addressed this issue in U.S. wholesale markets and directed market operators to develop rules governing storage's participation in energy, capacity, and ancillary service markets. Among other requirements, the rules must ensure open and equal access to the market for storage systems, taking into consideration their unique operating and technical characteristics (FERC 2018).

- **Restrictions or lack of clarity around if and how storage can be used across generation, transmission, and distribution roles.**

The variety of different services storage can provide often cuts across multiple markets and compensation sources. For instance, frequency regulation may be compensated in a wholesale market, but transmission or distribution investment deferrals may be compensated as a cost of service by the utility or system operator. In some jurisdictions, providing services across different compensation sources is restricted by regulation. Limiting the services batteries can provide based on where the service is provided or how it is compensated can influence how often they are utilized and whether they remain an economic investment (Bhatnagar 2013).

2. Market Barriers

- **Lack of markets for system services.** A lack of markets for services that batteries are uniquely suited to provide can make it difficult for developers to include them as potential sources of income when making a business case, deterring investment. For example, in most U.S. Independent System Operator (ISO) markets, generators are currently expected to provide inertial and governor response during frequency excursions without market compensation. Although BESS can provide the same services, currently there is no way for BESS to seek market compensation for doing so. Furthermore, the price formation for a service may have evolved for conventional generators, meaning the presence

of batteries in the market could distort prices, affecting storage systems and conventional generators alike (Bhatnagar 2013).

- **Lack of discernment in quality and quantity of services procured.** For some services, such as frequency regulation, the speed and accuracy of the response is correlated to its overall value to the system. Battery systems can provide certain services much faster and more accurately than conventional resources, which may not be reflected in compensation for the service. Markets can provide fair compensation to BESS by aligning compensation schemes with the quality of service provided, as is mandated by FERC Order 755, which requires compensation for frequency regulation that reflects “the inherently greater amount of frequency regulation service being provided by faster-ramping resources” (FERC 2011). Similarly, BESS can be uniquely suited to provide up- or down-regulation, given their larger operating range over which to provide regulating reserves (due to their lack of a minimum stable level and ability to provide up- and down-regulation in excess of their nameplate capacity, based on whether they are charging or discharging) (Denholm 2019). These unique features of BESS are not necessarily reflected in the procurement requirements and compensation of such services, diminishing BESS’ economic viability.

3. Data and Analysis Capabilities

Battery storage systems are an emerging technology that exhibit more risk for investors than conventional generator investments. These risks include the technical aspects of battery storage systems, which may be less understood by stakeholders and are changing faster than for other technologies, as well as potential policy changes that may impact incentives for battery deployment. Given the relatively recent and limited deployment of BESS, many stakeholders may also be unaware of the full capabilities of storage, including the ability of a BESS to provide multiple services at both the distribution and transmission level. At the same time, traditional analysis tools used by utilities may be inadequate to fully capture the value of BESS. For example, production cost models typically operate at an hourly resolution, which does not capture the value of BESS’ fast-ramping capabilities. The gaps in data and analysis capabilities and lack of adequate tools can deter investments and prevent battery storage from being considered for services that can be provided by better understood conventional generators (Bhatnagar et al. 2013).

What are some real-world examples of batteries providing services and value-stacking?

There are several deployments of BESS for large-scale grid applications. One example is the Hornsdale Power Reserve, a 100 MW/129 MWh lithium-ion battery installation, the largest lithium-ion BESS in the world, which has been in operation in South Australia since December 2017. The Hornsdale Power Reserve provides two distinct services: 1) energy arbitrage; and 2) contingency spinning reserve. The BESS can bid 30 MW and 119 MWh of its capacity directly into the market

for energy arbitrage, while the rest is withheld for maintaining grid frequency during unexpected outages until other, slower generators can be brought online (AEMO 2018). In 2017, after a large coal plant tripped offline unexpectedly, the Hornsdale Power reserve was able to inject several megawatts of power into the grid within milliseconds, arresting the fall in grid frequency until a gas generator could respond. By arresting the fall in frequency, the BESS was able to prevent a likely cascading blackout.

Another example of value-stacking with grid-scale BESS is the Green Mountain Power project in Vermont. This 4 MW lithium-ion project began operation in September 2015 and is paired with a 2 MW solar installation. The installation provides two primary functions: 1) backup power and micro-grid capabilities; and 2) demand charge reductions. The solar-plus-storage system enables the utility to create a micro-grid, which provides power to a critical facility even when the rest of the grid is down. The utility operating the BESS also uses it to reduce two demand charges: an annual charge for the regional capacity market and a monthly charge for the use of transmission lines. Sandia National Laboratories estimated that reducing the annual demand charge for a single year saved the utility over \$200,000 (Schoenung 2017).

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This work was authored, in part, by the National Renewable Energy Laboratory (NREL), operated by Alliance for Sustainable Energy, LLC, for the U.S. Department of Energy (DOE) under Contract No. DE-AC36-08G028308. Funding provided by the United States Agency for International Development (USAID) under Contract No. IAG-17-2050. The views expressed in this report do not necessarily represent the views of the DOE or the U.S. Government, or any agency thereof, including USAID.

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The Grid Integration Toolkit provides state-of-the-art resources to assist developing countries in integrating variable renewable energy into their power grids. Greening the Grid is supported by the U.S. Agency for International Development.

The USAID-NREL Partnership addresses critical challenges to scaling up advanced energy systems through global tools and technical assistance, including the Renewable Energy Data Explorer, Greening the Grid, the International Jobs and Economic Development Impacts tool, and the Resilient Energy Platform. More information can be found at: www.nrel.gov/usaid-partnership.





Valley Regional Fire Authority

Selfless Service. Integrity. Grit.

VRFA Headquarters, 1101 D Street NE, Auburn, WA 98002
(253) 288-5800 · vrfa.org · askthevrfa@vrfa.org

The increasing use of commercial-scale Battery Energy Storage Systems (BESS) introduces new safety and emergency response challenges. As the Valley Regional Fire Authority (VRFA) adapts to these emerging technologies, it is essential to focus on site design, hazardous material management, proper personnel training, and having a well-structured emergency response plan. These elements are critical for ensuring a safe and effective response to any BESS incident.

To manage these risks, VRFA relies on the International Fire Code (IFC) and the National Fire Protection Association (NFPA) standards while evaluating all proposed development that falls within our purview. The proposed project will follow the 2023 edition of NFPA 855, Standard for the Installation of Stationary Energy Storage Systems, and the amended Chapter 12 of the Washington State IFC, which took effect on March 15, 2024, through an emergency ruling by the State Building Council to ensure the most current safety measures can be applied towards BESS development. Additionally, the project will adhere to the City of Auburn (COA) Engineering and Design Standards (EDS), interpreting all other IFC codes from the appropriate code cycle for the project.

To allow Valley Regional Fire Authority to follow the best practices for emergency response outlined in Tesla's Industrial Lithium-Ion Battery Emergency Response Guide for the Megapack, onsite hydrants meeting section 7.06.01 of COA EDS will be required. Each Tesla Megapack must follow the commercial hydrant spacing requirements for commercial development. With the probability of water being applied during an emergency fire event at the property, onsite water containment should be considered to help prevent contaminated runoff into the nearby protected wetlands.

VRFA is an all-hazards fire agency and will respond to all fire, medical, and other emergencies within the cities of Algona, Auburn, Pacific, and Fire District 31. This would include any emergency incidents at BESS facilities. However, any response to a BESS site, especially a fire or discharge event, would likely require both local and regional assets due to the unique features and risks associated with these sites.

A fire or discharge incident at a BESS facility would be treated as a hazardous materials incident. All VRFA emergency response personnel are trained to an Operations level for hazardous materials

response as defined in WAC 296-824-30005, Safety Standards for Emergency Response, while three are trained to the higher Technician level. This distribution is similar in other local fire departments. Because of these training levels and the high-risk, low frequency nature of hazardous materials incidents, the VRFA and our regional partners rely on automatic and mutual aid agreements to respond to and mitigate hazardous materials incidents.

Response modeling determines the type, number, and order of emergency response assets to incidents based on established risk management criteria. Currently, an initial hazardous emergency response to a BESS site in Auburn would include VRFA, Puget Sound Regional Fire Authority, South King Fire and Rescue, and Renton Regional Fire Authority, at minimum. Combined with a fire response, there may be a significant impact on the area and the availability of fire-based resources. Furthermore, a review of previous incidents has shown that these emergencies span multiple operational periods – i.e., 12 or more hours – as the prescribed method for remediation of thermal events is to let the systems burn. This may necessitate extended evacuations and/or road closures due to smoke, water runoff from exposure protection, and the large presence of emergency vehicles. Finally, a prolonged response to a BESS would require coordinated public safety response and ongoing messaging to the community from VRFA, the City of Auburn, and other partners.



Incident Review— Melba Battery Fire

Presentation to Canyon County

October 18, 2023

Topics to Cover

- ☒ Melba Incident Review
- ☒ Air Quality Testing Results
- ☒ Fire Response & Investigation
- ☒ Inspection & Remediation
- ☒ Other Lessons Learned
- ☒ Current & Future Battery Storage Needs

Introductions

- Megan Ronk, Economic Development & Innovations Director
- Eric Hackett, Projects & Design Senior Manager
- Bill Norris, Environmental Compliance Manager
- Angelique Rood, Regional Manager



Melba Incident Review

- The fire was reported to Idaho Power at 5:20 a.m., Monday Oct. 2
- Idaho Power arrived on-site at 6:02 a.m.
- Neighbors were encouraged to evacuate, hotels offered
- Fire responders reported on-site, no action needed
- Roads were closed to maintain a 200 ft perimeter
- Regular updates to fire, city, and county throughout event
- Industrial Hygiene Professionals arrived to begin air quality testing at approximately 11:00 a.m.
 - National firm with mobile instrumentation arrived Tuesday, Oct. 3



Air Quality Testing Results

- 3rd party real-time air monitoring
 - Immediate monitoring conducted afternoon and evening of Oct. 2
 - Continuous monitoring performed evening of Oct. 3–Oct. 5 (duration of fire)
 - Analyte selection: vendor material information and common contaminants from fires
 - Sampling locations based on nearby residential dwellings and prevailing winds

No detected analytes above health-based action levels



Fire Response & Investigation

- Idaho Power and battery supplier monitored 24x7 until fire was extinguished
- Advised by battery supplier to not add water or retardant, consistent with current industry practices





Fire Response & Investigation

- Comprehensive investigation at Melba
 - Battery supplier believes the root cause to be water intrusion
 - Short-circuit caused heat that ignited the battery cells
 - Fire spread between battery segments until it burned out
- Supplier believes that an identified defective unit is where the fire originated due to water intrusion
- Idaho Power third-party experts engaged to provide independent conclusions and recommend appropriate mitigation measures
- Developing plans for removal



Inspection & Remediation

- Melba incident has emphasized heightened need and awareness for inspection and remediation across Idaho Power battery systems
 - Meet specifications, codes, and testing ratings
 - Ensure safe operation
 - Ensure emergency response clarity
- Complete inspection of all battery systems with supplier and independent third-party
 - Water intrusion
 - Defects
 - Mitigation measures and success





Inspection & Remediation

- Determine appropriate mitigation strategies
 - Resolve water intrusion
 - Reduce propagation between battery segments
- Consult with third-party experts to ensure ongoing safe operation
- Develop additional procedures, processes, inspection protocols, and contingency plans
- Complete rigorous technical and engineering diligence and specification review of future suppliers



Other Lessons Learned

- Improved coordination with stakeholders **prior** to battery installation is necessary
 - Training with public safety partners
 - Better communication with city and county officials
- Idaho Power staff to be better equipped with information on battery units to aid in communication and information sharing
- Previous work with Canyon County aided in cooperation during the event
 - Messaging was timely, coordinated, and accurate





Other Lessons Learned

- Operational experience
 - Establish subject expertise
 - Mitigation strategies
 - Contingency planning
 - Emergency response



Current & Future Battery Storage Needs

- Growth info
 - Capacity needs- 23% customer growth in Canyon County (2018-2023)
- Why Melba specifically
 - Steady load growth
 - Batteries supports local peak demand and help meet system needs
 - Affordable and reliable
 - Local resiliency benefits
- Other Canyon County installations
 - Happy Valley Substation (Nampa)



Melba Project Timeline

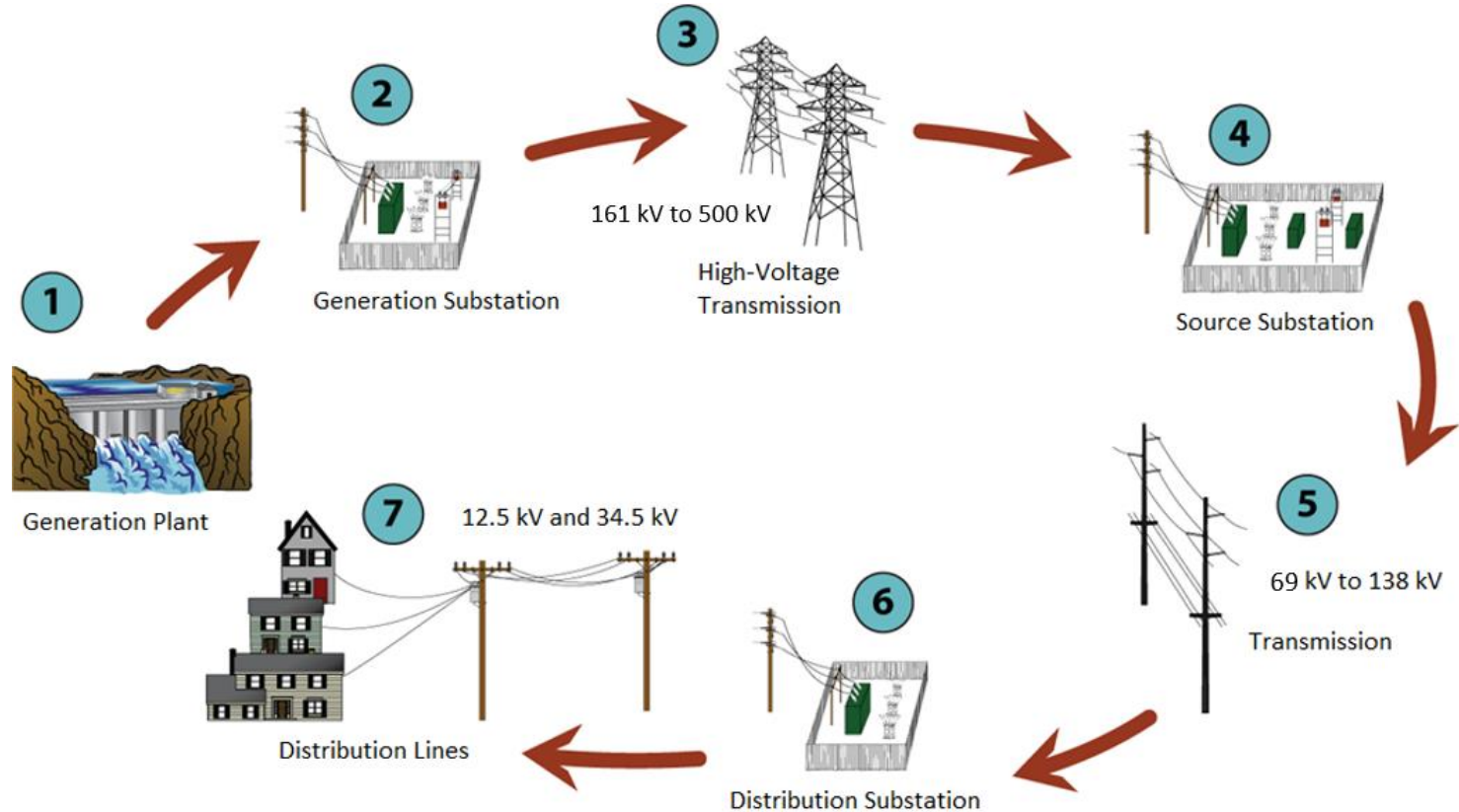
- Need identified in spring 2021
 - Transformer overload given sustained growth in Melba
 - 2-MW four-hour battery storage system
 - Defer transformer upgrade by 10+ years
- Supplier solicitation, review, and contract through the end of 2021
 - Numerous suppliers evaluated based on specification, timeline, and cost

Melba Project Timeline

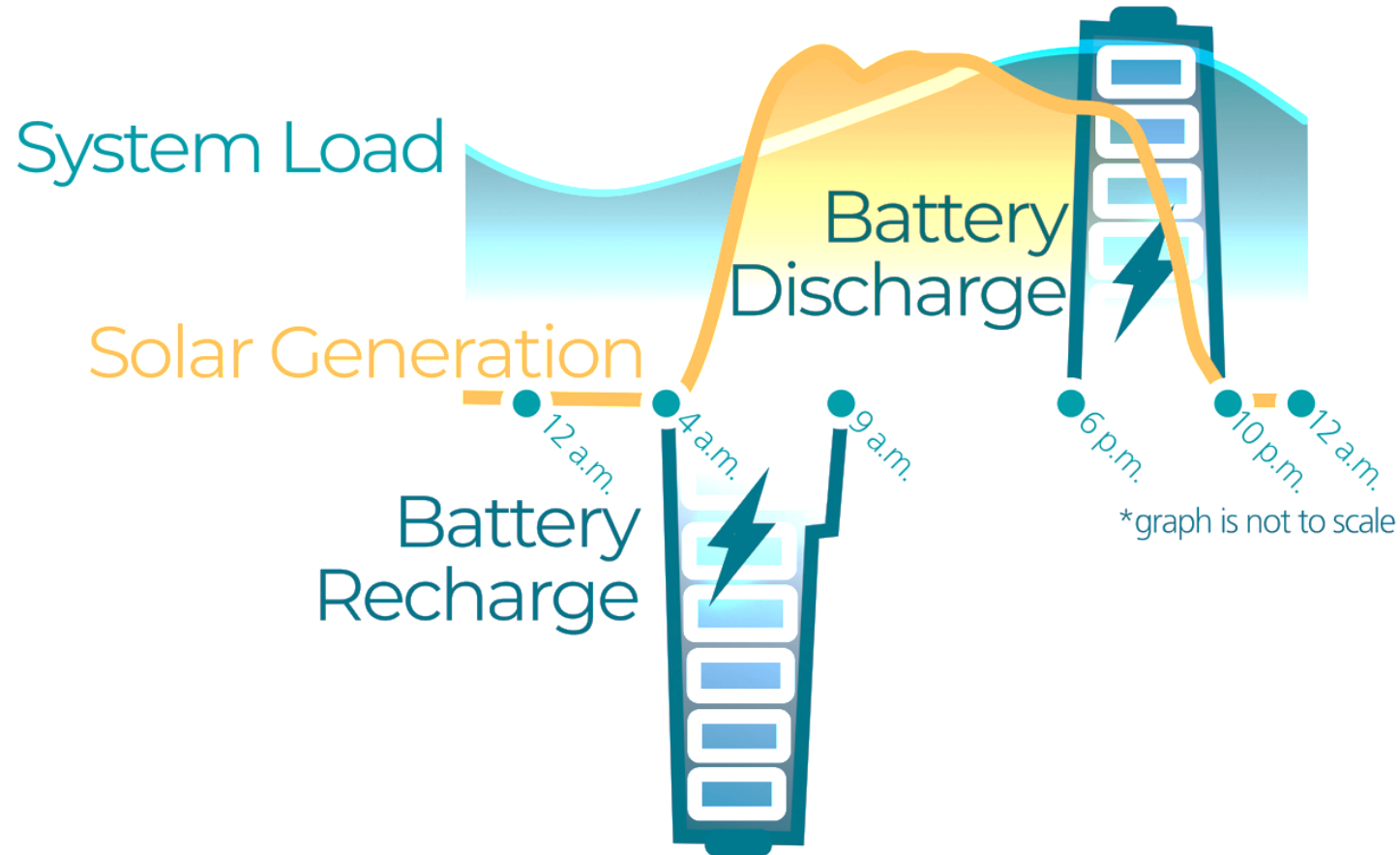


- Batteries were delivered/installed in summer 2023
 - Testing/commissioning began in September 2023
 - Control electronics, monitoring equipment, auxiliary power, fire suppression system, HVAC
 - Expected to be fully operational in early October
- 

Our Electric Grid



How Batteries Can Help

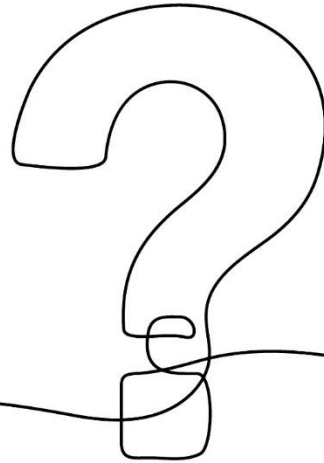


The Future of Battery Storage

- Industry is advancing technology, including safe operations
 - Worldwide, batteries are generally proven and safe
 - Supplier/industry expertise
 - Battery experts
 - Community collaboration
- Affordable and reliable
 - Anticipated in Idaho Power Integrated Resource Plan
- Provide ability to store energy to meet customer needs at any time
 - Potential to support economic development and meet timelines
 - Support local needs as well as system benefits



Questions



ORDINANCE NO. 07-2024

AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF COVINGTON, WASHINGTON, RELATING TO ADOPTING A TEMPORARY 12-MONTH MORATORIUM ON THE ACCEPTANCE, PROCESSING, AND/OR APPROVAL OF APPLICATIONS FOR BUILDING AND LAND DEVELOPMENT PERMITS AND RELATED LAND USE DECISIONS FOR BATTERY ENERGY STORAGE SYSTEM FACILITIES PROPOSED TO BE LOCATED IN ANY ZONE WITHIN THE CITY OF COVINGTON; SCHEDULING A PUBLIC HEARING; RECOGNIZING THAT A WORK PLAN WILL BE ESTABLISHED; ADOPTING FINDINGS OF FACT; PROVIDING FOR SEVERABILITY; DECLARING AN EMERGENCY; AND ESTABLISHING AN IMMEDIATE EFFECTIVE DATE.

WHEREAS, within the express terms of the Covington Municipal Code (“CMC”) and the Growth Management Act, the Washington State Legislature has conferred upon the governing bodies of Washington code cities the right to establish and adopt moratoria related to land uses, as set forth in RCW 35A.63.220 and RCW 36.70A.390; and

WHEREAS, a moratorium is a pause on all new development, land use, and construction applications, which allows cities to consider new development and zoning regulations; and

WHEREAS, Battery Energy Storage System (BESS) facilities are installations designed to store electrical energy for later use, typically consisting of batteries, power conversion systems, and control equipment; and

WHEREAS, the primary function of BESS facilities is to store excess electricity generated during periods of low demand or high renewable energy production, such as from solar or wind sources. This stored energy can then be discharged when demand is high or when renewable energy generation is low, helping to stabilize the electrical grid and improve overall energy reliability; and

WHEREAS, time is needed for the City of Covington (“City”) to study whether battery energy storage system facilities are compatible and should be allowed within City limits, either as a permitted or conditional use, and if so, in which zone(s) and whether current zoning regulations in Title 18 CMC and/or other official controls and development standards need to be updated to ensure such facilities can be safely and appropriately sited within the City; and

WHEREAS, the City’s development regulations, and specifically the definition of “Utility Facility” in CMC 18.20.050 and the permitted and conditional uses provided in CMC Chapter 18.125.040, have not been updated to reflect recent technological changes and business models in the energy storage and electric utility industry; and

WHEREAS, applying these outdated regulations in Title 18 CMC to new technologies and business models could lead to approval of battery energy storage system facility projects that are undesirable, unsafe, and/or inconsistent with long-term planning goals and objectives of the City, particularly when the existing regulations have not been reviewed and updated for best practices nor reconsidered in light of technological changes and potential effects such facilities have on surrounding areas and community resources; and

WHEREAS, the City Council of the City of Covington ("City Council") has determined the following facts, and identified the following unknown risks and economic factors, that may be relevant in assessing the desirability of, and siting concerns associated with, battery energy storage system facilities in the City:

- A. Battery energy storage systems are essentially rechargeable battery arrays that store excess energy when demand on the electrical grid is low and can feed power back into the system when demand is high (or energy production is low).
- B. The elements used in batteries can pose risks of explosion from overheating and of environmental contamination.
- C. Battery energy storage system facilities present fire hazards that can take weeks to extinguish, requiring massive volumes of water and chemicals to bring under control.
- D. Battery energy storage system facilities are sites where hazardous chemicals such as cyanide and hydrofluoric acid are present and thus pose the potential for discharge to surrounding property, air, and groundwater in the event of a fire.
- E. Battery energy storage system facilities create a potential for air quality hazards in the event of a fire.
- F. Battery energy storage system facilities may produce noise and visual impacts that are not currently well understood by the city.
- G. Battery energy storage system facilities may produce impacts on wildlife that are not currently well understood by the city.
- H. Battery energy storage system facilities may be more appropriate for heavy industrial zones than commercial, neighborhood retail offices, or residential zones.
- I. Battery energy storage system facilities may create additional strain on local emergency response agencies and their personnel.
- J. The Washington State Department of Ecology is beginning to compile guidance on battery energy storage system facility sites that the City wishes to study before updating its zoning and other regulations applicable to battery energy storage system facilities.
- K. The Washington State Legislature adopted House Bill 1216 in 2023, and new Washington State regulations codified at WAC 51.54A.0322 which are intended to minimize the risks of lithium-ion battery energy storage system facilities through fire safety requirements and construction standards and will take effect soon. The City desires to study these new laws and regulations to determine what effects they will have on local regulatory authority. King County is studying whether its codes need updating to add conditions for approving these types of facilities, including zoning, safety, and insurance requirements. The City desires

to learn about King County's regulatory initiatives before finalizing updates to the City's zoning regulations and official controls.

- L. Puget Sound Energy ("PSE"), which is conducting Requests For Proposals for third-party private entities to develop energy storage facilities connected via high-voltage transmission lines to PSE's regional substations, has published safety and reliability requirements for such facilities that need to be explored and better understood before the City can determine whether to permit battery energy storage system facilities in the City, and under what conditions.
- M. It is unknown what fiscal or economic development benefits would flow to the City if battery energy storage system facilities were permitted within the City or which zone(s) would be most advantageous for siting them. The City needs to investigate and analyze potential economic impacts and tax revenues associated with such projects.

WHEREAS, due to the unique characteristics of battery energy storage system facilities, certain existing requirements in the CMC may not appropriately address or mitigate the community impacts and risks such facilities may present; and

WHEREAS, processing applications for land use approvals, development permits, and related applications or code interpretations for battery energy storage system facilities under existing zoning regulations and other official controls could potentially result in approvals of undesirable and incompatible development until such time that the City has properly reviewed its regulations and implemented any zoning code revisions or additional controls deemed necessary and proper for the health, safety, and general welfare of the City and its residents; and

WHEREAS, the City's Comprehensive Plan update includes analysis and recommendations for needed zoning code amendments to implement the Land Use element and Economic Development element of the Comprehensive Plan following its anticipated adoption in December 2024; and

WHEREAS, it would be an efficient use of resources and an appropriate exercise of its planning authority under the Growth Management Act and Chapter 35A.63 RCW for the City to integrate an analysis of whether, and under what regulatory parameters, battery energy storage system facilities should be allowed uses within the City with the City's ongoing work on the Land Use chapter and other elements of the Comprehensive Plan and development regulations; and

WHEREAS, the City Council has significant concerns about whether battery energy storage system facilities can be appropriately reviewed and analyzed under current regulations and finds that unless the City acts immediately to preserve the status quo, there are likely to be adverse impacts on the City and the health, safety, and welfare of its citizens; and

WHEREAS, pursuant to RCW 35A.63.220 and RCW 36.70A.390, the City may adopt a moratorium that is effective for no longer than six months but may adopt a moratorium that is effective for up to 12 months if a work plan is developed for conducting appropriate studies and analyses over that longer period; and

WHEREAS, to promote public health, safety, and welfare, the City Council deems it necessary and proper to impose a moratorium on land use and development permit applications related to battery energy storage system facilities for a period of 12 months; and

WHEREAS the City Council deems it appropriate to hold a public hearing on June 11, 2024, and may adopt additional findings following the conclusion of said public hearing; and

WHEREAS, the City possesses land use jurisdiction and regulatory authority over the City's incorporated lands; and

WHEREAS, the adoption of this moratorium is exempt from the threshold determination requirements under the State Environmental Policy Act; and

WHEREAS, Council's desire to maintain the status quo justifies the declaration of an emergency and the designation of this ordinance as a public emergency ordinance necessary for the protection of public health, public safety, public property, or the public peace by the Council; and

WHEREAS, the potential adverse impacts on public health, property, safety, and welfare of the City and its citizens if this moratorium does not take effect immediately, further justifies the declaration of an emergency and the designation of this ordinance as a public emergency ordinance necessary for the protection of public health, public safety, public property, or the public peace by the Council; and

WHEREAS, Council finds that the enactment of this ordinance constitutes an emergency due to the need to immediately prevent the community detriment that would occur by allowing further self-service storage facility development proposals to vest under the current land use regulations; and

WHEREAS, RCW 35A.13.190 permits an ordinance to become effective immediately but requires that it must be passed by a majority plus one of the whole membership of Council to have such an effect; and

WHEREAS, the moratorium imposed herein promotes the public good and is necessary for the protection of public health, property, safety, and welfare. A public emergency exists requiring that the City's moratorium takes effect immediately upon adoption.

NOW, THEREFORE, The City Council of the City of Covington, Washington, do ordain as follows:

Section 1. Findings of Fact. The recitals set forth above are hereby adopted as the City Council's initial findings of fact in support of the moratorium established by this ordinance. The City Council may, in its discretion, adopt additional findings after the public hearing referenced in Section 3 below.

Section 2. Moratorium Imposed. Pursuant to RCW 35A.63.220, and RCW 36.70A.390, a temporary development moratorium is hereby imposed upon battery energy storage system facilities in any zone within the City of Covington. This moratorium also applies to the City's acceptance, processing, or approval of any applications for building permits and land use permits for battery energy storage system facilities, including without limitation:

- A. Development permits;
- B. Special use permits;
- C. Building permits;
- D. Clearing and grading permits;
- E. Short plats;
- F. Subdivisions;
- G. Binding site plans;
- H. Site plan reviews;
- I. Conditional use permits;
- J. Reasonable use exceptions;
- K. Variances from Title 18 CMC regulations;
- L. Deviations from any City of Covington engineering design and construction standards or other technical codes for any battery energy storage system facility within the City or any other type of development permit, approval, or code interpretation in connection with same; and
- M. Any other development permits related to battery energy storage system facilities.

Section 3. Public Hearing. Pursuant to RCW 35A.63.220 and RCW 36.70A.390, the City Council will hold a public hearing at the City Council's regular meeting, at 7:00 p.m., on Monday, June 11, 2024, or as soon thereafter as the business of the City Council shall permit, in order to take public testimony on this moratorium and to consider adopting further findings of fact.

Section 4. Referral to Staff; Work Plan. City staff and the Covington Planning Commission are hereby authorized and requested, as part of their ongoing work on the 2024 Comprehensive Plan periodic update and review of current zoning regulations, to study the issues identified in this ordinance and to develop recommendations for whether battery energy storage system facilities should be allowed uses within the City and, if so, what zoning regulations and public processes are needed to protect the health, safety, and welfare of the community and ensure that such facilities are developed in a manner that is compatible with the overall plan and vision for the City. These recommendations shall be reviewed and considered by the Covington City Council for inclusion in the 2024 Comprehensive Plan update, Title 18 of the Covington Municipal Code, and/or other official controls of the City. This work plan is subject to change upon subsequent direction of the City Council following the public hearing referenced in Section 3 of this ordinance.

Section 5. Severability. If any section, paragraph, sentence, clause, or phrase of this ordinance, or its application to any person or situation, be declared unconstitutional or otherwise invalid for any reason, or should any portion of this ordinance be pre-empted by state or federal law or regulation, such decision or preemption shall not affect the validity of the remaining

portions of this ordinance or its application to other persons or situation. The City Council of the City of Covington hereby declares that it would have adopted this ordinance and each section, subsection, sentence, clauses, phrase, or portion thereof, irrespective of the fact that any one or more sections, subsections, sentences, clauses, phrases, or portions be declared invalid or unconstitutional.

Section 6. Corrections. Upon the approval of the city attorney, the city clerk and the codifiers of this ordinance are authorized to make any necessary corrections to this ordinance including, but not limited to, the correction of scrivener's/clerical errors, references, ordinance numbering, section/subsection numbers, and any reference thereto.

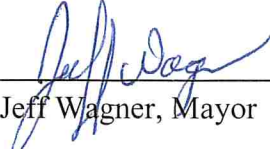
Section 7. Ratification. Any act consistent with the authority and prior to the effective date of this ordinance is hereby ratified and affirmed.

Section 8. Declaration of Emergency; Effective Date; Duration. The City Council hereby finds and declares that there is a significant potential for battery energy storage system facilities to create substantial adverse effects on public health, safety, and welfare if not addressed by adequate and appropriate development regulations; therefore, an emergency exists which necessitates that this ordinance become effective immediately in order to preserve the public health, safety, and welfare. Non-exhaustive underlying facts necessary to support this emergency declaration are included in the recitals above, all of which are adopted by reference as findings of fact as if fully set forth herein. This moratorium shall take effect immediately and shall remain in effect for 12 months, unless terminated earlier by the Council; provided, however, Council may, in its sole discretion, renew the moratorium for one or more six-month periods in accordance with state law. This ordinance or a summary thereof consisting of the title shall be published in the official newspaper of the City.

Passed by the City Council of the City of Covington this 14th day of May, 2024.

Signed in authentication of its passage this 14th day of May, 2024.

[Signature Page Follows]



Jeff Wagner, Mayor

EFFECTIVE: 05-14-2024

PUBLISHED: 05-17-2024

AUTHENTICATED:



Krista Bates, City Clerk

APPROVED AS TO FORM:

/s/ Mark Orthmann, as authorized by email on May 14, 2024

Mark Orthmann, City Attorney

FINAL BILL REPORT

E2SHB 1216

C 230 L 23
Synopsis as Enacted

Brief Description: Concerning clean energy siting.

Sponsors: House Committee on Appropriations (originally sponsored by Representatives Fitzgibbon, Doglio, Berry, Reed, Simmons, Macri, Fosse and Pollet; by request of Office of the Governor).

House Committee on Environment & Energy
House Committee on Appropriations
Senate Committee on Environment, Energy & Technology
Senate Committee on Ways & Means

Background:

Energy Facility Siting.

The Energy Facility Site Evaluation Council (EFSEC) was established in 1970 to provide a single siting process for major energy facilities. The EFSEC coordinates all evaluation and licensing steps for siting certain energy facilities, as well as specifies the conditions of construction and operation. After evaluating an application, the EFSEC submits a recommendation either approving or rejecting an application to the Governor, who makes the final decision on site certification. If approved by the Governor, a site certification agreement is issued in lieu of any other individual state or local agency permits.

The laws that require or allow a facility to seek certification through the EFSEC process apply to the construction, reconstruction, and enlargement of energy facilities, biorefineries, and electrical transmission facilities, with many specifications. Energy facilities of any size that exclusively use alternative energy resources, such as wind or solar energy, may opt into the EFSEC review and certification process. Energy facilities that exclusively use alternative energy resources that choose not to opt in to the EFSEC review and certification process must instead receive applicable state and local agency development and environmental permits for their projects directly from each agency.

This analysis was prepared by non-partisan legislative staff for the use of legislative members in their deliberations. This analysis is not part of the legislation nor does it constitute a statement of legislative intent.

Projects of Statewide Significance.

Since 1997 a process has existed to support the development of certain types of industrial projects of statewide significance. To qualify for designation as a project of statewide significance, a project must meet capital investment or job creation requirements. Possible designations include: (1) border-crossing projects; (2) private projects investing in manufacturing, research, and development; (3) projects that will provide a net environmental benefit; and (4) projects that will further commercialization of an innovation. The Legislature has designated certain types of projects as projects of statewide significance; for all other types of projects, an application for designation as a project of statewide significance must be submitted to the Department of Commerce. The application must include a letter of approval from jurisdictions where a project is located and must commit to providing the local staff necessary to expedite the completion of a project. Counties and cities with projects must enter into agreements with the Governor's Office of Regulatory Innovation and Assistance (ORIA) and local project managers to expedite the processes necessary for the design and construction of projects. The ORIA must provide facilitation and coordination services to expedite completion of industrial projects of statewide significance. The project proponents may provide the funding necessary for the local jurisdiction to hire the staff required to expedite the process.

State Environmental Policy Act.

The State Environmental Policy Act (SEPA) establishes a review process for state and local governments to identify environmental impacts that may result from governmental decisions, such as the issuance of permits or the adoption of land use plans. The SEPA environmental review process involves a project proponent or the lead agency completing an environmental checklist to identify and evaluate probable environmental impacts. If an initial review of the checklist and supporting documents results in a determination that the government decision has a probable significant adverse environmental impact, known as a threshold determination, the proposal must undergo a more comprehensive environmental analysis in the form of an environmental impact statement (EIS). If the SEPA review process identifies significant adverse environmental impacts, the lead agency may deny a government decision or may require mitigation for identified environmental impacts.

Under SEPA rules adopted by the Department of Ecology (Ecology), after the submission of an environmental checklist and prior to a lead agency's threshold determination, an applicant may ask the lead agency to indicate whether it is considering a determination of significance. If the lead agency indicates that a determination of significance is likely, the applicant may clarify or change features of the proposal to mitigate the impacts which led the agency to consider a determination of significance to be the likely threshold determination. If an applicant revises the environmental checklist as necessary to describe the clarifications or changes, the lead agency must make its threshold determination based on the changed or clarified proposal.

Lead agencies undertaking SEPA review must aspire to finish an EIS as expeditiously as possible without compromising the integrity of the analysis. For complex government

decisions, the lead agency must aspire to finish an EIS within 24 months of making a threshold determination that an EIS is needed; for government decisions with narrower and more easily identifiable environmental impacts, the lead agency must aspire to finish in far less time than 24 months. The aspirational time limit does not create civil liability or a new cause of action against a lead agency. Ecology must submit a report to the Legislature every two years on recent EISs.

Under SEPA rules, when a lead agency prepares an EIS on a nonproject proposal, the lead agency has less detailed information available on environmental impacts and the environmental impacts of any subsequent project proposals that may follow the EIS. The lead agency's nonproject EIS must discuss impacts and alternatives in the level of detail appropriate to the scope of the proposal and the level of planning for the proposal. If a specific geographic area is the focus of a nonproject EIS, site specific analyses are not required but may be included for specific areas of concern. After the approval of a nonproject EIS by the lead agency based on the EIS assessing the proposal's broad impacts, when a project is proposed that is consistent with the approved nonproject action that was the subject of the nonproject EIS, the EIS for the project proposal must focus on the impacts and alternatives, including mitigation measures, that are specific to the subsequent project and that were not analyzed in the nonproject EIS. Procedures allow for the adoption and use of portions of the nonproject EIS in a subsequent project-level SEPA review. Lead agencies must, at the time of project-level SEPA review, evaluate the nonproject EIS that was previously completed to ensure that the nonproject analysis is valid when applied to the current proposal, knowledge, and technology. If a nonproject EIS's analysis is no longer valid, the analysis must be reanalyzed in the project-level EIS.

Local Project Review.

Counties and cities planning under the Growth Management Act (GMA) are required to establish an integrated and consolidated development permit process for all projects involving two or more permits and to provide for no more than one open record hearing and one closed record appeal. Other jurisdictions may incorporate some or all of the integrated and consolidated development permit process. The permit process must include a determination of completeness of the project application within 28 days of submission. A project permit application is determined to be complete when it meets the local procedural submission requirements even if additional information is needed because of subsequent project modifications. Within 14 days of receiving requested additional information, the local government must notify the applicant whether the application is deemed complete. The determination of completeness does not preclude the local government from requesting additional information if new information is required or substantial project changes occur. A project permit application is deemed complete if the GMA jurisdiction does not provide the determination within the required time period.

Summary:

Interagency Clean Energy Siting Coordinating Council.

An Interagency Clean Energy Siting Coordinating Council (Coordinating Council) is created, and is co-chaired and co-staffed by the Department of Ecology (Ecology) and the Department of Commerce (Commerce). The Coordinating Council must have participation from at least 11 named state agencies or offices in addition to Ecology and Commerce. The Coordinating Council's responsibilities are enumerated and include:

- identifying actions to improve the siting and permitting of clean energy projects;
- tracking federal government efforts;
- soliciting input from parties with interests in clean energy project siting and permitting; and
- supporting the creation and annual update of a list to be published by the Governor's Office of Indian Affairs containing contacts at federally recognized Indian tribes, applicable tribal laws on consultation, and tribal preferences regarding clean energy project siting and outreach.

The Coordinating Council must provide annual updates to the Governor and the Legislature.

The Coordinating Council must advise Commerce in contracting for an independent third party to evaluate state agency siting and permitting processes, identify successful models used in other states for siting and permitting clean energy projects, and make recommendations for improvements by July 1, 2024. The Coordinating Council, led by Ecology, must also pursue development of a consolidated clean energy application and must explore development of a consolidated permit for clean energy projects. Ecology must update the Legislature on the consolidated clean energy application and the consolidated permit by the second half of 2024.

Clean Energy Projects of Statewide Significance.

Commerce must establish an application process for the designation of Clean Energy Projects of Statewide Significance (CEPSS). The CEPSS process contains similar elements to the existing Projects of Statewide Significance process, but is independent of that process. Applicants must demonstrate certain information to Commerce as part of the CEPSS application, including an explanation of how the project will contribute to the state's achievement of state greenhouse gas emission limits and be consistent with the state energy strategy, how the product will contribute to the state's economic development goals, and a plan for meaningful engagement and information sharing with potentially affected federally recognized Indian tribes.

The clean energy projects eligible for designation as a CEPSS include:

- certain types of clean energy product manufacturing facilities;
- electrical transmission facilities that don't primarily or solely serve fossil fuel electric generation facilities;
- facilities that produce electric generation from renewable resources or that do not result in greenhouse gas emissions, with the exception of certain hydroelectric facilities;
- storage facilities;

- facilities and projects at any facilities that exclusively or primarily process biogenic feedstocks into biofuel;
- biomass energy facilities;
- facilities or projects at any facilities that exclusively or primarily process alternative jet fuel that has 40 percent lower greenhouse gas emissions than conventional jet fuel;
- projects or facility upgrades undertaken by emissions-intensive trade exposed industries classified under the Climate Commitment Act (CCA) to align with the CCA's cap trajectory, where a project does not degrade local air quality; and
- storage, transmission, handling, or other related and supported facilities associated with any of the above facilities.

Commerce must determine within 60 business days of receipt of a complete application whether to designate a clean energy project as a CEPSS, taking into consideration criteria including the applicant's need for coordinated state assistance, whether a nonproject environmental review process or least-conflict siting process has been carried out in the project's area, and the potential impacts on environmental and public health. Commerce may designate an unlimited number of CEPSS.

The Coordinated Permit Process Available to Clean Energy Projects.

Ecology is given certain responsibilities for coordinating a fully coordinated permitting process for clean energy projects. The coordinated permitting process serves as an option, but not a requirement, for those seeking permits for clean energy projects.

Upon request, Ecology must conduct an initial assessment of a clean energy project to determine the level of coordination needed and the complexity, size, and need for assistance of the project, including specified permitting and environmental review processes. Ecology's initial assessment must be documented in writing, made available to the public, and completed within 60 days of the request for the initial assessment.

A clean energy project proponent may request that Ecology convene a fully coordinated permit process. A clean energy project proponent must provide specified information and enter into a cost reimbursement agreement with Ecology to cover the costs to Ecology and other agencies in carrying out the coordinated permit process. To convene the coordinated permit process, Ecology must determine that the clean energy project raises complex coordination, permit processing, or substantive review issues. Ecology serves as the main point of contact for the project proponent and participating agencies, and keeps a schedule identifying procedural steps in the permitting process and highlighting substantive issues that require resolution. A project proponent may withdraw from the coordinated permit process.

Within 30 days of accepting a project for the coordinated permit process, Ecology must convene a work plan meeting to develop a coordinated permit process schedule with the project proponent, local government, and participating permit agencies. Each participating agency and the lead agency under the State Environmental Policy Act (SEPA) must send

representatives to the work plan meeting, and relevant federal agencies and potentially affected federally recognized Indian tribes must be notified and invited to participate. Any accelerated time periods for permits or SEPA review under the coordinated permit process schedule must be consistent with statute, rules, regulations, or adopted state policies, standards, and guidelines for public participation and the participation of other agencies and federally recognized Indian tribes. The coordinated permit process schedule must be finalized and made available to the public after the work plan meeting.

Cities and counties with development projects determined as eligible for the coordinated permit process within their jurisdictions must enter into an agreement with Ecology or project proponents for expediting the completion of projects, including expedited permit processing and environmental review processing.

Following specified procedures, Ecology must offer early, meaningful, and individual consultation with any affected federally recognized Indian tribe on a clean energy project participating in the coordinated permit process. Ecology must identify overburdened communities that might be potentially affected by the clean energy project and verify that these communities have been meaningfully engaged in the regulatory processes in a timely manner by participating agencies.

Applicants using the fully coordinated permit process are not eligible to apply for site certification under the Energy Facility Site Evaluation Council (EFSEC) process unless a substantial change is made to the proposed project.

The CEPSS designation and coordinated permit process does not affect the jurisdiction of the EFSEC, limit or abridge the powers of a participating permit agency, or prohibit a state agency, local government, federally recognized Indian tribe, or CEPSS applicant or project proponent from entering into nondisclosure agreements related to confidential proprietary information.

State Environmental Policy Act for Clean Energy Projects.

A number of new provisions are added to SEPA that apply to clean energy project proposals:

- In addition to the 24 month aspirational timeline that applies to all SEPA environmental impact statements (EISs), lead agencies are directed to complete an EIS for a clean energy project within 24 months of a threshold determination. Lead agencies may work with a project applicant to set or extend a time limit longer than 24 months. Lead agencies must work collaboratively with agencies that have actions requiring SEPA review for a clean energy project to develop a schedule that includes a list of agency responsibilities, actions, and deadlines. Failure to comply with the SEPA timeline requirements is not subject to appeal, does not invalidate SEPA review, and does not create civil liability or create a new cause of action.
- Lead agencies may not combine the evaluation of a clean energy project proposal with other proposals unless the proposals are closely related or the applicant agrees to

a combined SEPA review. Lead agencies may require mitigation measures for clean energy projects only to address the environmental impacts that are attributable to and caused by a proposal.

- After submitting an environmental checklist, but prior to a threshold determination, a lead agency must notify a clean energy project applicant that a project proposal is likely to result in a determination of significance. The lead agency must provide the project applicant the option of withdrawing or revising the application, and must use any revised application as the basis for the threshold determination.

Ecology must prepare three nonproject EISs: one for solar energy projects, one for onshore wind energy projects, and one for green electrolytic or renewable hydrogen projects. Each nonproject EIS must include analysis of co-located battery storage for such hydrogen, solar, and wind projects. Ecology must include certain information in the nonproject EIS and address specified types of environmental impacts, and determine the EIS's scope based on input from specified parties. Ecology must offer early and meaningful consultation on the nonproject EIS's with any affected federally recognized Indian tribe. The nonproject EISs must result in the development of maps identifying probable significant adverse environmental impacts for evaluated resources. Following the completion of nonproject EISs, the Coordinating Council must review the findings and make recommendations to the Legislature and the Governor on potential areas to designate as clean energy preferred zones for the technology analyzed, and any taxation, regulatory, environmental review, or other benefits that should accrue to projects in those zones. Project proponents of actions covered by these nonproject EISs must consider the impact analysis from the nonproject EIS in carrying out project-level SEPA reviews, and may rely on the nonproject EIS in specified ways when carrying out project-level SEPA review. Clean energy projects that follow the recommendations of the nonproject environmental review must be considered to have mitigated environmental impacts unless the project-specific environmental review identifies project-level adverse environmental impacts not addressed in the nonproject environmental impact review.

Other.

During a local project review of a project to construct or improve electric generation, transmission or distribution facilities, a local government may not require a project applicant to demonstrate the necessity or utility of the project, other than to require as part of the completed project application the submission of documentation required by Federal Energy Regulatory Commission or other federal agencies with regulatory authority over electric power transmission and distribution needs, or the Utilities and Transportation Commission.

A county may not prohibit the installation of wind and solar resource evaluation equipment necessary for the design and environmental planning of a renewable energy project.

The Washington State University (WSU) Energy Program must conduct a pumped storage siting process to support expanded capacity to store intermittently produced renewable

energy, with a goal of understanding issues and interests related to areas where pumped storage might be sited, and to provide useful information to developers and for subsequent SEPA reviews of environmental impacts. The WSU Energy Program must allow ample opportunity for participation by stakeholders, governments, and federally recognized Indian tribes who self-identify an interest in the process, and must complete the process by June 30, 2025. The WSU Energy Program must develop and make available a map with geographical information systems data layers highlighting areas identified through the process. The map may not include sensitive tribal information as identified by federally recognized Indian tribes and the WSU Energy Program must take precautions to prevent disclosure of any sensitive tribal information it receives.

Commerce must conduct at least three stakeholder meetings focused on certain rural clean energy impacts, with at least one in Eastern Washington and at least one in Western Washington. These stakeholder meetings must be held with rural, agriculture, natural resource management and conservation, and forestry stakeholders to gain a better understanding of the benefits and impacts of anticipated changes in the state's energy system, including the siting of facilities under the jurisdiction of the EFSEC, and to identify risks and opportunities for rural communities. Commerce must then complete a report on rural clean energy and resilience, which must consider the stakeholder consultation and must include recommendations for how to more equitably distribute costs and benefits to rural communities. The report must specifically examine the impacts of energy projects in rural areas to jobs, local tax revenue, agriculture, and tourism, and it must forecast what Washington's clean energy transition will require for energy projects in rural Washington. Commerce must complete a report on these topics by December 1, 2024.

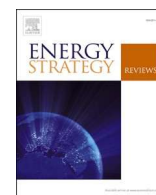
The Joint Committee on Energy Supply and Energy Conservation is renamed the Joint Committee on Energy Supply, Energy Conservation, and Energy Resilience (Joint Committee). The Joint Committee must hold at least two meetings to consider policy and budget recommendations to reduce impacts and increase benefits of the clean energy transition for rural communities. The Joint Committee must report its findings and any recommendations to the EFSEC and the Legislature by December 1, 2024.

A severability clause is included.

Votes on Final Passage:

House	75	20	
Senate	30	18	(Senate amended)
House	78	18	(House concurred)

Effective: July 23, 2023



Comprehensive review of energy storage systems technologies, objectives, challenges, and future trends

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ARTICLE INFO

Keywords:

Renewable energy
Energy storage system
Power system
Energy storage applications
Electrical vehicle
Energy sustainability
Power system reliability
Energy storage forms
Hybrid energy storage system

ABSTRACT

Energy storage is one of the hot points of research in electrical power engineering as it is essential in power systems. It can improve power system stability, shorten energy generation environmental influence, enhance system efficiency, and also raise renewable energy source penetrations. This paper presents a comprehensive review of the most popular energy storage systems including electrical energy storage systems, electrochemical energy storage systems, mechanical energy storage systems, thermal energy storage systems, and chemical energy storage systems. More than 350 recognized published papers are handled to achieve this goal, and only 272 selected papers are introduced in this work. A comparison between each form of energy storage systems based on capacity, lifetime, capital cost, strength, weakness, and use in renewable energy systems is presented in a tabular form. Selected studies concerned with each type of energy storage system have been discussed considering challenges, energy storage devices, limitations, contribution, and the objective of each study. The integration between hybrid energy storage systems is also presented taking into account the most popular types. Hybrid energy storage system challenges and solutions introduced by published research are summarized and analyzed. A selection criteria for energy storage systems is presented to support the decision-makers in selecting the most appropriate energy storage device for their application. For enormous scale power and highly energetic storage applications, such as bulk energy, auxiliary, and transmission infrastructure services, pumped hydro storage and compressed air energy storage are currently suitable. Battery, flywheel energy storage, super capacitor, and superconducting magnetic energy storage are technically feasible for use in distribution networks. With an energy density of 620 kWh/m³, Li-ion batteries appear to be highly capable technologies for enhanced energy storage implementation in the built environment. Nonetheless, lead-acid batteries continue to offer the finest balance between price and performance because Li-ion batteries are still somewhat costly. The applications of energy storage systems have been reviewed in the last section of this paper including general applications, energy utility applications, renewable energy utilization, buildings and communities, and transportation. Finally, recent developments in energy storage systems and some associated research avenues have been discussed. Academics and engineers interested in energy storage strategies might refer to this review.

1. Introduction

In the past few decades, electricity production depended on fossil fuels due to their reliability and efficiency [1]. Fossil fuels have many effects on the environment and directly affect the economy as their prices increase continuously due to their consumption which is assumed to double in 2050 and three times by 2100 [6]. Fig. 1 shows the current global installed capacity of energy storage system ESS. China, Japan, and the United States are among the most used countries for energy storage systems. RESs are eco-friendly, easy to evolve, and can be

applied in all fields like commercial, residential, agricultural, and industrial [2]. Many problems are accomplished with applying the RESs, such as intermittency, poor load following, and non-dispatchable. Using an energy storage system (ESS) is crucial to overcome the limitation of using renewable energy sources RESs. ESS can help in voltage regulation, power quality improvement, and power variation regulation with ancillary services [3]. The use of energy storage sources is of great importance. Firstly, it reduces electricity use, as energy is stored during off-peak times and used during on-peak times. Thus improving the efficiency and reliability of the system. Secondly, it reduces the amount of carbon emitted. Thirdly, these systems are used to supply energy to

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<https://doi.org/10.1016/j.esr.2024.101482>

Received 28 February 2024; Received in revised form 8 June 2024; Accepted 26 June 2024

Available online 1 July 2024

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List of abbreviations

ESS	Energy Storage System	SCs	Supercapacitors
REs	Renewable Energy Sources	EV	Electric Vehicle
SMES	Superconducting Magnetic Energy Storage	BEV	Battery Electric Vehicle
CAES	Compressed Air Energy Storage	HEV	Hybrid Electric Vehicle
FES	Flywheel Energy Storage	PEV	Plug-in hybrid Electric Vehicle
PHES	Pumped Hydro Energy Storage	FB	Flow Battery
BESS	Battery Energy Storage System	DOD	Depth of Discharge
HESS	Hybrid Energy Storage Systems	Li-Ion battery	Lithium-ion battery
EES	Electrical Energy Storage System	NiCd	Nickel - cadmium battery
CESS	Electrochemical Energy Storage System	NaS	Sodium Sulfur battery
MESS	Mechanical Energy Storage System	LAES	Liquid Air Energy Storage
TESS	Thermal Energy Storage System	SHSS	Sensible heat storage systems
CESS	Chemical Energy Storage System	LHSS	Latent heat storage system
		TCESS	Thermo chemical energy storage systems
		FC	Fuel Cell

consumers in remote areas far away from the grid as well as reduce the intermittency of renewable energy [4,5], and [6]. Energy can be stored in many forms, such as thermal, mechanical, chemical, or electrochemical energy. Besides, it can be stored in electric and magnetic fields resulting in many types of storing devices such as superconducting magnetic energy storage (SMES), flow batteries, supercapacitors, compressed air energy storage (CAES), flywheel energy storage (FES), and pumped hydro storage (PHS) 96 % of the global amplitude of energy storage capacity is shared by the PHS. Super-capacitor energy storage, battery energy storage, and flywheel energy storage have the advantages of strong climbing ability, flexible power output, fast response speed, and strong plasticity [7]. More development is needed for electromechanical storage coming from batteries and flywheels [8].

With the rapid rising of the development of ESS and due to the enormous energy storage potential, all the efforts of researchers are focusing on giving reviews on the types, characteristics, advantages, limitations, comparison, electrical vehicle, evaluations, challenges, and applications of ESS. Some reviews are discussed, presented and compared with our work in a tabular form in Table 1.

Table 1 revealed that no review had included every one of the previously listed points. For this reason, this review has included new developments in energy storage systems together with all of the previously mentioned factors. Statistical analysis is done using statistical data from the “Web of Science”. The number of papers with the theme “Energy storage” over the past 20 years (2002–2022) is shown in Fig. 2 and it is deduced from it that ESS is a hot research field with extensive attention

(see Fig. 3).

Figures (4–9) show the number of published papers and number of citations that interested in ESS technologies using the keywords (thermal energy storage system, pumped hydro energy storage, supercapacitors, SMES and battery) over the last 17 years. As can be observed in Figs. 4 and 8, there are also a lot of studies on thermal and battery energy storage, which is a hot spot of ESS and suggests that the authors are more interested in these. Furthermore, the number of papers reviewing ESS keeps rising each year, showing that ESS is a popular area of research that is receiving a lot of attention. For more clarification review, all figures have been merged in to one figure (Fig. 9). It can be observed that the number of research in ESS technologies continues to increase in the last 17 years.

In this paper, different types of energy storage are presented. Various ESS features, advantages, and limitations are discussed. In addition to, hybrid energy storage systems and some of its combinations are listed here. Furthermore, several applications of ESS along with challenges and new trends in ESS are critically reviewed.

The rest of this paper is as follows, section 2 discusses the different types of ESS, their operation, characteristics, advantages, limitations and applications. Hybrid energy storage systems in addition to several typical HESS combinations are presented in section 3. In section 4, the challenges for integrating ESS is discussed. The selection criteria for ESS is listed in section 5. Furthermore, in section 6, the applications of ESS are presented. Section 7 discusses new trends in ESS. Finally, conclusion inferred from this review paper and recommendations are listed in section

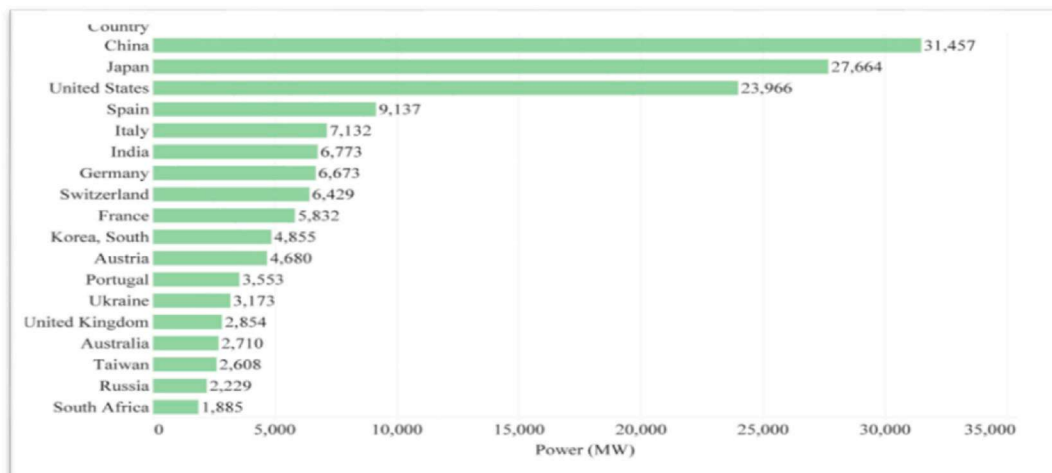
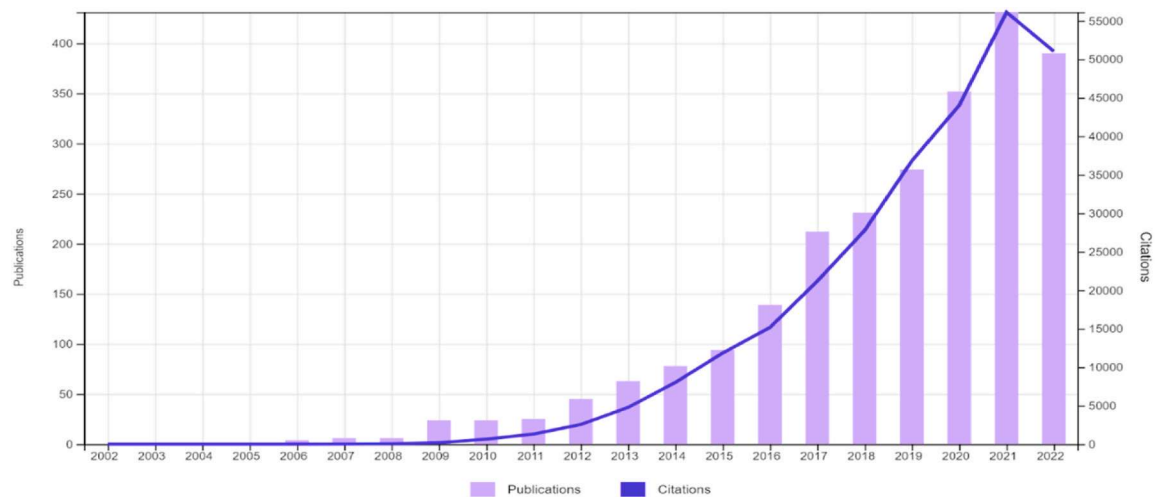
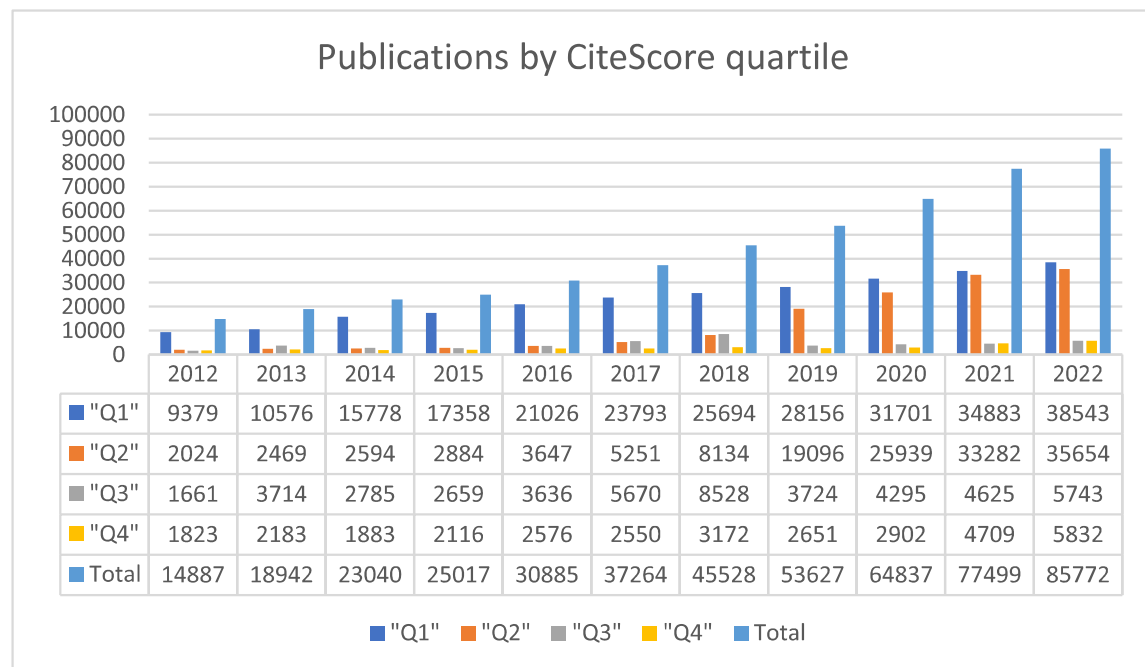


Fig. 1. Global scenario of energy storage adoption [7].

Table 1

Some reviews focusing on storage energy.

Ref.	Types	Advantages	Limitations	Comparison	Electrical vehicle	Selecting criteria	Applications	Challenges
[1]	✓	✓	✓	×	×	×	×	×
[2]	✓	✓	✓	✓	×	✓	✓	×
[9]	✓	✓	✓	×	×	×	×	×
[10]	✓	✓	✓	✓	×	✓	✓	✓
[11]	✓	✓	✓	✓	×	✓	×	✓
[8]	✓	✓	✓	×	×	×	✓	×
[12]	✓	✓	✓	✓	×	×	×	✓
[13]	×	×	×	✓	×	×	×	✓
[14]	✓	✓	✓	✓	×	✓	×	×
[15]	✓	✓	✓	✓	×	✓	✓	×
[16]	✓	✓	✓	✓	×	✓	✓	✓
[17]	✓	✓	✓	✓	×	✓	✓	×
[18]	✓	✓	✓	✓	✓	×	✓	✓
Our work	✓	✓	✓	✓	✓	✓	✓	✓

**Fig. 2.** Number of articles and citations reviewing ESS over the last 20 years.**Fig. 3.** Publications by CiteScore quartile from Scival.

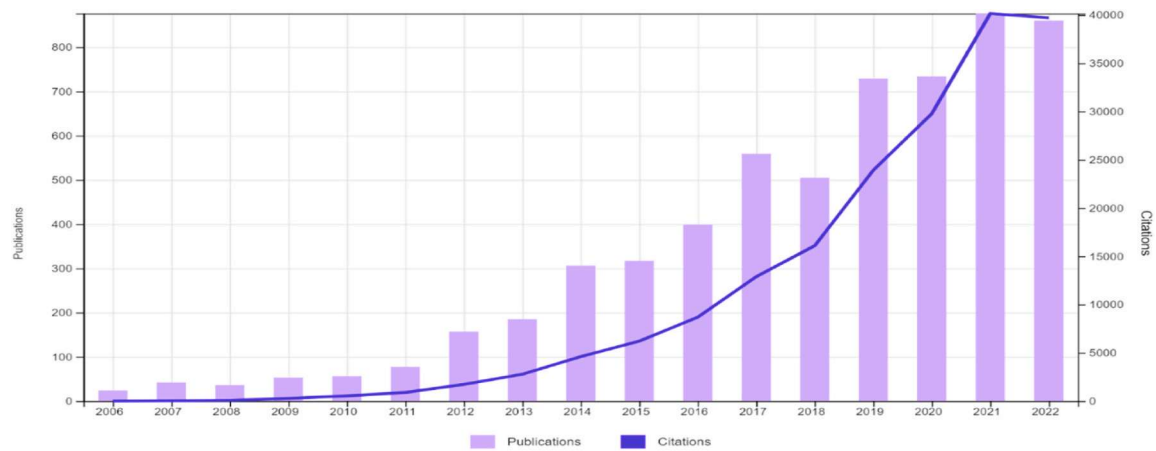


Fig. 4. Number of articles reviewing TESS over the last 17 years.

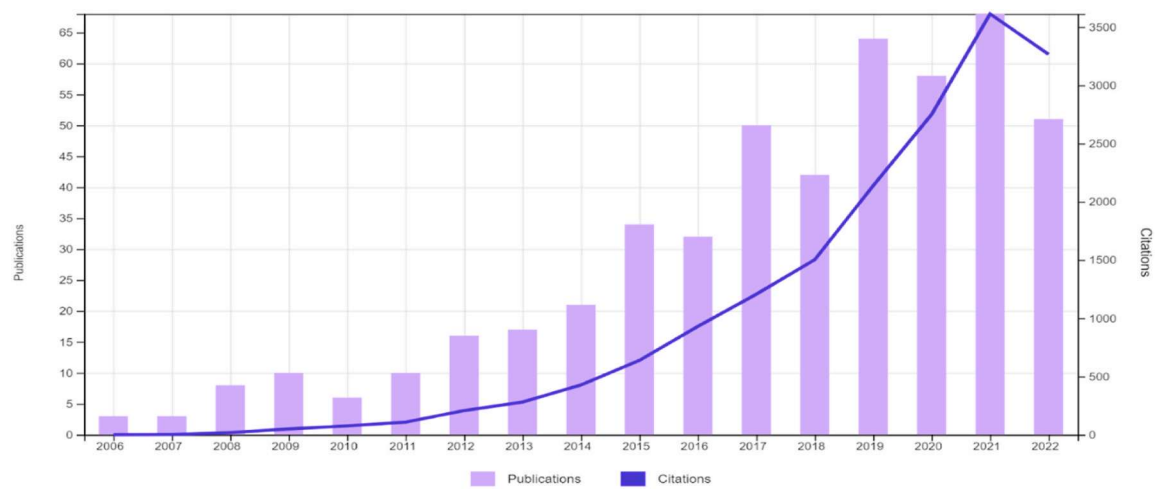


Fig. 5. Number of articles reviewing hydropower over the last 17 years.

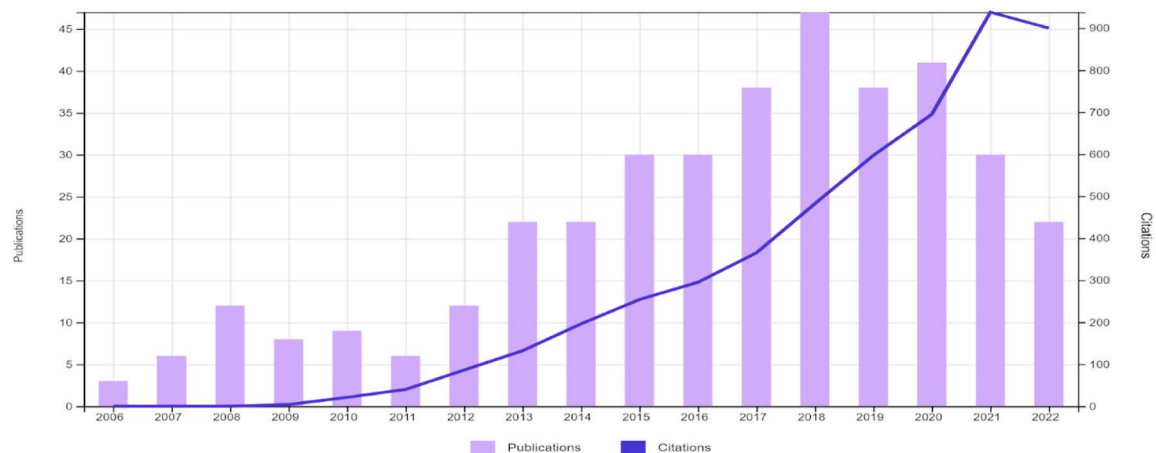


Fig. 6. Number of articles reviewing Super capacitors over the last 17 years.

8.

2. Types of energy storage

Energy storage technologies can be categorized based on the stored energy form (as shown in Fig. 10) to Ref. [9].

1. Electric energy storage systems EESS
2. Electrochemical energy storage systems ECESS
3. Mechanical energy storage systems MESS
4. Thermal energy storage systems TESS
5. Chemical energy storage systems CESS

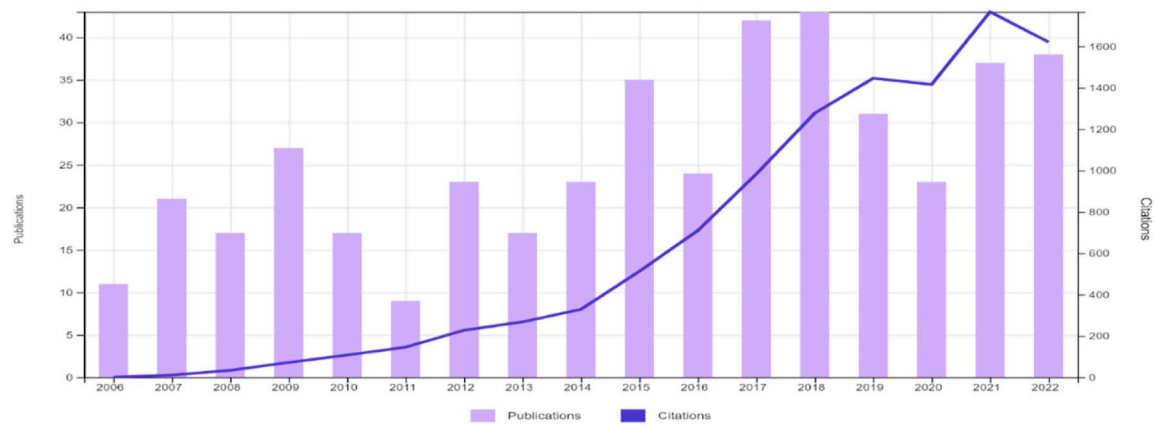


Fig. 7. Number of articles reviewing SMES over the last 17 years.

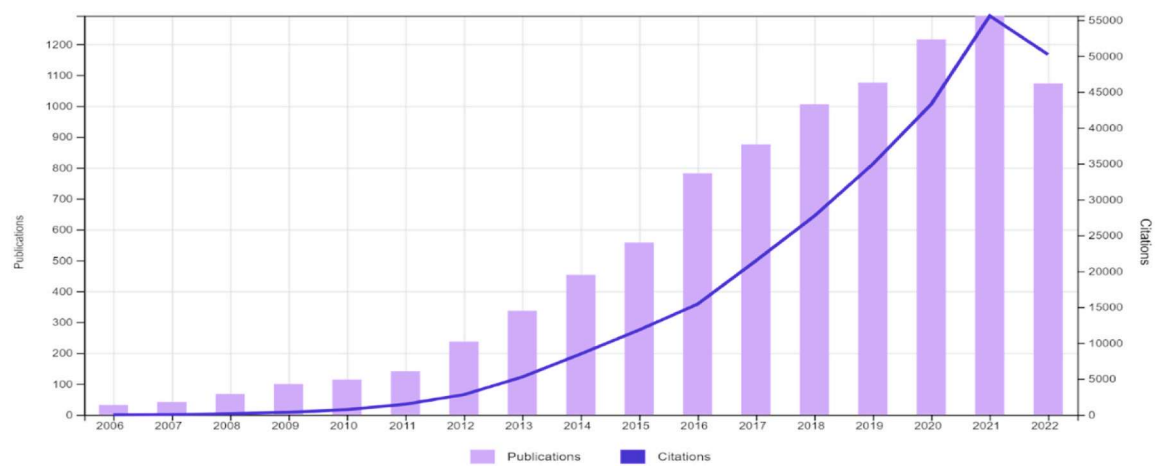


Fig. 8. Number of articles reviewing battery energy storage system BESS over the last 17 years.

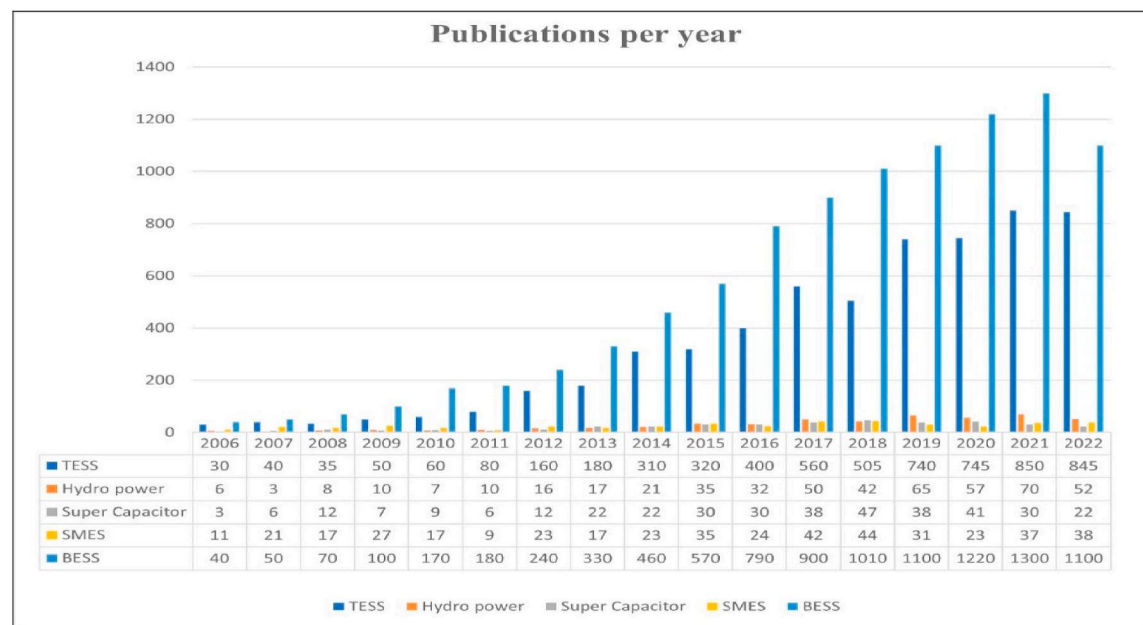


Fig. 9. survey of ess growth technology over the last 17 years.

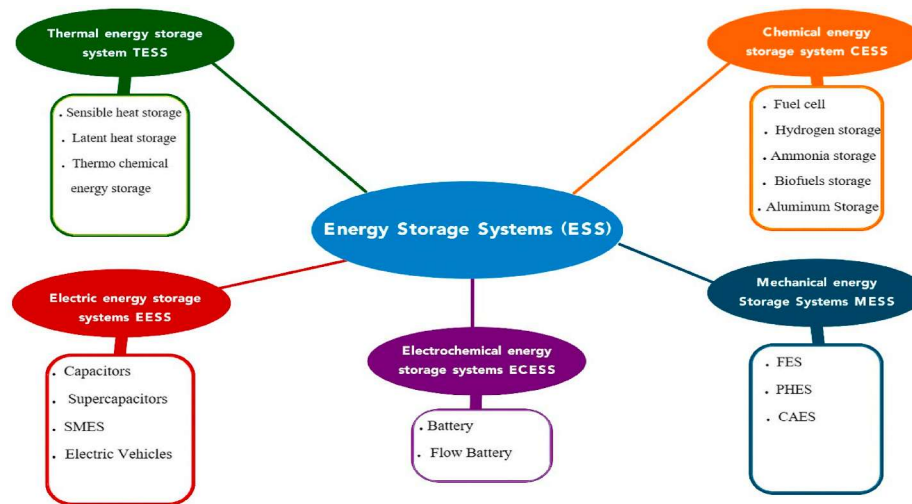


Fig. 10. Classification of energy storage technologies.

2.1. Electric energy storage systems (EESS)

It can be categorized to electrostatic and magnetic systems. The capacitor and the supercapacitor are electrostatic systems while the SMES is a magnetic system [9].

2.1.1. Capacitors (Cs)

Two metal plates called electrodes separated by dielectric layer form the electric capacitor. One plate is charged while the other plate is induced by an opposite sign charge [19]. The energy is stored on the surface of the metal electrodes. This type store energy for extremely short periods [12]. Fig. 11 shows a schematic diagram for a capacitor. Plates size the distance between plates and the dielectric material are the factors affecting the capacitor energy capacity [14]. The capacitors are suitable for small scale power applications as they have an instant recharge capabilities and long lift cycle. For large scale applications, it

will be very expensive [7].

2.1.2. Supercapacitors (SCs)

To conquer the problems mentioned above of the capacitors, the supercapacitors or ultracapacitors are patented by the Japanese company Nippon Electric Company in 1975 [20]. Compared with conventional capacitors, supercapacitors have very high output power of (50–100 KW), high charge density, life likelihood of 12 years, 500,000 times life cycle and high self-discharge [15]. Therefore, SC are suitable for application which required instant high output power like engine cranking applications of hybrid vehicles and permanent magnet synchronous generator. SCs and Cs have identical operating principles. Despite, in SC, electrolytic physical barrier comprising of activated carbon is used as a dielectric which allows ionic conduction, and this assists the SC to have large specific area and so high energy density [21]. The other difference is in the electrode materials, SCs use carbon nano

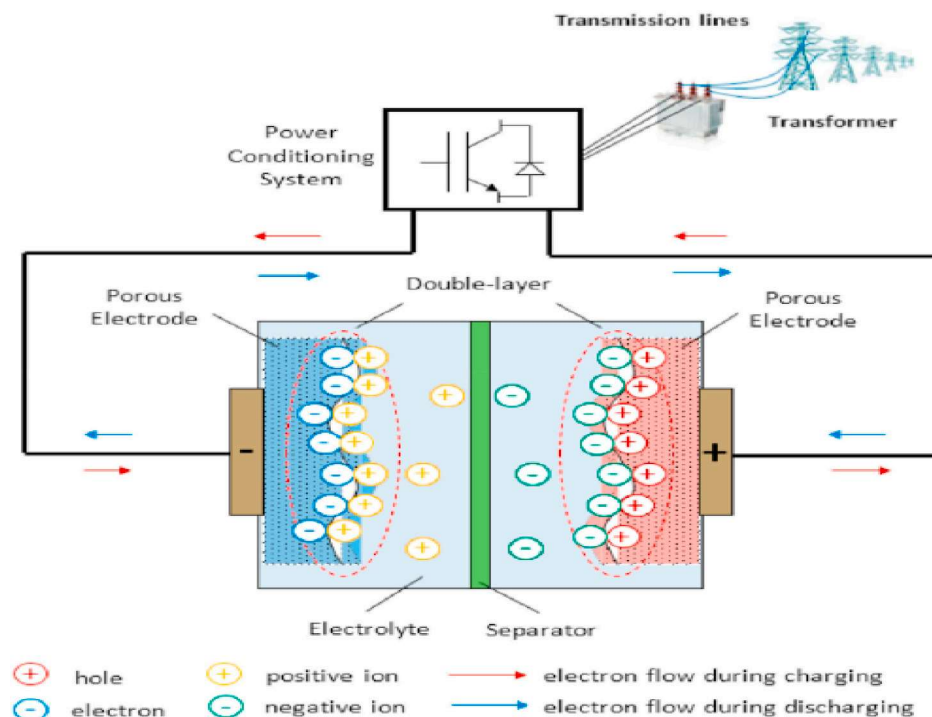


Fig. 11. Schematic diagram for a capacitor [11].

tube electrode which provide a tiny splitting up distance and a huge amount of charge is absorbed and hence improving the energy density [21]. Applying the electric field, the electrolyte performs as a dielectric and an ion absorption layer is generated on the activated carbon fibers [21]. The charging and discharging occur on this ion absorption layer. The schematic of supercapacitor is represented in Fig. 12. Many papers have been published about SC applications and to upgrade its control strategy.

2.1.3. Superconducting magnetic energy storage (SMES)

SMES can be made up of a superconducting coil which has no electrical resistance near absolute zero temperature that can store electric energy in the form of magnetic field created by DC current passing through it and there is no energy loss in the coil. The second part of SMES is cryogenically cooled refrigerator which keep the coil at a cryogenic temperature by utilizing liquid helium or nitrogen and therefore there is some energy losses (about 2–3% of energy) is lost related with cooling system [2]. The third part of SMES is a power conditioning system to convert the stored energy to an AC power [9]. The coils temperature must be below its critical temperature. The schematic diagram of a SMES is shown in Fig. 13.

SMES has very long lifespans (30 years), cycle life, high efficiency (95–98 %), short time for complete discharge (less than 1 min), fast response speed, very low power loss, high power density, and very high discharge rates [16,17,22,23]. During discharging, the SMES can provide huge amount of energy to the grid during a break of a second (milliseconds) [12].

The major drawbacks of SMES units are the performance problems due to the strong magnetic field, high cooling demand, high-priced raw materials, complex design, high capital cost (\$104/kWh), high self-discharge rate (10–15 %/day), temperature sensitivity and pricy in operation [24,25].

Current curiosity in SMES is because of the capability to operate microgrids on the residential and utility scale [27]. The research fields of SMES are mainly focused on reducing the cost of superconducting coils and liquid nitrogen cooling systems; and developing high-temperature superconducting coil (HTS) materials with lower low-temperature sensitivity (working at around 70 K) and capital cost [18,44]. SMES applications include load leveling, system stability, voltage stability, frequency regulation, transmission capability enhancement, power quality improvement, automatic generation control, and uninterruptible power supplies [2,28]. According to Refs. [7,9,29], and [30], Table 2 has been derived including different characteristics of EES devices.

2.1.4. Electric vehicles (EVs)

Electric vehicles use electric energy to drive a vehicle and to operate electrical appliances in the vehicle [31]. The spread of electric vehicles, commonly known as zero-emissions vehicles, will gradually replace

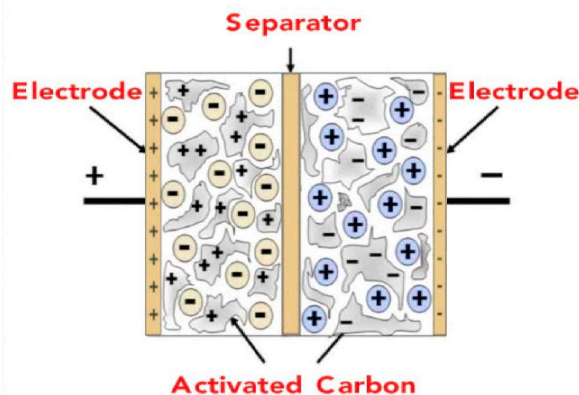


Fig. 12. Schematic diagram of an individual cell of a SC.

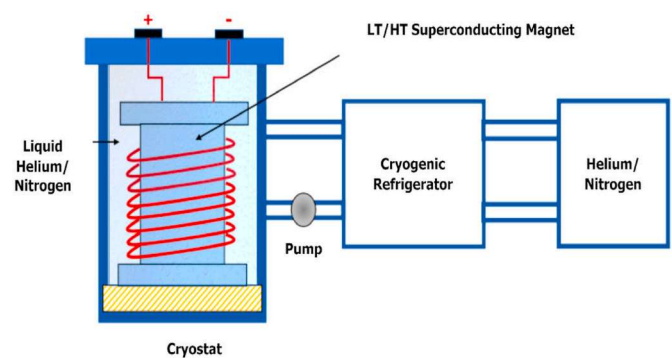


Fig. 13. Superconducting magnetic energy storage [26].

older fuel vehicles and enormously reduce greenhouse gas emissions [18]. There are many technologies that can be utilized in EV such as SC, batteries, FC, or hybrid ESS [32] as shown in Fig. 14. EV can be categorized into hybrid EVs (HEV), battery powered EVs (BEV), plug-in hybrid EVs (PEV), photovoltaic EVs (PEV), and fuel cell EVs (FCEV) [33]. The major barriers of EVs are that the charging is not fast enough and charging facilities are not highly accessible in most cities and the cost is disproportionate, roughly 1/3 of the cost of EV is employed for the ESS technology on the car [18]. Table 3 summarizes the characteristics of different types of EVs.

2.1.4.1. Battery electric vehicle (BEV). BEV or “pure electric vehicles” as there is no fuel tank and the electricity is totally served by the battery [34]. It is comprised of a huge rechargeable battery. This battery is charged from the grid or any external source using a charging plug [36]. BEVs charging takes roughly 6–8 h for slow charging and 20–40 min with a fast charger [37]. For the fully charged battery, BEV tracks 100 km–250 km distance [38]. BEVs are appropriate for short distances. Battery temperature affects the performance of the battery and life cycle [39]. The BEV storage capacity is above 100 kWh [35]. Due to this substantial reserve capacity, it is used for minimizing renewable energy fluctuations and stabilizing the voltage and frequency of the grid [40]. The illustrative structure of BEV is presented in Fig. 15. The improved version of BEV such as HEV and PHEV are discussed to increase the covered distances.

2.1.4.2. Hybrid electric vehicle (HEV). HEV is a combination of two or more types of energy and power sources. Power source like battery, fuel cell FC, SC, internal combustion engine (ICE), and energy source like battery, FES, or regenerative braking [34] are used for combining the profits of ICEVs and EVs [41]. Available hybrid powertrain configurations have been described, categorized, and totally analyzed in previous literature reviews [42–44]. Energy management strategy (EMS), which copes with the power distribution between power sources according to their own control guidelines, has been significantly studied with different objectives like fuel usage minimization [45,46] emission diminishing [47], and battery lifetime [48]. The profit of HEV is that when the primary fuel (diesel, gasoline) storage tank runs out of during driving the ICE then the secondary source will operate as a backup system to the driveline with its maximum range [49].

2.1.4.3. Plug-in hybrid electric vehicle (PEV). The PEV is a form of HEV in which the battery is charged from an external source. PEV can run on both battery and gasoline. These batteries can be charged at a charging station or at home using an ordinary plug or by a regenerative braking system [34]. For short distances, it uses battery banks and for long distances, it utilizes gasoline power when battery power is depleted [50]. Because of decreasing moving parts of PEV, it has lower maintenance cost. The typical configuration of PEV is presented in Fig. 16. There are two ways of working of PEV. The first one is grid to the vehicle

Table 2
Characteristics of different EES devices.

EES	Capacity (MW)	Lifetime (Years)	Capital cost (£/kWh)	Strength	Weakness	Use in RE Systems
Capacitor	0.05	5	897	High power density	Small capacity	No use
Supercapacitor	0.3	20	1795	- High charge -Discharge efficiency (95 %) -Fast response -High efficiency -Long lifetime	-Low voltage -High self-discharge rate -High capital cost	Wind parks
SMES	0.1–10	20	8974	-High cycles of charging- discharging -High power density -Fast response -High efficiency	-High cost -High self-discharge rate -High capital cost	Wind parks

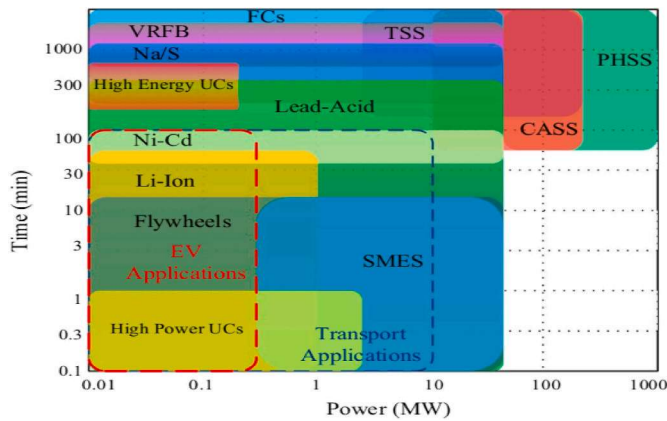


Fig. 14. Suitable technologies for EV [32].

Table 3
The characteristics of different types of EVs [34,35].

Characteristic	BEV	PHEV	FCEV
Energy system	-Battery -UC	-Battery -ICE -UC	-FC -Battery -UC
Energy source	-Charging power station	-Charging power station -Fuel pump -Gasoline	-Hydrogen fuel
Energy supply capacity	-Limited by battery -Capacity	-Limited by battery -capacity	-Unlimited
Carbon emissions	-Zero emissions	-Some emissions	-Zero emissions
Price factors	-Battery price -Market electricity -Price	-Battery price -Market electricity -Price -Gasoline price	-Battery price -Market electricity -Price - Fuel price
Advantage	-Zero emissions -Independence on fossil fuels	-Less emissions -Long-distance covered	-Zero emissions -High efficiency
Disadvantage	-High initial cost -Battery replacement	-Dependence on fossil fuels -Higher cost	-Hydrogen fuel storage -High cost of fuel
Degree of application	-Extensive use	-Being popularized	-Test stage

(G2V) whereby, the battery charges from the grid to drive the vehicle and charge the battery. The second one is the vehicle to grid (V2G) in which the battery provides power to the grid to overcome the grid overload problem [31]. In regenerative braking mode, the traction motor acts as a generator to charge the battery [51]. PEV can drive for a proper distance, but it has some drawbacks like its initial cost is higher than BEV and it produces more emissions than BEV. Owing to these reasons, BEV is obtaining more approval than PHEV [34].

2.1.4.4. EVs utilization as ESS. The market for electric vehicles (EVs) is growing quickly on a global scale. It is expected that market share will rise significantly in next few years [52]. Globally, there were more than 5 million electric vehicles (EVs) in use in 2018. It is anticipated that this number will increase rapidly to 44 million by 2030 [52]. The power system has traditionally struggled to balance generation and load demand; however, EV integration into the grid presents additional difficulties. The growing popularity of electric vehicles (EVs) presents substantial operational difficulties for the power grid since the patterns of EV charging and discharging need to be carefully controlled to maintain system stability and dependability. It is more difficult to balance the supply and demand of electricity when EV charging is dynamic and renewable energy sources are sporadic [53]. To solve these issues, numerous approaches and technologies are being developed, including as vehicle-to-grid (V2G) technology, smart charging infrastructure, and sophisticated grid management systems. These technologies allow for bidirectional power transfer between EVs and the grid, improve grid flexibility, and optimize EV charging and discharging patterns [54].

EV batteries have a fast reaction time, which makes them ideal for auxiliary functions like frequency regulation. EV batteries can play a significant role in preserving grid stability and balancing the frequency of the power system due to their quick response to variations in power supply or demand. This increases the potential value of EVs in sustaining the overall performance and dependability of the power grid and makes them a desirable alternative for providing auxiliary services [55]. To optimize EV integration benefits while preserving system stability, effective coordination between renewable energy generation, EV charging, and grid operations is essential. For EVs to be seamlessly integrated into the power grid, standards, incentives, and policies must be established in close coordination with automakers, energy providers, and regulatory agencies [56]. Some work contributions with several issues using EESS are tabulated in Table 4.

2.2. Electrochemical energy storage systems (ECESS)

ECESS converts chemical to electrical energy and vice versa [14]. ECESS are Lead acid, Nickel, Sodium –Sulfur, Lithium batteries and flow battery (FB) [9]. ECESS are considered a major competitor in energy storage applications as they need very little maintenance, have high efficiency of 70–80 %, have the greatest electrical energy storage (10 Wh/kg to 13 kW/kg) [15] and easy construction, [1]. However, there are some barriers high maintenance costs in large-scale facilities, their lifetime depend on depth-of-discharge (DoD) and relative low cycling times [9].

2.2.1. Lead acid batteries

The most heavily used rechargeable battery is the lead–acid battery [80]. They are composed of lead dioxide (PbO₂) as the positive electrode and lead dioxide (PbO₂) as the negative electrode immersed in an electrolyte mitigated solution of sulfuric acid (H₂SO₄) [81]. Lead–acid batteries have very tiny response time, little daily self-discharge rates, relatively high efficiencies, small capital costs, and can be established for

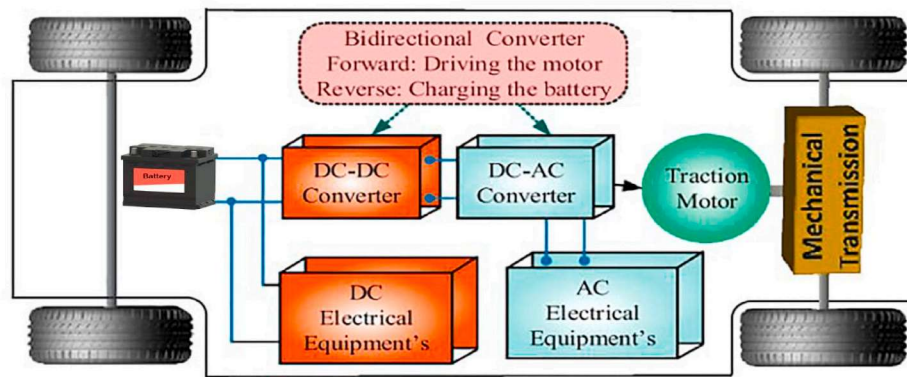


Fig. 15. typical structure of BEV.

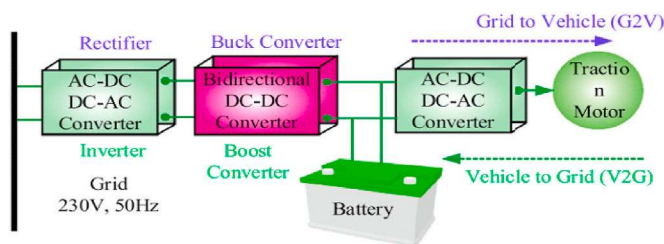


Fig. 16. Typical structure of PEV [31].

the large scale applications [82]. On the other hand, they have restricted life cycle, usually require a ventilation system, and charging and discharging process are not identical [83]. The schematic diagram for lead acid batteries during charging and discharging is shown in Fig. 17.

2.2.2. Lithium-ion battery (Li-Ion battery)

This type of battery is very appropriate for portable applications such as laptops and mobile phones because of its low weight, good performance, fast response time, and high cycle efficiency. Also, It can also be used to improve the performance of EVs [12]. In a Li-Ion battery, the cathode is made of a lithium metal oxide, such as LiCoO_2 and LiMO_2 , and the anode is made of graphitic carbon as shown in Fig. 18 [82]. The Li-Ion battery current research spotlights on using nanoscale materials for improving the power capability of the battery and heightening battery specific energy by progressing advanced electrode materials and electrolyte solutions [82].

2.2.3. Nickel - cadmium battery (NiCd)

These batteries are commercially used since about 1915. The two electrodes of these batteries are nickel hydroxide and metallic cadmium. The electrolyte is made of an aqueous alkali solution as presented in Fig. 19 [82]. NiCd batteries have low maintenance, relative high efficiencies, and the ability to work in a wide range of low temperatures (from -20°C to -40°C). However, they can affect the environment as cadmium and nickel are toxic heavy metals, NiCd batteries cost is up to 10 times greater than the Li-ion batteries [85]. NiCd battery can be used for large energy storage for renewable energy systems. The efficiency of NieCd battery storage depends on the technology used during their production [12].

2.2.4. Sodium sulfur battery (NaS)

In the NaS battery, molten sodium and molten sulfur compose the two electrodes and uses beta alumina as the solid electrolyte. A scheme of a NaS battery cell is shown below in Fig. 20 [82]. This battery can supply high rated capacity than other types of batteries (up to 244.8 MWh). So, it is built for high power energy storage applications [86].

This storage system has many merits like there is no self-discharge, high energy densities (150–300 Wh/L), high energy efficiency (89–92 %), low maintenance and materials cost, non-toxic materials, and materials can be recycled [87]. NaS batteries used for grid connected applications like power quality enhancing and peak shaving [85]. However, the demerits are high operating cost (80 \$/kW/year) to obtain liquid electrodes, and a high temperature (574–624 K) chemical reaction is required. So, an additional system is used which adds an extra cost and it is suitable only for large scale power system applications [85]. The research mainly focuses on improving the cell performance and decreasing the high temperature operating costs [1].

2.2.5. Flow batteries (FBs)

Flow battery consists of two liquid electrolytes which stored in two dissolvable redox couples enclosed in external tanks to increase the energy storage capacity [88]. These electrolytes can be pumped from the tanks to the cell stack, and they are separated by a microscopic membrane to allow a restricted ions number to pass over it. Through the electrolyte solutions reduction oxidation reactions, the electricity is produced [89]. The flow battery schematic diagram is shown in Fig. 21. Unlike the FC, the chemical reactions taking place inside the flow batteries are reversible. So, it can be recharged without replacing the electroactive material. The FB's power rating relies upon the stacks number of the cell and the electrode size [15]. FB can release huge amount of energy at a high discharge rate and has a good life cycle (10, 000 full cycles during their lifetime) [90]. FBs have tiny response time, have high efficiency, and operate near to the ambient temperature [85]. Evaluation of various battery technologies' parameters in a comparison is presented in Table 5. In addition to, some characteristics of every type from electrochemical energy storage systems ECESS including their strength and weakness issues are presented in Table 6.

It has been noticed from Table 7 above that there are plenty of papers that concerned with challenges and limitations of batteries (Li-ion battery, Na-S battery and lead acid battery). Batteries can be used in different systems as grid connected or isolated systems providing the advantages of minimizing cost (total cost, maintenance cost or investment cost), preventing voltage fluctuation in LV distribution network, maximizing PV utilization and minimizing losses. There are various optimization techniques that can be used for catching these benefits.

2.3. Mechanical energy storage system (MESS)

MES is one of the oldest forms of energy that used for a lot of applications. It can be stored easily for long periods of time. It can be easily converted into and from other energy forms [15]. Three forms of MESS are drawn up, include pumped hydro storage, compressed air energy storage systems that store potential energy, and flywheel energy storage system which stores kinetic energy.

Table 4
Challenges and limitations of EESS.

Ref	Challenge	ESS Device	Isolated/Grid connected	Limitation	Contribution
[19]	Minimize operating cost (fuel + startup cost)	SMES	Islanded	Power quality is not improved	Using the modified LR-PSO method on IEEE 10-unit thermal bus system with and without SMES
[23]	Control SMES terminal voltage	SMES	Grid connected	Power quality is not improved	A new security circuit is proposed for highly inductive loads to ensure safe operation in case of fault.
[57]	Control of SC'SOC Minimizing Power loss	SC	Isolated	Cost is not considered	The strategy improved the reliability of the system and reduced the required communication data.
[58]	Control fluctuation of wind power	SC BESS	Grid connected	High cost	Design system composed of HESS to control wind power fluctuations by using fuzzy logic control.
[59]	Minimize cost Minimize fuel Minimize system efficiency	SC BESS	Isolated	Power quality is not improved	Design a HESS used for distributed generation system to meet the demand for a UK family and reduce the generator operating time.
[60]	Using SC to control high voltage ride through (HVRT) for wind turbine generation system.	SC	Grid connected	The overall power quality is unsatisfactory	Design a control system for wind turbine generator to control HVRT using SC.
[61]	Controlling system frequency.	SC	Grid connected	Cost is not considered	Using fuzzy logic control strategy for control frequency of DFIG, SC and wind farm system under variable wind speed.
[62]	- Control SOC of SC Minimize DC voltage fluctuation	SC	Isolated	Power quality is not improved.	EMS depends on using SOC of SC and DC voltage fluctuation as a reference to perform a double closed loop to control SC.
[63]	-Minimize DC voltage fluctuation. -Control SOC of SC.	SC	Isolated	Cost is not considered	Design a three-level bidirectional DC-DC converter to control the SC power flow. Using model predictive control to control the converter.
[64]	Optimal design of SMES system	SMES – BESS	Grid connected	Lack of ESS control	Design micro grid system with SMES integrated system of capacity 1.2 MW for a micro grid system
[65]	Reduce system cost	SMES	Grid connected	Power quality is not improved	Using an adaptive fractional-order sliding-mode control (AFOSMC) to improve the dynamic response of SMES against various operating conditions
[66]	Mitigate the fluctuations of PV output during a cloud passing.	SMES BESS	Grid connected	Cost and losses are not considered	Using HESS composed of high temperature superconducting coils based superconducting magnetic energy storage (HTS SMES) and battery for voltage control.
[44]	Voltage control of DC grids connected to wind farms	SMES	Grid connected	Cost is not considered	Design of SMES system. control system of SMES
[67]	Smoothing the output of the wind farms	SMES	Grid connected	losses are not taken into account.	Improving the wind farms transient stability using a control strategy of the SMES in parallel with voltage source inverter.
[68]	Improve the grid power quality	SMES	Grid connected	High system cost	Adding SMES in VSC based active filter for reducing THD.
[69]	Control the fluctuation of frequency due to transient load changes.	SMES	Isolated	Losses are not considered	Design the fuzzy PI controller for SMES.
[70]	Compensate voltage fluctuations for a grid connected hybrid renewable system	SMES BESS	Grid connected	Neglecting losses and cost.	Using battery and SMES based dynamic voltage resistor for compensating voltage fluctuations.
[71]	Smoothing output power for DFIG and PMSG.	SMES	Grid connected	Battery degradation is not considered	Usin transient voltage control (TVC) method to reduce the PCC' VD and enhances the overall system performance
[72]	Design a multistage SMES	SMES	Isolated	Cost is not considered.	Design a multistage SMES and study the system performance with the conventional SMES and multistage SMES.
[73]	Optimization the SMES coil dimensions	SMES	Isolated	Power quality is not improved	Using a multi- objective function GA to minimize the coil losses.
[74]	- Increasing system efficiency - Minimizing cost	SC BESS	Isolated	Battery degradation is not considered	Design a bidirectional DC_DC converter for HESS for EV and HEV.
[75]	Control SOC of SC banks	SC BESS	Isolated	Battery degradation is not taken into account	Design a new multi-source inverter MSI for integration SC and B for EV.
[76]	-Control SOC of SC -Minimize the system cost	SC BESS	Grid connected	Power quality is not improved	Dynamic wireless power transfer WPT system for charging EV.
[77]	-Minimize system cost -Control SOC of SC	SC Li-ion Battery	Grid connected		Optimal design of EV based HESS composed of Li-ion B and SC to minimize the system cost, improve power quality, and increase the overall efficiency.
[78]	Control current and voltage of the system.	SC BESS	Isolated	Cost is not considered	Control strategy for EV based on HESS composed of SC and B to control SOC of SC and prolong battery life.
[79]	Minimize battery current ripples and SC current fluctuation.	SC li-ion Battery	Isolated	Cost is not considered	Implementation fuzzy logic on EV based on HESS

2.3.1. Flywheel energy storage (FES)

FES was first developed by John A. Howell in 1983 for military applications [100]. It is composed of a massive rotating cylinder which is sustained over a stator and electric motor/generator is jointed with the flywheel. In FES, kinetic energy or rotational energy is transformed to electrical energy by using electric generator on the discharging mode and vice versa on the charging mode. Permanent magnet machines are commonly used for FESs because of their high efficiencies, high power densities, and low rotor losses [101]. The FES capacity is proportional to its mass and the square of speed [9]. Its efficiency relies on the energy storage usage time. FES is not suitable for storing energy on long-term basis so, it is combined with other devices [14]. The schematic

diagram of FES is presented in Fig. 22. The flywheel is kept on a low pressure state to reduce the frictional losses [10]. FES can be used for load levelling and peak shaving and reducing the RES intermittencies by supplying real power to the system when necessary [102,103]. Because of FES fast response, it can be used for enhancing system stability for penetration RES in power systems [104]. Relied on rotational speed, the FES can be classified into two categories: low-speed FES (less than 6000 rpm) and high-speed FES (about $10^4 - 10^5$ rpm) [17,21]. The low speed FES is suitable for power reliability applications, and it has low cost. High speed FES is good for traction and aerospace applications and its cost is five times larger than low speed FES [10]. FES has many merits like high power and energy density, long lifetime and lower periodic

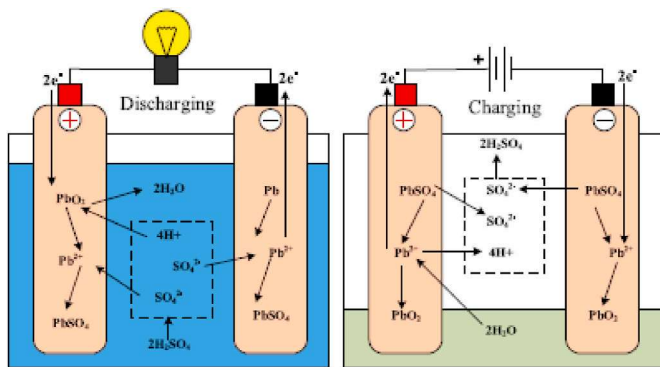


Fig. 17. Schematic diagram for lead acid batteries during charging and discharging [84].

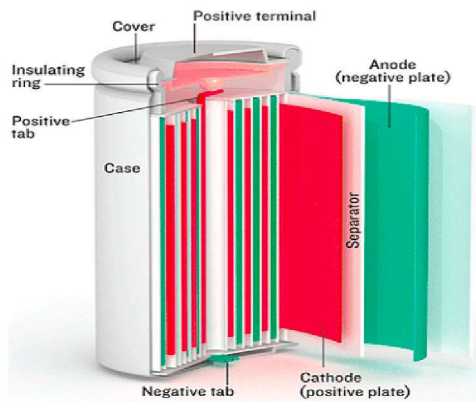


Fig. 18. Li-Ion batteries cell structure [82].

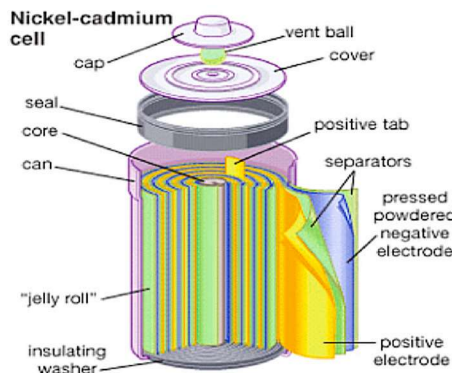


Fig. 19. Nickel-Cadmium cell [82].

maintenance, small recharge time, temperature insensitivity, 85%–90 % efficiency, high charging and discharging rate, large energy storage capacity, and clean energy. On the other hand, it has some demerits, small discharge time, intricate structure, mechanical stress, protection anxieties because of high rotor speed and breaking likelihood, and high cost [102].

2.3.2. Pump hydro energy storage (PHES)

PHES composed of two natural or manufacturing positioned/ designed at higher and lower heights [14]. In Fig. 23, the components of PHES is presented which involve: upper reservoir, lower reservoir, motor, generator and inlet valve. When the electricity demand is low, the water is lifted from the inferior reservoir to the higher one and vice

versa when the demand is high. The electricity is then generated from the stored water to supply power for momentary peaks or for unpredicted outages [12]. To produce a variable output power, the inlet water flow is controlled using gates and variable-speed drives can be utilized for regulation while charging [7]. PHES needs some conditions like, location existence besides difference in height [7]. PHES has many advantages such as long life time (40–60 years), fast response time, low cost, high efficiency, ability to store enormous amounts of energy, and very low self-discharge rate [103,105]. In contrast, it has some disadvantages such as it needs huge water source, massive environmental affect, and not much possible sites [103].

2.3.3. Compressed air energy storage (CAES)

CAES uses compressed and pressured air to store energy [106]. Compressor, underground storage unit, and turbine, are the main CAES components. The air is compressed and stored at a high pressure in an underground chamber and when needed, it expanded. The air is compressed while off peak and this stored energy is used during peak time. While peak time, the compressed air is fed to a combustion chamber which mixed with fuel to generate electricity [10]. The schematic of CAES plant is shown in Fig. 24. CAES and PHES are the available largest scale energy storage systems. Compared with PHES, CAES is smaller in size, its construction sites are more prevalent. So, it offers a large-scale widespread storage network [107]. It is more convenient for frequency regulation, energy arbitrage, and load levelling [15]. To enhance the CAES efficiency, the released heat from the compression stage, stored and used while expansion process and this improve the overall system efficiency by 10 %–15 % [12]. The CAES life cycle is approximately 40 years [103]. CAES has many merits like, it can store massive amount of energy, it has high efficiency 70 %, fast response, and low cost. On the other hand, it has some demerits such as, the need for enclosed storage cavern, economical for a storage period of up to one day only and not yet completely advanced [103]. The researchers focus on Liquid Air Energy Storage (LAES) as liquefied air is thick, so it is more convenient for long-term storage, Advanced Adiabatic CAES and Supercritical Compressed Air Energy Storage [108]. Some characteristics of different types of mechanical energy storage systems including their strength and weakness issues are tabulized in Table 8. Also, some papers that concerns with several issues using MESS is tabulized in Table 9.

Table 9 indicates the concerned challenges and limitations of MESS (PHES, CAES and FES). All types can be utilized for both grid connected and isolated systems. It can be concluded that all mentioned types can reduce cost and control system voltage. CAES can control both active and reactive power and the SOC. Also, PHES has the ability to smooth fluctuations of Photovoltaic Power and improve system reliability. Different optimization strategies have been applied to achieve these advantages.

2.4. Thermal energy storage systems (TESS)

Heat or cold is stored in TESS for later use. These systems consist of a heat storage tank, an energy transfer media, and a control system. Heat is stored in an insulated tank using a specific technology [12]. Utilizing these systems reduces energy consumption and overcome the problem of intermittency in renewable energy systems [82]. TESS has some advantages like, clean energy source for generating electricity, reducing heating or cooling energy demand for buildings, low initial cost, reducing emissions, increasing continuity, and reducing maintenance cost [85,121]. On the other hand, some concerns should be considered such as: increasing complexity, the overall efficiency for TESS is low (30–50 %), thermal losses, and the possible prescribed space [121]. A simplified TES diagram is presented in Fig. 25. TESS is mostly utilized for industrial, residential buildings for generating electricity besides producing water, and is often used in PV systems which guarantee collecting much amount of energy from the sun [10,12]. Thermal energy can be stored in the form of latent heat, sensible heat, and reversible

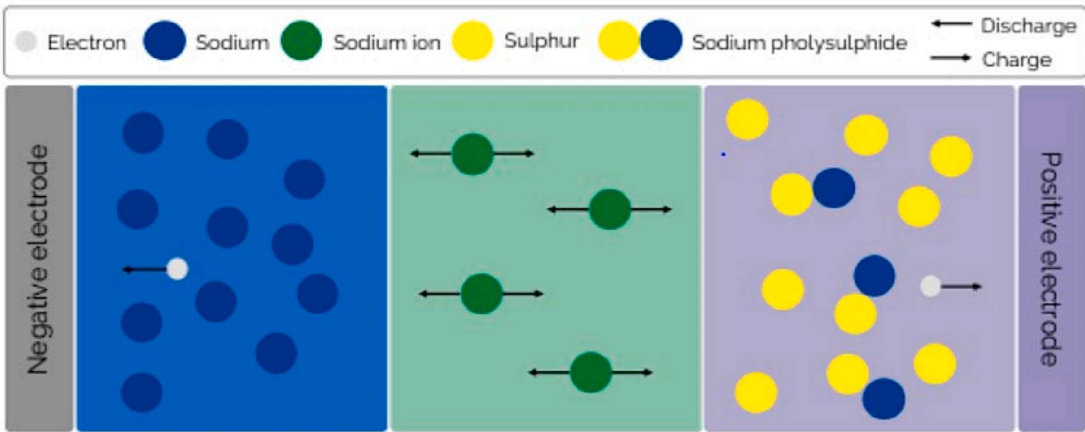


Fig. 20. Schematic diagram of NaS battery [82].

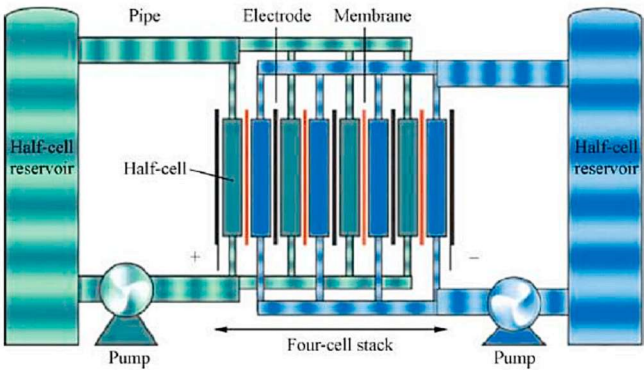


Fig. 21. Schematic diagram of flow battery [10].

Table 5 Comparison between parameters for different battery technologies.			
Parameters	Lead-Acid battery	Li-Ion battery	Flow battery
Efficiency	75 %–80 %	80 %–86 %	60 %–70 %
Energy density	50 Wh/kg to 100 Wh/kg	200 Wh/kg to 350 Wh/kg	20 Wh/kg to 70 Wh/kg
Power density	10 W/kg to 500 W/kg	100 W/kg to 3500 W/kg	n. a
Life cycle	500 to 2000	1000 to 5000 cycles	>10000
Calendar life	5 years–15 years (depending on temperature and soc)	5 years–20 years (depending on temperature and soc)	10 years–15 years
Depth of discharge	70 %	Up to 100 %	100 %
Self- discharge	0.1 % per day to 0.4 % per day	5 % per month	0.1–0.4 % per day
Power installation cost	150 €/kW to 200 €/kW	150 €/kW to 200 €/kW	1000 €/kW to 1500 €/kW
Energy installation cost	100 €/kWh to 250 €/kWh	300 €/kW to 800 €/kW	300 €/kW to 500 €/kW

thermochemical reactions [122].

2.4.1. Sensible heat storage systems (SHSS)

In SHSS, the heat is stored by increasing the medium temperature without transition its initial phase. The stored energy is proportional to material mass, the charging/discharging temperature change, and the specific heat capacity [17]. SHSS is the cheapest and simplest TESS. Materials used for this system can be divided into liquid and solid. Water

Table 6 Strength and weakness for electrochemical energy storage systems ECESS.			
Storage type	strength	weakness	Use in RE systems
Lead-Acid battery	-Fast reaction speed -Low self-discharge rate -High cycle efficiency	-Low energy density -Impact on the environment	Wind parks, PV
Li-Ion battery	-Low capital cost -High energy density -Fast reaction speed -Low self-discharge rate -Long cycle life -High reliability	-Require working temperature -Need overcharge protection	Wind parks
NaS battery	-High energy density -Low self-discharge rate -Fast reaction speed -Nontoxic materials	-High internal resistance -Sodium corrosion -Additional system for high temperature heating	Wind parks
NiCd battery	-High energy density -Long cycle life -High reliability	-Environmental hazards -Affected by memory effect	Wind parks, PV
Flow battery	-Fast reaction speed	-Environmental issues -No large-scale application experience	Wind parks

is the most material used because of its low cost, availability, and high specific heat capacity [121]. Thermal oil and molten salt are utilized for high-temperature applications. Solid materials like: rocks, sands, gravel, wood, ceramics, and concrete [123] that are used for high-temperature applications although they have higher cost and lower energy density than liquid materials [121]. SHSS storage efficiency is (50%–90 %) [121].

2.4.2. Latent heat storage system (LHSS)

Thermal energy is stored in the form of latent heat when a substance undergoes a transitional phase and its state changes from one form to another. The most famous transition state is the change of the state of matter from a solid form to a liquid form [121]. Moreover, it can be changed from solid to liquid or liquid to gas and vice versa [4]. The used materials called phase change materials (PCM) [17]. Throughout the

Table 7
Challenges and limitations of batteries for different systems as ESS.

REF	Challenge	ESS Device	Isolated/ Grid connected	Limitation	Contribution
[91]	-Minimize cost	Battery	Grid connected	Power quality issue is unsatisfactory	Optimal allocating of the batteries in the distribution system with PV generation.
[92]	-Minimize cost	Lead acid battery	Grid connected	Power quality is not improved	Minimizing the total cost of the grid connected system. Optimal size, location of lead acid battery and optimal operation are studied.
[28]	-Minimize battery maintenance cost -Minimize losses	Battery	Grid connected	Optimal charge/discharge of BESS is complicated	Optimal sizing a daily charge /discharge of BESS in LV distribution network with high PV penetration is studied.
[93]	-Minimize operational and investment cost	Li- io battery	Isolated	Trapping solver in local optima	Using a combination of self-adapted evolutionary strategy with Fischer–Burmeister algorithm to minimize the investment and operational cost for hybrid RE system.
[94]	-Minimize investment cost Minimize Energy error	Na–S battery	Isolated	Power quality is not improved	Using grey wolf optimization method for sizing electrical energy storage system in microgrids
[95]	-Minimize investment cost	Battery	Grid connected	Battery degradation is not considered	Optimization of BESS for different ownership structures in a peer-to-peer energy sharing community
[96]	-Sizing and allocation of battery banks -Optimal number and location of switching devices -Equipment cost	Battery	Grid connected	Power quality is not improved.	Using the Non-Dominated Sorting Genetic Algorithm II (NSGA-II) for optimal design for distributed

Table 7 (continued)

REF	Challenge	ESS Device	Isolated/ Grid connected	Limitation	Contribution
[97]	-Minimizing total cost	Battery	Grid connected	Lack of battery control algorithm	Preventing over and under voltage in radial LV distribution network.
[98]	-Maximize PV utilization -Minimize battery degradation	Battery	Grid connected	Complex computations	Using a combination of Model Predictive Control (MPC) strategy and Benders decomposition technique. Longer for planning distributed battery storage
[99]	-Minimize system cost	Battery	Isolated	Slow convergence	Using Cuckoo Search algorithm for optimal sizing of a remote hybrid renewable energy System. Comparing the results with GA and PSO.

material's phase change, the heat is stored or emanated, and the medium's temperature is constant. The material, during charging, absorbs heat and its temperature rises until its melting point [124]. At this point, the material absorbs heat to change its phase while its temperature stops rising. LHSS charging and discharging relies upon the utilized PCM melting and solidification [125]. PCM can be categorized into organic and inorganic. Paraffin, fatty acid, esters, alcohols, glycols, and eutectics are deemed as organic PCM. Whilst salt hydrates, nitrate salts, carbonate salts, chlorine salts, sulfate salts, fluorine salts, hydroxides, metal, alloys, and salt eutectics are deemed as inorganic PCM [126]. LHSS has a storage efficiency of (75 %–90 %) and its capacity is 4 times larger than of a SHSS [127]. LHSS is more thermally stable whilst charging and discharging processes than SHSS [128]. Nowadays, bio-based PCM is taking more interest as they are relied on renewable raw materials and they have lower flammability compared to paraffin [107]. LHSS research is mainly focused on the presenting new storage media and enhancing thermodynamic properties of the existing ones [129]. A new PCM is examined that it is fatty acid derivative of vegetable and animal oils [130].

2.4.3. Thermo chemical energy storage systems (TCESS)

In this type, the heat is not stored directly but utilizes a physico-chemical process [14]. The heat is consumed during charging process and released during discharging [12]. Absorption and adsorption of energy is an example of physicochemical process [126]. Fig. 26 represents the working principles of a TCESS. During charging, a thermo chemical material *C* absorbs energy and gets separated to 2 materials *A* and *B*. This reaction is called endothermic. While discharging, the stored heat is released as the materials *A* and *B* pose initial material *C* and this is called exothermic [6]. The materials *A* and *B* are stored in separated

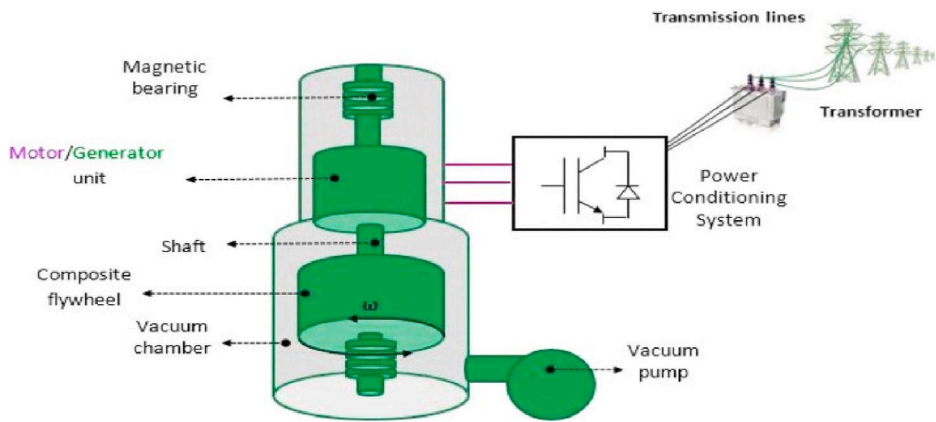


Fig. 22. Schematic diagram of flywheel energy storage system source [102].

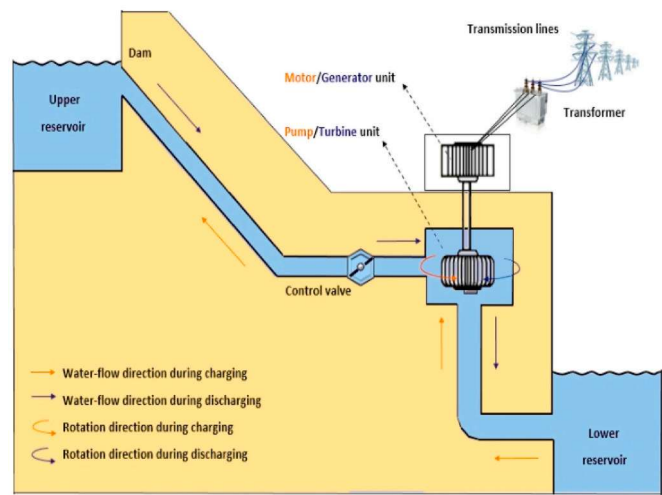


Fig. 23. Pumped hydro storage systems [12].

rooms, so, there is no self-discharging [9]. TCESS storage efficiency is (75%–99 %). TCESS has higher energy capacity than SHSS and LHSS and they are able to store energy for long periods with very low energy losses [126]. The strength and weakness of TESS and their use in RES systems are presented in Table 10. Also, some papers that concerns with several issues using TESS are tabulized in Table 11.

Table 11 presents challenges and limitations of TESS. All TESS can be used in different systems (grid connected or isolated systems) and it cab be integrated with other storage devices such as BESS. All types can improving the battery life cycle and reduce total system cost and CO₂

emission. LHSS can reduce energy loss.

2.5. Chemical energy storage systems (CESSs)

Chemical energy is put in storage in the chemical connections between atoms and molecules. This energy is released during chemical reactions and the old chemical bonds break and new ones are developed. And therefore the material’s composition is changed [9]. Some CESS types are discussed below.

Table 8
Strength and weakness for mechanical energy storage systems.

	Strength	Weakness	Use in RE systems
Flywheel Energy Storage	-High energy density -Fast charging speed -Long lifetime -High cycle efficiency	-Low power density -High self-discharge -High cost -Heavy maintenance workload	Wind parks
Pumped hydro storage systems	-High capacity -Long lifetime -Low maintenance cost	-Large unit size -High capital cost -Terrain constrains -Centralized	Wind parks, hydro electrics
compressed air energy storage	-Long lifetime -Fast reaction speed -Environmentally friendly -High capacity -Low cost	-High requirements for geographical environment -Low round trip efficiency -Need underground cavities	Wind parks, hydro electrics

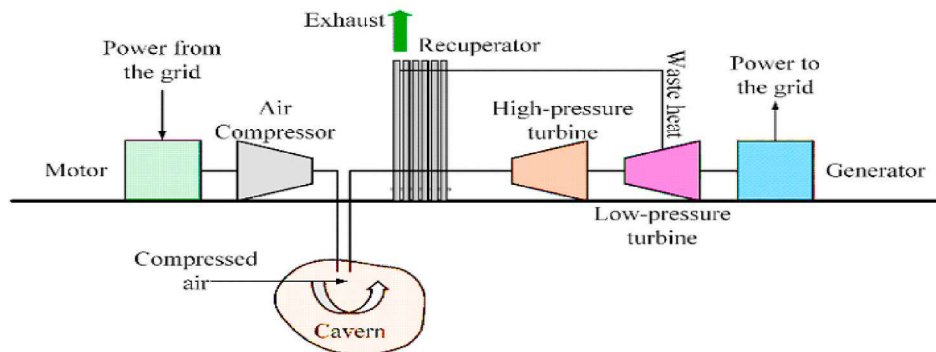


Fig. .24. Schematic diagram of (CAES) Plant [10].

Table 9
Challenges and limitations of MESS for different systems.

Ref	Challenge	ESS Device	Isolated/Grid connected	Limitation	Contribution
[109]	-Minimize cost Minimize losses	FES	Isolated	Power quality is not improved	Planning ESS with studying the effects of transmission losses and increased penetration of RE.
[110]	-Control DC link voltage Control FES speed	FES	Grid connected	PQ is unsatisfactory	Control of FES in case of Uncertainties using tube based MPC.
[111]	-Minimize cost Minimize losses	PHES	Grid connected	PQ is not improved	Using Multi-Objective Particle Swarm Optimization (MOPSO) to get the optimal size of standalone system and comparing the results of this method with GA, Simulated Annealing method (SA) and weighted sum approach (WSA).
[112]	Minimize cost	CAES	Isolated	Computational complexity	Using modified bacteria foraging algorithm to get the optimal configuration of HES based CAES and comparing the results with differential evolution.
[113]	Minimize the overall cost	CAES	Grid connected	Power quality is not improved	Using The Monte-Carlo simulation method to estimate the (electrical, thermal, gas load, wind turbine and electricity price) uncertainties. Considering P2G technology, along with the CAES system, reduce gas costs and the total operating cost of EHS and reduce the amount of electricity sold from the upstream network.
[114]	Control active power, reactive power, and SOC.	CAES	Grid connected	Cost is not considered	Implement a transient stability model of a system composed of two CAES. Studying the effects of cavern sizes on the system frequency
[115]	Minimize system cost	CAES	Isolated	Computational complexity	Using Monte Carlo simulation (MCS) to study the benefits of utilizing CAES for RES.
[116]	Control system voltage	PHES	Isolated	Cost is not considered	Generating a continuous power from PHES for a hybrid system consists of mixed-integer linear programming (MILP) for short term scheduling for WTHS
[117]	Minimize cost	PHES	Isolated	Computational complexity	
[118]	Smoothing Fluctuations of Photovoltaic Power	PHES	Grid connected	Cost is not considered	Using fuzzy CEEMDAN algorithm to calculate the target power combined system composed of cascade hydro stations, PV, and PHES.
[119]	-Minimize the integral of time multiplied absolute error (ITAE).	PHES BESS	Isolated	Degradation of BESS is not considered. Cost is not considered.	Using coyote-optimization algorithm (COA) to control MG system containing of wind, solar, biodiesel and a storage system composed of (mini-PHES and BESS) for getting a reliable system performance.
[120]	Cost reduction	PHES BESS	Isolated	Battery degradation is not considered	Using HOMER to perform comparative analysis for nine HRES.

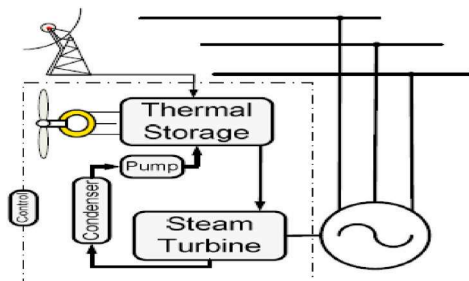


Fig. 25. TES simplified diagram [82].

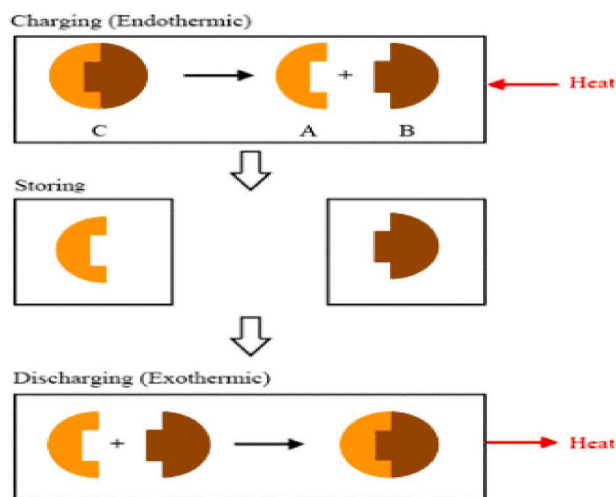


Fig. 26. Working principles of a TCESS [10].

Table 10
Strength – weakness of TESS and their use in RES systems [9].

TESS	strength	Weakness	Use in RES system
SHSS	-No toxic or expensive materials used -Many available materials -Low price	-Small energy density -High cycle efficiency -Energy density affected by the materials	Solar panels, geothermal
LHSS	-High energy density -Small range of temperature change	-Differentiation of PCM volume per cycle -High demand for PCMs	Solar panels, geothermal and PV
TCESS	-High efficiency -High energy density -Long term stable storage period -Low energy loss	-High manufacturing cost -Low efficiency -Poor heat transfer performance	No use

2.5.1. Fuel cells FC

Fuel cells receive an inflow of fuel from an external source and convert it into electrical output. This fuel can be (hydrogen, methanol, or hydrazine) or it can be obtained indirectly from converting (natural gas, ammonia, ethanol, or hydrocarbon gases) into a hydrogen. The anode is a hollow vessel lined with a layer of porous carbon on which hydrogen is pushed, and the cathode has the same composition as the anode and oxygen is pushed on it, where the porous carbon allows the contact of the anode and cathode with the electrolyte solution [68]. Hydrogen gas enters from the inlet in a very large amount and oxidation occurs at the barrier each atom loses an electron and turns into a positive ion. The electrolyte membrane allows the H^+ to flow from anode to cathode but does not permit the electrons flow electrons are released to the cathode using an external circuit where oxygen from air is supplied and reduction occurs. The unreacted oxygen is exited from the other side. The resulting water vapor is collected and condensed and used as drinking water in spacecraft [34]. The cell reactions are represented below in Fig. 27 [10].

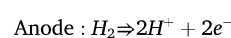


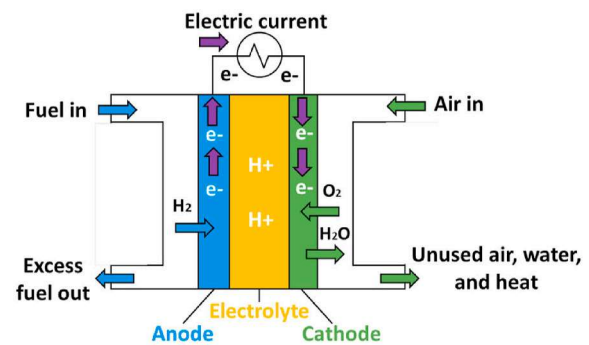
Table 11

Challenges and limitations of TESS for different systems.

REF	Challenge	ESS Device	Isolated/ Grid connected	Limitation	contribution
[131]	Minimize energy loss.	LHSS	Isolated	Power quality is not considered.	Utilizing a cascaded latent thermal energy storage (CLTES) based on a control charging method to improve the charging and discharging thermal energy.
[132]	Improve the battery life cycle.	TESS with Li-ion battery	Isolated	Cost is not considered.	Introduced a HESS composed of TESS with Li-ion battery to solve the overheating problem and improve the battery life cycle.
[133]	Thermal management of li-ion battery using Graphene-enhanced hybrid PCM	LHSS Li-ion battery	Isolated	Power quality is not considered	Using Graphene-enhanced hybrid PCM for solving the overheating problem for li-ion battery
[134]	Minimize total system cost	TESS	Isolated	Power quality is not considered.	Comparing operation strategies of two HTESS. The first one is composed of two tank TES and the other consists of packed bed TES
[135]	-Minimize CO ₂ emission Minimize system cost	TESS	Isolated	Overall power quality is not improved	Using TES for increasing primary energy efficiency in industrial aspects and as a result minimizing the total cost.
[136]	-Finding optimal sizing Minimize leveled cost of energy.	TESS BESS	Isolated	Power quality is not improved	Using GA-PSO for finding the optimal sizing of a system composed of concentrated solar power, TES and battery.

Cathode : $2O_2 + 2H^+ + 2e^- \Rightarrow H_2O$ Overall : $H_2 + \frac{1}{2}O_2 \Rightarrow H_2O$

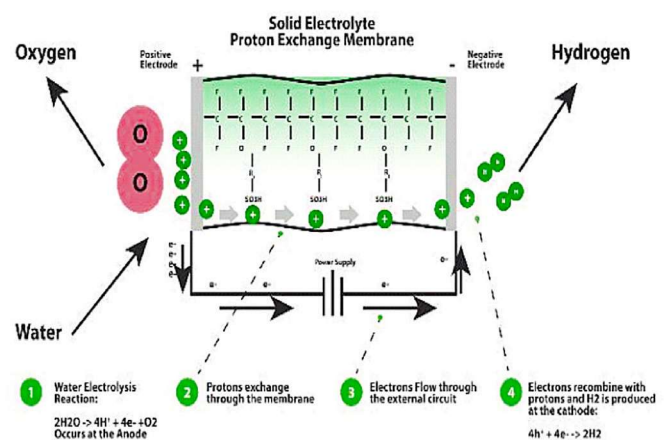
FCs are categorized based on the used electrolyte. These are: alkaline FC, phosphoric acid FC, solid oxide FC, molten carbonate FC, proton exchange membrane FC (PEMFC), and direct methanol FC. Among all,

**Fig. 27.** The schematic diagram of the fuel cell [138].

alkaline FC has an efficiency of 60 % whereas the PEMFC delivers 58 % and molten carbonate gives 47 %. PEMFC is ideal for transport applications owing to its low operating temperature, quick start-up, and rapid load with low voltage and high current [137]. Most of the fuel cells currently in existence are in their early stages and are used in some limited applications such as aerospace and as a generation back-up in large scale grid [105].

2.5.2. Hydrogen storage

This technology is composed of an electrolyser to transform the electrical energy into hydrogen, a reservoir to store the produced hydrogen, and a conversion system like FC to convert the chemical energy to an electrical form. The produced hydrogen is stored, liquified or compressed. The chemical process of hydrogen production is shown in Fig. 28. The major merit of hydrogen is that there is no emission of harmful gases [1]. For renewable energy sources, the excess electricity is used for water electrolysis to split the water into its basic components (hydrogen and oxygen) then they are stored in tanks where hydrogen may be consumed in one of three ways [103]. Directly as a fuel: hydrogen can be transformed to electricity through a FC or combustion engine. As a feedstock: by chemical combination of hydrogen and carbon dioxide to produce synthetic natural gas ($2H_2 + CO_2 \Rightarrow CH_4 + O_2$) which can then be injected into natural gas pipelines. Blended with natural gas: hydrogen may be injected into some natural gas pipeline systems to supply infrastructures or end-use devices. Compared to the other energy storage technology, hydrogen technology cost is very low however, its efficiency is not very high So, it is suitable when the total amount of energy stored is more valuable than efficiency [139]. The different hydrogen storage mechanisms are as follows: liquid hydrogen storage, compressed and stored in a pressure tank, physical adsorption in carbon, complex compounds, and metal hydrides. A comparison of

**Fig. 28.** Scheme of chemical process of hydrogen production [103].

hydrogen storage capacity is presented in Fig. 29 [1].

2.5.3. Ammonia storage

Ammonia can be easily stored in large quantities in liquid form, making it an ideal chemical store for renewable energy. The idea stems from the fact that there is excess energy during the night and can be used in the production of ammonia and then stored for use when needed. Storing hydrogen in large quantities is difficult and expensive, while ammonia is easier and cheaper to store and transport, and it can easily be cracked to provide hydrogen gas when needed and used in fuel cells [140].

2.5.4. Biofuels

Biofuels, are a eco-friendly, locally available, sustainable, and reliable fuel obtained from renewable sources [141]. Plants are a source of biofuels, as they work to trap sunlight in the form of chemical energy inside them through the process of photosynthesis, and this energy can be used to suitable forms and used for energy needs. Biofuels provide 3 % of the world's transportation fuel. Biofuels are in the form of liquid or gaseous fuels that are produced from biomass by chemical, thermal, or biological processes. Liquid fuels, like, ethanol, methanol, biodiesel, and gaseous fuels, like hydrogen and methane [141]. Liquid biofuels can be utilized in transportation, engines, or fuel cells to generate electricity. The USA, Brazil, Germany, Argentina, and China are the leading countries in the production of biofuels in the world, where they produced together 80.2 % of the world biofuel production in 2018 [96].

2.5.5. Aluminum energy storage

Aluminum is inexpensive and abundant, as it is the third most abundant element on earth. Excess electricity from renewable energy sources is used to produce the first aluminum using corundum. Solid aluminum can be stored and transported easily and used when needed without safety concerns. Upon discharge, the aluminum first oxidizes, producing hydrogen, heat, and aluminum oxide. These by-products can be used as sources of energy [142]. Several papers that concern with several issues using chemical energy storage systems are tabulized in Table 12.

Table 12 indicates It has been noticed challenges and limitations of CESS. It can be used in different systems (grid connected or isolated systems) and cab be integrated with other storage devices such as BESS. All types have the potential in minimizing cost, reducing CO_2 emission, increasing the battery life time, minimizing losses, improving system reliability.

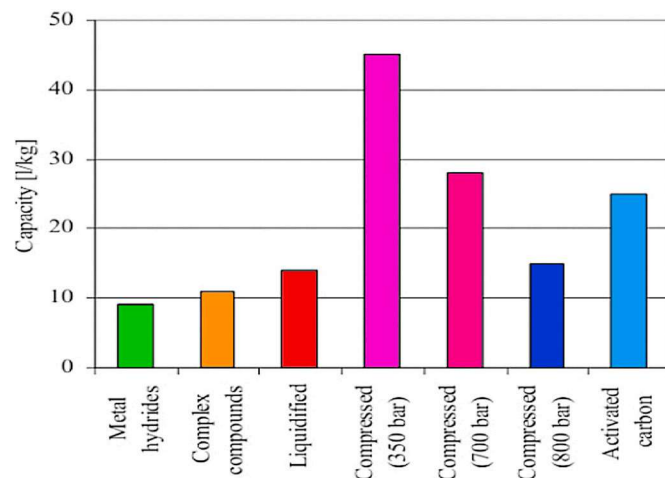


Fig. 29. Comparison of hydrogen storage capacity [1].

3. Hybrid energy storage system (HESS)

HESS is made by integrating more than one type of energy storage systems. It has a great importance, as renewable energy sources have intermittent characteristics in energy production and it is difficult for a single energy storage system to meet the energy requirements of a particular consumer [7]. ESSs can work in either of two modes: high-power mode and high-energy mode. High-power ESSs like (flywheel ES, SMES, SCES, BESS, etc.), respond fast (few seconds to a few minutes) and has high power density. They can used for voltage stabilization and improve the power system dynamic response. On the other hand, they have high self-discharge rate and high cost per unit capacity so, they are not appropriate for large capacity and long-term storage [150]. While high-energy ESSs such as (PHS, CAES, fuel cells, BESS, etc.) respond slowly, and they have high energy density so, they can used for long-term energy systems. Their demerits are that they have a short cycle life, cannot be charged and discharged rapidly, and are not suitable for real-time scenarios requiring dynamic compensation [151]. Both modes are used for a single HESS application. HESS may improved performances, enhanced efficiency, increased life expectancy, and lessened costs [152]. HESSs can be used in several applications, such as in hybrid electric vehicles, fuel-cell-powered electric vehicles, renewable energy supply systems utilizing battery/hydrogen combination, grid-tied HESS in local or provincial use, and large-scale wind and solar farms [151]. At present, HESS has come to be one of the hot investigated fields all over the world. Here are several typical HESS combinations.

3.1. Super capacitors and batteries

So many papers have been published for introducing using the combination of super capacitors and batteries for optimizing the performance of Electric Vehicle (EV). In Ref. [75] authors proposed a Muti Source Inverter for active control of energy storage systems in EV applications and a Space Vector Modulation technique and a deterministic State of Charge (SOC) controller are also introduced for control of the switching actions and the operation of the SC bank. The convenience of this configuration has checked out by MATLAB. The adaptation of the HESS containing SC and battery in the DC distribution network that can restrain DC voltage flicker and enhance the system stability, is presented in Ref. [153]. In Ref. [154], authors studied the use of bidirectional two-quadrant frontend dc–dc converter to control the energy flow between the Lithium-Ion battery bank and super capacitor (SC) bank. This model offers good dynamic performance and well-organized output voltage. Implementation of Fuzzy Logic control for EV using SC and Li-ion battery is presented in Ref. [79].

3.2. SMES and batteries

A study in Ref. [155] proposed the using of SMES and battery storage system to stabilize a photovoltaic based microgrid. A comparison, using MATLAB, between the system containing the SMES-battery and the system of battery only is carried out. The study proved that the SMES-battery is better in dealing with the microgrid transient faults and the it can reduce the fault current to avoid an unnecessary off-grid. In Ref. [66], the design of high temperature superconducting with the battery to form HESS is proposed. The paper showed that; this configuration can reduce the voltage fluctuation due to cloudy events and by using low resistance of high temperature superconducting cables, the voltage profile can be improved. Authors in Ref. [156] introduced the design and implementation of SMES-battery hybrid energy storage system in electric vehicle (EV). It used a novel nonlinear robust fractional-order control of SMES-battery to optimize the power demand. A case study is carried out to verify the effectiveness of this control strategy in improving the battery life cycle and compared with other control methods.

Table 12

Challenges and limitations of CESS for different systems.

REF	Challenge	ESS Device	Isolated/Grid connected	Limitation	contribution
[143]	-Minimize total life cycle cost Improve system reliability.	Hydrogen	Isolated	Power quality is not improved.	Optimal sizing of stand-alone system consists of PV, wind, and hydrogen storage.
[144]	Minimize life cycle cost	Hydrogen BESS	Isolated	Battery degradation is not considered.	Modelling and optimal design of HRES. The optimization results demonstrate that HRES with BESS offers more cost effective and reliable energy than HRES with hydrogen storage.
[145]	-Minimize total net present cost TNPC -Minimize loss of power supply probability (LPSP)	FC	Isolated		Multi-objective design of HESS composed of PV, FC and diesel generator to supply power for an off-grid community.
[146]	Improve system reliability -Minimize Loss of Power Supply Probability (LPSP), levelized Cost of Energy (LCOE) and Net Present Value (NPV). Minimize CO ₂ emissions	FC BESS	Isolated	Computational complexity	Using multi objective PSO algorithm for optimal design of HRES.
[147]	Minimize Loss of Power Supply Probability (LPSP)	FC BESS	Isolated	Battery degradation is not considered	new real-time optimization algorithm based on Lyapunov optimization framework and novel queueing theory is proposed to optimal design the SMG with BSS.
[148]	Cost reduction Increase lifetime	FC BESS	Isolated	Power quality is not improved	experimental plat- form designed and constructed to test operation modes for hydrogen renewable power plants integrating HESS
[149]	Minimize net present value of the operation cost. Increase lifetime	Hydrogen BESS	Isolated	Power quality is not improved	Techno-economic optimization for HRES for off grid applications using Linear Programming.

3.3. Flywheel and batteries

In [157], authors provided a study of using a hybrid energy storage system combined of battery and flywheel to mitigate load fluctuations in electric ships. A typical prediction algorithm was developed for demonstrate the validation of this strategy. Authors in Ref. [158] proposed the installation of flywheel/battery HESS in a house on the island in Greece for supplying the house with loads and a financial accounts are made for analysis its economic feasibility. In Ref. [159], authors represented a residential Micro-Grid, consists of a photovoltaic plant integrated with a flywheel/battery HESS. A Matlab Simulink model (for AC and DC bus configurations) is developed. From the results, it is showed that the AC bus MG is the better in interfacing with the grid than the DC bus MG (peak current value is reduced by 58 % and transient time is 30 % shorter).

3.4. Compressed air and supercapacitor

In [160], authors introduced a HESS composed of CAES system and super capacitors SCs to improve the power quality of the power grid. A control strategy is developed for the system to track the 24 h power demand curve effectively. Authors in Ref. [161] proposed a CAES – SCs HESS to improve the voltage stability. Also, SCs can be used as a filter to smooth the power outputs.

3.5. Thermal energy storage and batteries

Authors in Ref. [132] introduced a HESS composed of thermal energy storage system TES with Li-ion battery to solve the overheating problem while using Li-ion battery only and improve the battery life cycle. In Ref. [133], authors examine HESS consists of TESS and batteries for heat handling battery management problem and reliability improvement the battery.

4. Challenges for integrating energy storage systems

Reliability and sustainability are the main aspects related to integrating ESSS to the modern power networks. However, this can be challenged. Hence, the next challenges should be considered for success integration of ESS [162].

4.1. Battery degradation

One of the main problems associated with batteries, is degradation problem. Owing to, rising in battery temperature because of the charging and discharging cycling and aging problem that affects the battery performance over the time. In Ref. [163], it is represented a control strategy to manage a BESS in a microgrid for enhancing the ESS life time based on battery SOC and maximum capacity. The overall BESS life span enhanced by 57 %.

4.2. Battery SOC effects on ESS

Energy storage systems' stability and performance are highly affected by the SOC. Some works have been studied these goals. A piecewise linear SOC controller has been created to stop BESS depletion before it reaches minimum levels for integrating SOC into low-inertia power systems' primary frequency control [164]. Furthermore, another research has looked into SOC balancing control in distributed battery systems. Researchers have used multi-agent consensus theory and dynamic event triggering coordination algorithms to efficiently accomplish SOC balance while consuming less communication [165]. Also, fractional-order modeling and Kalman filters improve estimation accuracy and dependability, demonstrating decreased errors compared to standard approaches under diverse working situations [166]. Accurate SOC estimation is also essential for supercapacitor functioning. All of these investigations indicate how SOC has a major impact on energy storage systems.

4.3. ESS sizing and allocation

The sizing and placement of energy storage systems (ESS) are critical factors in improving grid stability and power system performance. Numerous scholarly articles highlight the importance of the ideal ESS placement and sizing for various power grid applications, such as microgrids, distribution networks, generating, and transmission [167, 168]. Numerous crucial factors must be taken into account for Energy Storage System (ESS) sizing that is optimal. Market pricing, renewable imbalances, regulatory requirements, wind speed distribution, aggregate load, energy balance assessment, and the internal power production model are some of these factors [169]. An ideal ESS size that guarantees a steady supply of energy can be achieved by carefully taking into account all of these factors [170]. An ESS that is appropriately sized and

distributed can save costs, improve the use of renewable energy, and help with frequency management, all of which improve grid dependability and lower operating costs [171]. To address the difficulties in ESS planning, design, and implementation, sophisticated approaches, algorithms, and optimization techniques are being created, opening the door for more research and innovation in this area [172,173]. In distribution networks with high Distributed Generation (DG) penetration, the placement of energy storage systems (ESSs) is critical to addressing controlling voltage and system losses. Numerous approaches have been put out to optimize the placement and sizing of energy storage systems (ESSs) [174]. In order to identify the most efficient ESS size and location, these optimization procedures frequently use multi-objective functions that take into consideration PV panel power, self-consumption schemes, and the direction of demand growth. Distribution networks may experience better overall system efficiency, decreased losses, and improved voltage management by carefully choosing where to install energy-storage sensors using multi-objective optimization models and thorough sensitivity indices [175]. In order to facilitate power allocation to various storage technologies inside the hybrid energy storage system HESS, a basic optimization approach for choosing a low-pass filter's cut-off frequency has been proposed in Ref. [168]. The features of storage technologies are greatly impacted by the optimal cut-off frequencies that are determined by the optimization framework. This highlights the significance of precise power allocation for efficient grid support functions.

4.4. ESS financial feasibility

Understanding the technical sides of ESS technology and its application's economic viability is essential to assure the technology practicality. However, ESS's economic studies were quite restricted, where most of them, only the system capital cost was covered. For a comprehensive technoeconomic analysis, should include system capital investment, operational cost, maintenance cost, and degradation loss. Table 13 presents some of the research papers accomplished to overcome challenges for integrating energy storage systems.

It can be concluded from Table 13 that there are various solutions to overcome challenges facing integrating energy storage devices in isolated or grid connected systems. Utilization of HESS (SC + fuel cell, SMES + battery, battery + SC, etc) and applying optimization technique for optimal allocation or sizing of each device will lead to reducing cost, expanding ESS life time, improving efficiency and minimizing battery degradation.

5. Choosing principles for energy storage systems

There are many factors for selecting the suitable energy storage devices such as [34,182]:

- Capacity: The system energy stored is determined based on the capacity
- Power: How quickly the stored energy discharged and charged is determined based on the power.
- Efficiency: It expresses the amount of energy lost during the storage period and during the charging/discharging cycle, as it is the ratio between the energy provided to the consumer to the energy required for charging.
- Storage period: Denotes how long the energy is stored.
- Charge and discharge time: Expresses the time for charging and discharging.
- Lifetime: Denotes the time to use energy storage equipment.
- Cost: Depends on the storage equipment capital and operating costs and its life span.

Selection the superlative ESS for different applications is essential. In applications that require fast response such as frequency modulation, reactive power support, smooth transmission, and power quality improvement where millisecond response time is vital. FES, SMES, SC, and some batteries are highly recommended. Besides they have high efficiency and long lifetime. However, they have small energy ratio. ESS based on energy storage with hourly level response time is needed for energy time shift and capacity unit applications. PHES and CAES can be used for these applications [183]. Lead-acid batteries are used in many applications such as UPS, power quality and frequency regulation due to their cost, reliability, and ripening of technology. In fact, the Li-ion battery has high efficiency and a large energy ratio, but its cost is high, therefore its use in power applications is limited [184]. The CESS and ECESS typically have greater efficiency but shorter response time. Moreover, MESS and TESS have longer discharge time and response speed. On the other hand, for the lifetime specification, the longer life span time, the lower replacement costs [1]. Table 14 represents the general characteristics for some of the above discussed ESS to help the reader for choosing the appropriate ESS for its application [185]. presented some indicators to facilitate decision-making/design of various storage technologies include storage capacity, maximum charge/discharge power, depth of charge, durability, cost, maximum self-discharge rate and storage weight.

From Tables 14 and it is apparent that the SC and SMES are convenient for small scale energy storage application. Besides, CAES is appropriate for larger scale of energy storage applications than FES. The

Table 13
Solutions for energy storage systems challenges.

Ref	Challenge	ESS Device	Isolated/Grid connected	Limitation	Contribution
[176]	Minimize energy cost	Battery –SC	Grid connected		Design of the battery degradation process based on the characterization of semi-empirical aging modelling and performance. Modelling of the dynamic behavior of SCs.
[177]	Minimize system cost	Battery Hydrogen storage	Isolated	Battery degradation is not included.	Four different practical case studies, i.e., an off-grid rural village, telecom tower, stand-alone welding shop, and a backup for lift load system are selected to demonstrate the proposed sizing methodology.
[178]	High cost Battery degradation	Battery Hydrogen storage	Isolated	Allocation is not concerned	Using evolutionary algorithms and mixed integer linear programming for sizing a MG containing PV panels, a BSS and HSS.
[179]	-Reduce system cost, improve efficiency	SMES - lead-acid battery	Grid connected	Battery aging is not considered	The performance of the proposed system is applied on a residential PV system in case of load leveling and system efficiency.
[180]	Minimize energy cost	Hydrogen fuel cell - SC	Isolated	Battery aging is not taken into account	The allocation of supercapacitor enables to mitigate the draw of high power consumption, to avoid all fast charge/discharge cycles and consequently to minimize the number of used batteries.
[181]	-Expand ESS lifetime Minimize energy cost	Li-ion Battery – SC	Isolated		The study considers the SOC of both battery and SC to ensure long lifetime.

Table 14

General technical specifications of energy storage techniques [1,10,186,187].

Energy storage system	Power Rating	Discharge	Energy density Wh/kg	Energy cost €/KWh	Lifetime Efficiency
PHSS	100–4000 MW	1 hr–24 h	0.5–1.5	50–150	70–85 %
FES	0.002–20 MW	msec to 40 Min	5–130	1000–3500	90–95 %
CAES	50–300 MW	1he- 24 h	30–60	10–120	70–80 %
Ni-CD	0.001–0.1 MW	0.0003–1 h	40–60	200–1000	60–91 %
Li-ion	0.001–0.1 MW	0.0167–1 h	75–250	200–1800	85–100 %
Nas	0.5–50 MW	0.0003–2 h	150–240	200–900	85–90 %
Hydrogen	0.001–50 MW	14 hr- 24 h	800–10000	1–15	20–50 %
Supercapacitor	0.01–1 MW	msec to minute	0.1–15	300–4000	90–95*
SMES	10 kW-10MW	msec to seconds	0.5–5	700–7000	80–90 %

CAES and PHES are suitable for centered energy storage due to their high energy storage capacity. The battery and hydrogen energy storage systems are perfect for distributed energy storage. Presently batteries are the commonly used due to their scalability, versatility, cost-effectiveness, and their main role in EVs. But several research projects are under process for increasing the efficiency of hydrogen energy storage system for making hydrogen a dated future ESS.

6. Applications of energy storage systems

Energy storage is utilized for several applications like power peak shaving, renewable energy, improved building energy systems, and enhanced transportation. ESS can be classified based on its application [188].

6.1. General applications

There are many general applications for ESS such as solar water heating, solar air heating, solar cooking, solar greenhouses, space heating and cooling in buildings, off-peak electricity storage, and waste heat recovery [189]. Also, applications of FES are presented in Ref. [190], involve uses in a variety of industries and frequency regulation due to its advantages, including its high energy storage density, quick charging and discharging times, and extended service life.

6.2. Energy utilities

Energy storage posted at any of the five main subsystems in the

electric power systems, i.e., generation, transmission, substations, distribution, and final consumers. Some of the applications of ESS include transmission system congestion decreasing, storing energy during off peaks for using during on peaks, voltage and frequency control, reparation for unpredictable emergencies like generation unit failure, and providing a real-time balance between generation and load [139]. Using ESSs in public utilities is a significant way to control the intermittent nature of RE sources like wind and solar power [191]. By reducing variations in the production of electricity, energy storage devices like batteries and SCs can offer a reliable and high-quality power source [192]. By facilitating improved demand management and adjusting for fluctuations in frequency and voltage on the grid, they also contribute to lower energy costs. Authors in Ref. [193] represented some of these applications such as increasing RE penetration, load leveling, frequency regulation, and offering operating reserve. In Ref. [194], authors discussed some of energy storage technologies used in grids and the requirements to decrease costs and enhance performance for these technologies to expand their market penetration. Some applications of ESS application are summarized in Table 15.

6.3. Renewable energy utilization

The greater the use of renewable energy sources, the greater the need of energy storage sources to store energy in off-peak times and use it at on-peak ones, in addition to the continuous intermittent in the renewable energy sources [7]. Authors in Ref. [197], recommended that ESS that are scalable, resilient, and minimal maintenance, such as, FES, SC, SMES and most batteries, may be appropriate for distributed renewable

Table 15

ESS applications [195,196].

ESS			Application requirements			PHS	CAES	BESS	FES	SC	SMES
Application			Power rating (MW)	Discharge durations (HRs)	Response time						
Electric supply		Supply system capacity	1–1000	4–6	Mins	✓	✓				
		Load leveling	10–1000	2–10	Mins	✓	✓	✓			
		Peak shaving									
Additional services		Load following	10–1000	2–4	Mins	✓	✓	✓			
		Spin and non spin reserves									
		Fast response spinning reserve	10–1000	1–2	<30 Sec	✓	✓	✓			
		Voltage and frequency regulation	1–1000	15–30 Min	Immediate			✓	✓		✓
Renewables integration		Black start	100–1000	1–6	Secs	✓	✓	✓			
		Renewable back up	0.0001–400	2–4	Mins	*	*	*			
		RE grid integration (brief duration)	0.2–400	10–15 Sec	Secs -Mins		*	*	*	*	*
		Fluctuation decreasing									
Grid system	Transmission	Transmission congestion reassurance	0.25–400	2–6	Mins	*	*	*			
	Distribution	Reduce outage frequency	0.002–10	4–10	Secs- Mins			*	*		
		UPS									
Customers	End user	Voltage support	10–100	>15 Min	<1/4 cycle	*		*	*	*	*
		Enhance power reliability	0.002–10	2–5 Min	<1/4 cycle			*	*	*	*
		Enhance power quality	0.002–10	10–15 Sec	<1/4 cycle			*	*	*	*

energy. Technologies that combine a solar energy source with ES are reviewed in many papers [198,199]. [101,200] recommended that FES are favorable devices for combination with wind and PV systems unlike to BESS as they are fast response.

6.4. Buildings and communities

Energy storage is used to facilitate the integration of renewable energy in buildings and to provide a variable load for the consumer. TESS is a reasonably commonly used for buildings and communities to when connected with the heating and cooling systems. Wide research is represented on storage materials, latest developments, conditions and performance, and restrictions for buildings uses [201,202], and [203]. In Ref. [204], authors indicated that the use of FES in buildings with installed solar PV panels greatly lowers system costs. Zero Energy Buildings (ZEBs) has gained a lot of attention over the past decade. TESS is a appealing option for the ZEBs improvement by decreasing the energy utilization of the buildings, enhancing system efficiency, and lowering the peak load [123].

6.5. Transportation

There are many requests for ESS that used in EVs such as, high power density, fast discharge, specifically when accelerating, extreme efficiency, easy control and regenerative braking capacity [7]. The highly used primary ESS in EVs are batteries. On the other hand, SC has high power densities than battery. So, a combination between Battery and SC for EVs can improve the performance for EVs, aircraft, and ships [188]. FES has also been applied for extended time in transportation systems [101]. It can deal well with unpredictable power consumption as it has high power density and it can be used as the main source of energy for propulsion [200]. Various constraints occur when using Li-ion batteries for transportation. In Ref. [205], recommended some methods for enhancing Li-ion batteries for EVs such as the use of organic instead of inorganic ones.

6.6. Applications of hybrid energy storage systems

The ability of hybrid energy storage systems (HESS) to integrate multiple storage technologies and provide high-energy and high-power densities makes them useful in a variety of sectors [30]. When it comes to electric vehicles, HESS is essential because it supplies the power and energy density required for performance and acceleration, going beyond what can be achieved with one storage technology alone. Furthermore, by facilitating a more sustainable energy ecology, HESS plays a key role in improving the efficiency and stability of electrical grids with a high penetration of renewable energy sources [206]. Batteries-Supercapacitor HESS is being more widely used in domains such as microgrids, smart grids, energy systems, and renewable energy integration [207]. This is because of its effectiveness in efficiently controlling power and energy. Additionally, in order to meet decarbonization regulations and run on sustainable electrical energy, the marine industry is increasingly using Battery Energy Storage Systems (BESS) in hybrid propulsion vessels.

7. New trends in energy storage systems

There are many trends in ESS. Top topics of storage energy are electric vehicles, thermal energy storage, lithium sulfur batteries, methane production, hydrogen storage, geothermal heat pumps, lithium-ion batteries, microgrids and supercapacitors. Some of research directions of each topic and some published papers are also listed in Table 16. The energy storage technology is well covered in this review. The use of ESS is crucial for improving system stability, boosting penetration of renewable energy, and conserving energy. Electricity storage systems come in a variety of forms, such as mechanical,

Table 16
New trends in energy storage systems.

Topic	Research directions	Some published papers
Electric Vehicles	Charging stations	[208,209]
	Vehicle to grid	[210,211]
	Vehicle routing	[212,213]
	Location problem	[214,215]
	Wireless charging	[216,217]
Thermal energy storage	Plug-in hybrid vehicles	[218]
	Heat transfer enhancement	[219,220]
	Low-temperature thermal energy storage	[221–223]
	Phase Change Materials	[224,225]
	Melting process	[226,226,227]
Lithium Sulfur Batteries	Latent Heat (horizontal LH, cascaded LH, and reverse LH)	[228–230]
	High-performance lithium-sulfur batteries	[231–233]
	Accelerating electrochemical reactions	[234]
	Alleviating the self-discharge	[235]
	Solid-state lithium-sulfur batteries	[236,237]
Methane Production	C O ₂ methanation	[238,239]
	Low-Temperature Methanation	[240,241]
Hydrogen Storage	Solid state hydrogen	[238,242,243]
	Liquid organic hydrogen	[244,245]
	Dehydrogenation	[246,247]
	Adding graphene on the hydrogen storage	[248–250]
Geothermal Heat Pumps	Modelling	[251]
	Performance Optimization	[252,253]
	Hybrid system based geothermal energy	[254–256]
Lithium-ion batteries	High performance of lithium-ion batteries	[257,258, 258–261]
Microgrids	MG integrating EV	[262]
	Management of ESS in MGs	[263]
	MG with hydrogen energy storage	[264]
	Frequency control of standalone MG	[265–267]
	Optimal scheduling of MGs based ESS	[268,269]
Supercapacitors	High-performance electrode material for SC	[270–272]

chemical, electrical, and electrochemical ones. In order to improve performance, increase life expectancy, and save costs, HESS is created by combining multiple ESS types. Different HESS combinations are available.

The energy storage technology is covered in this review. The use of ESS is crucial for improving system stability, boosting penetration of renewable energy, and conserving energy. Electricity storage systems come in a variety of forms, such as mechanical, chemical, electrical, and electrochemical ones. In order to improve performance, increase life expectancy, and save costs, HESS is created by combining multiple ESS types. Different HESS combinations are available.

Hybrid electric vehicles, fuel cell-powered electric vehicles, grid-tied HESS, large-scale wind and solar farms, and several other applications are just a few of the many uses for HESSs. This article discusses several challenges to integrating energy-storage systems, including battery deterioration, inefficient energy operation, ESS sizing and allocation, and financial feasibility. It is essential to choose the ESS that is most practical for each application. FES, SMES, SC, and certain batteries are strongly advised for applications requiring quick response, such as frequency modulation, reactive power support, seamless transmission, and power quality enhancement. On the other hand, hourly level response time applications like capacity unit and energy time shift can make use of PHES and CAES. Additionally, new developments in energy storage systems (ESS) such as geothermal heat pumps, microgrids, SCs, methane generation, thermal energy storage, lithium sulfur batteries, electric vehicles, and hydrogen storage are covered in this overview. Due to ESS's high prominence as a study area, there are numerous search directions listed for each topic.

8. Conclusion

The energy storage technology is well covered in this review. The use of ESS is crucial for improving system stability, boosting penetration of renewable energy, and conserving energy. Electricity storage systems come in a variety of forms, such as mechanical, chemical, electrical, and electrochemical ones. In order to improve performance, increase life expectancy, and save costs, HESS is created by combining multiple ESS types. Different HESS combinations are available. The energy storage technology is covered in this review. The use of ESS is crucial for improving system stability, boosting penetration of renewable energy, and conserving energy. Electricity storage systems (ESSs) come in a variety of forms, such as mechanical, chemical, electrical, and electrochemical ones. In order to improve performance, increase life expectancy, and save costs, HESS is created by combining multiple ESS types. Different HESS combinations are available.

Hybrid electric vehicles, fuel cell-powered electric vehicles, grid-tied HESS, large-scale wind and solar farms, and several other applications are just a few of the many uses for HESSs. This article discusses several challenges to integrating energy-storage systems, including battery deterioration, inefficient energy operation, ESS sizing and allocation, and financial feasibility. It is essential to choose the ESS that is most practical for each application. FES, SMES, SC, and certain batteries are strongly advised for applications requiring quick response, such as frequency modulation, reactive power support, seamless transmission, and power quality enhancement. On the other hand, hourly level response time applications like capacity unit and energy time shift can make use of PHES and CAES. Additionally, new developments in energy storage systems (ESS) such as geothermal heat pumps, microgrids, SCs, methane generation, thermal energy storage, lithium sulfur batteries, electric vehicles, and hydrogen storage are covered in this overview. Due to ESS's high prominence as a study area, there are numerous search directions listed for each topic.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

Data will be made available on request.

Acknowledgments

The research has been partially supported by the Faculty of Informatics and Management UHK excellence project "Methodological perspectives on modeling and simulation of hard and soft systems".

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Energy Storage System Location Study For: Puget Sound Energy

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Client Reference: Puget Sound Energy

PSC Reference: JU8426

Revision: Final (revised)

Date: 25 June 2021





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1. Introduction

Puget Sound Energy (PSE) engaged Power Systems Consultants (PSC) to perform a qualitative and quantitative analysis for siting a possible Energy Storage System (ESS) within the PSE electrical system. PSE filed a draft All-Source Request for Proposals (RFP) for peak capacity resources on May 4, 2020. Interconnection studies of an ESS onto a transmission system can result in the need for significant and costly network upgrades, depending upon interconnection location. This report serves as a starting point for proponents or bidders into the RFP as an aid to determine potential / lower risk locations (with respect to network upgrade costs) for interconnection of energy storage resources (and others) into PSE's transmission system.

The ESS is expected to perform in a manner consistent with the FERC defined Network Resource Interconnection Service. In general, this study is like a Feasibility Study in concept, but not necessarily in scope. Screening techniques examined the potential ESS capacity available at several Puget stations. Detailed analysis (like those completed for a Feasibility Study) was not performed.

The FERC definition of Network Resource Interconnection Service (below) can be used as a contextual guide in order to understand the purpose of this study.

Network Resource Interconnection Service shall mean an Interconnection Service that allows the Interconnection Customer to integrate its Large Generating Facility with the Transmission Provider's Transmission System (1) in a manner comparable to that in which the Transmission Provider integrates its generating facilities to serve native load customers; or (2) in an RTO or ISO with market based congestion management, in the same manner as Network Resources. Network Resource Interconnection Service in and of itself does not convey transmission service.

Transmission Provider must conduct the necessary studies and construct the Network Upgrades needed to integrate the Large Generating Facility (1) in a manner comparable to that in which Transmission Provider integrates its generating facilities to serve native load customers; or (2) in an ISO or RTO with market based congestion management, in the same manner as Network Resources. Network Resource Interconnection Service Allows Interconnection Customer's Large Generating Facility to be designated as a Network Resource, up to the Large Generating Facility's full output, on the same basis as existing Network Resources interconnected to Transmission Provider's Transmission System, and to be studied as a Network Resource on the assumption that such a designation will occur.

The Interconnection Study for Network Resource Interconnection Service shall assure that Interconnection Customer's Large Generating Facility meets the requirements for Network Resource Interconnection Service and as a general matter, that such Large Generating Facility's interconnection is also studied with Transmission Provider's Transmission System at peak load, under a variety of severely stressed conditions, to determine whether, with the Large Generating Facility at full output, the aggregate of generation in the local area can be delivered to the aggregate of load on Transmission Provider's Transmission System, consistent with Transmission Provider's reliability criteria and procedures. This approach assumes that some portion of existing Network Resources are displaced by the output of Interconnection Customer's Large Generating Facility. Network Resource Interconnection Service in and of itself does not convey any right to deliver electricity to any specific customer or Point of Delivery. The Transmission Provider may also study the Transmission System under non-peak load conditions. However, upon request by the Interconnection Customer, the Transmission Provider must explain in writing to the Interconnection Customer why the study of non-peak load conditions is required for reliability purposes.



1.1. Disclaimer

Note that all the information used for the study is available to any member of the public either directly (i.e., geo-location from the Department of Homeland Security) or via non-disclosure agreements with the Western Electricity Coordinating Council (for WECC base cases).

Some information (one-lines and station configurations) used (as an analytical aid) is based on FERC Form 715 submissions that pre-date (circa October 2001) the CEII classification of FERC 715 data. Station configurations and interconnections were confirmed with recent imagery.

The best possible data and analytical technique was used for this study; however, no warranty is offered by Power Systems Consultants for fitness of use of any data associated with this report or the contents of the report itself. PSC did not perform a purposeful review of base cases, maps, or one-lines for accuracy.

This study was completed outside of the OATT and is intended to broadly inform interested readers. It does not replace any OATT driven processes or documentation, nor is it intended to do so. The results in this document do not indicate that available transmission exists or that a station is suitable for interconnection from an official FERC LGIA process viewpoint.

1.2. Energy Storage System (ESS) Discussion and Example

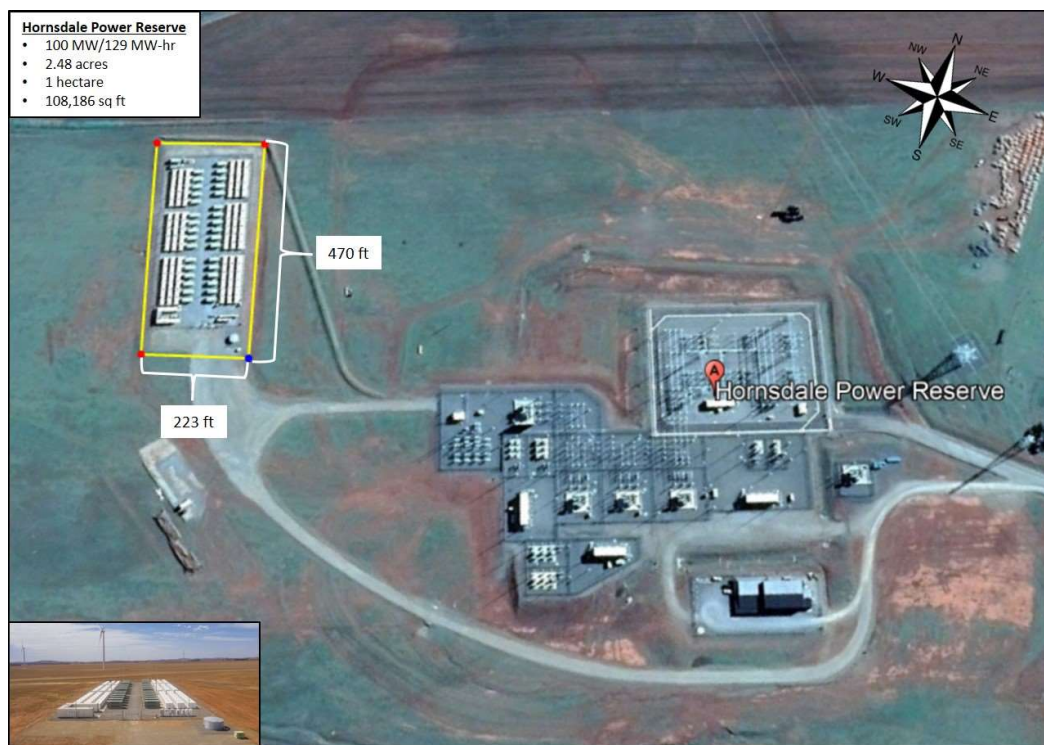
Modern utility scale ESS's store energy in the form of electro-chemical or mechanical energy, then convert that energy into electrical energy when appropriate, based on sophisticated control schemes.

Examples of electro-chemical storage include Lead Acid, Nickel-Cadmium, Lithium-Ion, and Molten Salt amongst others. Flow batteries are another type of electro-chemical battery, with Redox being an example. Mechanical energy storage examples include Flywheels, Pumped Hydro, and Compressed Air Energy Storage systems.

The study effort is agnostic to energy storage technology type and focuses primarily on the requirements of the ESS to interconnect on the PSE transmission system.

An example of a deployed Energy Storage System (located in South Australia) is shown in Figure 1.1. This is presently the world's largest ESS that uses Lithium-Ion batteries. The purpose of introducing this project is to give a sense of relative scale associated with a high energy capacity/high power ESS.

Figure 1.1 Hornsdale Power Reserve ESS



2. Methodology

Two methodologies were employed for this study. A qualitative and a quantitative method.

The qualitative method is a high-level review to determine potential for interconnection at the substation and to determine the potential to site an ESS in the area (PSE's property is not available for siting the ESS for this analysis). If a substation meets the evaluation metrics (detailed below) for the qualitative method, the locations will be further studied with the quantitative method.

The quantitative method is a high-level power flow analysis of the PSE transmission system, using official WECC databases to review the system performance with the addition of an ESS during charging and discharging conditions, for a multitude of system conditions and system contingencies.

These details of the qualitative and quantitative methods are discussed in the relevant section below.

2.1. Qualitative Method

Overhead imagery was utilized to determine the location of Puget's substations. This imagery was analysed in conjunction with WECC base cases and FERC 715 filings (pre-2001) that contain one-line drawings of the Puget system. We note that prior to October 2001 FERC 75 filings were available to the public. The stations were geo-located, mapped, locations were populated in the power flow-based cases, and then substations were created in the power flow base cases in order to support more detailed analysis using modelling and simulation tools.

2.1.1. Substation Interconnection Suitability

PSC examined the candidate substations to determine their suitability for expansion to accommodate interconnection of an ESS to the substation. This study assumes the ESS is sited off of PSE land in the area near the substation. Evaluation metrics are as below:

- Must interconnect to an existing Puget station
- Interconnects to PSE "native" network west of Cascades, no wheeling
- No radial or "return loop" transmission
- Above >100 kV point of interconnection (POI) per following details:
 - At least 4 lines for 115 kV candidate stations
 - Or non-radial 230 kV station
- Expansion space "in-the-gravel" in the station exists
- Development potential of existing station for interconnection is evident
 - Open space is desirable
 - Heavy residential presence is not desirable
 - Must pass the "Good Neighbor" test, which from an electric utility perspective has the following attributes:
 - Use of eminent domain proceedings is the absolute last resort with condemnation only used for those projects that are extremely mission critical and are supported politically.
 - The minimal number of landowners are impacted by a project and those landowners are justly compensated at prevailing rates.
 - Projects are developed with a focus on maximizing the use of existing "encumbered" properties.

- Land use should be reasonably consistent with its present use and the addition of electric utility infrastructure should be designed to be as unnoticeable as possible
 - Early involvement of the public in the development process is a must and the public should be encouraged to provide constructive input and alternative projects/locations
 - The public knows their neighbourhood best and can suggest minimum impact alternatives
 - Successful “Good Neighbor” projects leave the affected area better than it was before the project was executed.
- Identify substation configuration allows for additional breaker position
 - Ring bus, breaker and a half, double bus double breaker is preferred.
 - Main bus (with aux bus) has questionable reliability and could result in additional upgrades, up to rebuilding the substation to a different configuration.
 - Main bus (without aux bus) has poor reliability and is not suitable for interconnection of an ESS and would require substation upgrades, up to rebuilding the substation to a different configuration
 - An internal failure of a circuit breaker causes loss of entire station
- Identify existing unused breaker position (breaker not installed)
- Identify if the substation area allows for expansion
 - Examine available space inside substation fence
 - Examine available space outside substation fence
- If substation has 115 kV and 230 kV voltages, preference should be given to interconnect at the 115-kV side, unless interconnection at 230 kV results in substantial benefits.

2.1.2. ESS Siting Suitability

PSC examined how practical ESS siting near the substation is. This examination included:

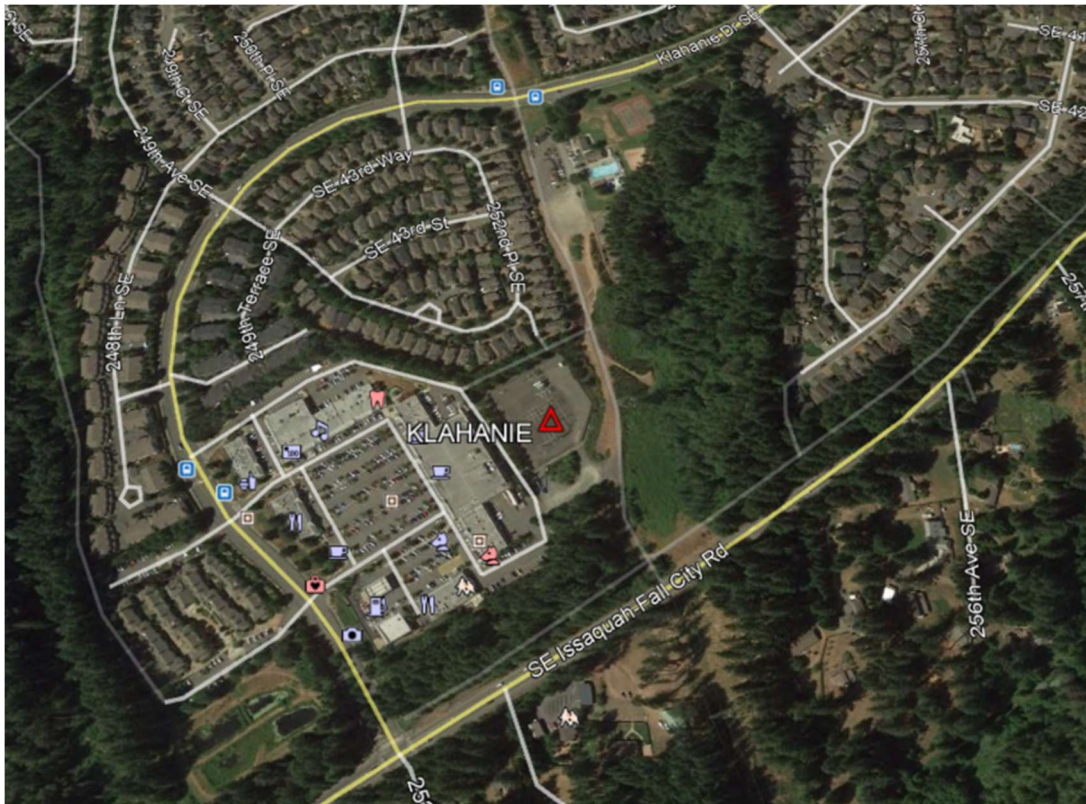
- Land use and Zoning compatibility
 - Imagery analysis and general land usage was examined using tools such as Google Earth and Land Grid. These tools provide a means to develop a general qualitative sense of how favourable the location near a particular PSE station might be for an ESS project.
 - Highly residential areas, constraints for possible transmission rights-of-ways to the PSE station, schools, hospitals, and other notable land uses indicate that that specific PSE station was less desirable as a practical location to interconnect an ESS.
- Environmental Constraints
 - Overhead imagery analysis was performed in order to identify the possibility of complicated environmental constraints.
 - For example, the PSE Snoqualmie Falls station met the basic requirements of electrical connectivity but clearly it is not a desirable location for additional development. Thus, that station was not a candidate for further analysis.

2.2. Qualitative Method - Example

Two examples of qualitative review (i.e., go or no-go) of candidate stations are briefly discussed as follows.

The Klahanie station (Figure 2.1) would be characterized as a high “risk” or red station. The Klahanie station is not desirable for an ESS interconnection due to its lack of space, residential encroachment, and general lack of development potential.

Figure 2.1 Undesirable Station: Klahanie



The Alderton station (Figure 2.2) is an example of a low “risk” (i.e., green station) that has desirable attributes associated with the station such as:

- Space for development in the immediate area
- Space in the station for expansion
- Fairly rural area that might be more easily support new rights-of-way, station expansion, or ESS siting

Figure 2.2 Desirable Station: Alderton



2.3. Quantitative Method

PSC used WECC power flow base cases to examine the PSE transmission system for the list of substations feasible for ESS interconnection. PSC used the PowerWorld (version 21) power flow ATC tool to perform analysis that approximates a “light-weight” generation interconnection feasibility screening study. This study is not a feasibility study under the OATT, but rather an informational screening that could aid an RFP respondent in determining where to queue for a detailed LGIA interconnection request. These POI’s were examined as charging (load) and discharging (generating) resources.

- Study Cases (WECC PowerWorld *.pwb power flow cases):
 - 2029-2030 Heavy Winter
 - Case used was 30HW1a1.pwb
 - 2030 Heavy Summer
 - Case used was 30HS1a.pwb
 - A 2029 HS case was originally used but then rejected due to an incomplete PSE transmission project that caused contingency performance issues (29HS1a1.pwb)
 - Off-peak load case (at consultants' discretion) which was the 2030 Light Spring case (30LSP1Sa.pwb)
- ESS studied as generation (discharging) and also as a load (charging)
 - ESS was studied one at a time
 - No groups or combinations of ESS's were studied
 - Only single ESS's were studied
- Only one interconnection per site location (either 115 kV or 230 kV, not both)
- Determine maximum ESS size at each location that results in acceptable system performance, for NERC TPL-001-4 PSE P0, P1 (N-1), and P6 (N-1-1) contingencies, while studying limited and sensitive neighbouring contingencies.

2.3.1. Quantitative Software Use and Approach

The results of the qualitative analysis and study were obtained using the “ATC” tool of PowerWorld Simulator. The details for implementing this in PowerWorld are briefly described as follows:

- Create an ALL WECC injection group of generators to dispatch against
 - The following metrics were used to select generators:
 - Pmax>10 MW
 - Pgen>10 MW
 - Pmin>0
 - ALL WECC injection group metrics (from 30HS case)
 - Number of generators is 2272
 - Total MW injection is ~191,294 MW
- Insert a single ESS (i.e. generator) and create an injection group for each station in Table 3.1
- Create an auto-inserted list of contingencies for Area 40
- Performed “Iterated Linear then Full Ctg” ATC analysis
 - Ignore elements with OTDFs < 3.0
 - Ignore elements with PTDFs<3.0
 - Report only:
 - 20 Transfer Limiters
 - 3 Limiters per ctg
 - 3 Limiters per element
- The results were manually inspected and those limiting elements and/or contingencies that were not relevant to the ESS were ignored for further analysis.
 - One may view this as machine aided learning to determine those contingencies and electrical system elements that are truly associated with electrical service to the ESS sites.
 - Many of these ignored elements/contingencies were 500 kV elements/contingencies with remedial action schemes or near their limits in the base case (for example various series capacitors associated with the California Oregon Intertie, etc).

- The metrics associated with the quantitative analysis are noted below:
 - All elements with valid ratings were scanned for performance with the ATC tool for PO, P1, and P6 conditions of the NERC TPL-001-4 standard
 - Summer Emergency ratings were RATEA
 - Winter Emergency ratings were RATEC
 - Spring Emergency ratings were RATEG
 - P1 & P6 contingencies were those in the Northwest >100 kV
 - P1: 1135 out of 5081 contingencies were examined for detailed P1 performance
 - The smaller list of contingencies was selected using the Linear ATC tool which determined those contingencies sensitive to the PSE BESS sites.
 - P6: 1107 out of 144,453 contingencies were examined for detailed P6 performance
 - The smaller list was tested for performance using the Iterated Linear feature of the ATC tool. The larger amount was screened with the linear ATC tool.

3. Results

The results of the qualitative and quantitative analysis are listed below.

3.1. Qualitative Results

The results of the qualitative analysis and study were obtained in an iterative fashion. The list of candidate stations was then inspected both in PowerWorld Simulator and with overhead imagery to cull undesirable locations. The results follow:

- 382 total PSE initial stations (based on software results).
 - The 382-station count may not be a figure that exactly matches the number of stations that PSE has. This is due to the software requirement for a tapped line to be modeled with a bus, which might not be representative of an actual substation bus.
 - These 382 stations were geo-located.
- 36 PSE stations were kept for overhead imagery analysis based on the following:
 - Is 230 kV non-radial service.
 - Or is > 4 lines of 115 kV non-radial service.
 - And within PSE network
 - Determined from geo-location and bus ownership
 - Substation configuration metrics were not included in determining of the initial candidate stations.
- The 36 PSE stations were analysed and grouped by the following criteria for risk regarding ESS site location and interconnection:
 - Substation area analysis
 - Surrounding area analysis
 - Refined understanding of interconnection based on imagery analysis
- 12 stations (of the 36) were assigned “green”, for initial low risk ESS interconnection
- 8 stations (of the 36) were assigned “yellow”, for initial medium risk ESS interconnection
- 16 stations (of the 36) were assigned “red”, for high risk due to not meeting the initial qualitative screening metrics

3.1.1. Candidate Stations

Table 3.1 lists the 20 PSE stations that were analyzed in detail. These stations were visually inspected with recent overhead imagery and are organized by color for low risk and medium risk substations. As previously stated, the substation configuration metrics were not used for the initial candidate stations and will be addressed later in the report. Substations that are of a main bus configuration are highlighted in red.

Table 3.1 Qualitative Results for Low Risk (Green) and Medium Risk (Yellow) Stations

Sub Name	Nominal kV Range	# of Lines	Bus Configuration (low & high voltage)	Zone
Alderton	115.0 (only)	7	Main & Aux	PIERCE
Berrydale	115.0 to 230.0	7	Main & Aux / Brk & half	S.KING
Christopher	115.0 (only)	6	Main Bus	S.KING
Frederickson	13.8 to 115.0	4	Main Bus	PIERCE
Fredonia	13.8 to 230.0 (115kV)	2	Main Bus	SKAGIT
Lake Tradition	115.0 (only)	8	Main Bus	N.KING
March Point	115.0 to 230.0	12	Main & Aux / Xfrm Term	SKAGIT
Midway	115.0 (only)	6	Main & Aux	S.KING
Saint Clair	115.0 to 230.0	7	Main & Aux / DB-DB	THURSTN
Sammamish	115.0 to 230.0	11	Main & Aux / Main & Aux	N.KING
Talbot Hill	115.0 to 230.0	14	Main & Aux / DB-DB	S.KING
Tono	115.0 (only)	4	Main & Aux	THURSTN
Bellingham	115.0 (only)	11	Brk & half	WHATCOM
Krain Corner	57.5 to 115	6	Main Bus	PIERCE
O'Brien	115.0 to 230.0	11	Main & Aux / Xfrm Term	S.KING
Portal Way	115.0 (only)	5	Main & Aux	WHATCOM
S. Bremerton	115.0 to 230.0	6	Main & Aux / Xfmr Term	KITSAP
Sedro Woolley	115.0 to 230.0	12	Main & Aux / Brk & half	SKAGIT
Starwood	115.0 (only)	4	Main Bus	S.KING
White River	115.0 to 230.0	12	Main & Aux / DB-DB	PIERCE

Table 3.2 lists those stations that were deemed high risk and thus not selected for more detailed analysis.

Table 3.2 Qualitative Results for High Risk (Red) Stations

Sub Name	Nominal kV Range	# of Lines	Substation Type	Zone
ARCO C	115.0 (only)	4	Main Bus	WHATCOMI
BAKER SW	115.0 (only)	4	Main Bus	SKAGIT
BALDI	230.0 (only)	2	Tap	S.KING
CASCADE	34.5 to 230.0	3	Xfmr Term/Main Bus	KITTITAS
COTAGEBR	115.0 (only)	4	Main Bus	N.KING
ELECTHTS	57.5 to 115.0	5	Xfmr Term/Main Bus	PIERCE
HORSRNCH	230.0 (only)	3	Main Bus	N.KING
HRNCHTAP	230.0 (only)	2	Tap	N.KING
KLAHANIE	230.0 (only)	2	Tap	N.KING
LAKESIDE	115.0 (only)	7	Main Bus	N.KING
MINTFARM	13.8 to 230.0	1	Main (Gen Interconnection)	Portland Area
NOVELTYH	115.0 to 230.0	7	Main & Aux/Main Bus	N.KING
OLYMPA P	115.0 (only)	9	Main Bus	THURSTN
SHUFFLETON	115.0 (only)	4	Main & Aux	S.KING
SNOQ SW	2.0 to 115.0	5	Main Bus	N.KING
FREDONIA	13.8 to 115.0	4	Main Bus	SKAGIT

Note that there are two Fredonia stations, one serves a gas turbine power plant and the second serves local load. The “red” Fredonia station is the load serving station. Although these stations are “red” (or less desirable for ESS integration) they may be worthy of further review and analysis.

3.2. Quantitative Results

3.2.1. Quantitative Results

Table 3.3, 3.4, and 3.5 lists the results from the quantitative analysis. The gen/load limit is equivalent to the discharge/charge limit for the ESS at the listed station for TPL-001-4 P0, P1, and P6 conditions (for the most limiting element). Units for the limits are MW. Note that we omit the negative sign for load since the sign is implicit in the definition of load.

Results shown in the tables indicate the ESS sizes for the different substations on an individual bases, meaning the potential size for a single ESS to be placed at any one of the locations listed. The results are not meant to indicate that the ESS sizes listed can be installed for all locations simultaneously.

BPA 500 kV contingencies (such as the Raver-Paul 500 kV line loss) were noted, but not considered as limiting contingencies since it is known that these contingencies have remedial action schemes associated with them. BPA has historically planned its system for P1 outages and has not necessarily planned (and built) its system to perform for P6 outages (without operator action).

A 2030 Light Spring case was examined to test performance under P0, P1, and P6 conditions to determine if there was any notable sensitivity to light spring conditions (in addition to the Heavy Summer and Heavy Winter cases).

Table 3.3 P0 Quantitative Results

Quantitative Results - P0 Results in MW (Green shaded stations are low risk; yellow shaded stations are medium risk)								
Substation	2030 Heavy Summer		2030 Heavy Winter		2030 Light Spring		Maximum ESS Size	
	Generating	Charging	Generating	Charging	Generating	Charging	Generating	Charging
Alderton	725	(790)	872	(823)	886	(998)	725	(790)
Berrydale	982	(248)	1077	(273)	1031	(569)	982	(248)
Christopher	751	(419)	1031	(648)	842	(622)	751	(419)
Frederickson	432	(316)	485	(440)	404	(466)	404	(316)
Fredonia	510	(803)	679	(873)	538	(878)	510	(803)
Lake Tradition	725	(534)	993	(701)	888	(837)	725	(534)
March Point	664	(367)	834	(367)	701	(412)	664	(367)
Midway	550	(263)	711	(333)	558	(368)	550	(263)
Saint Clair	520	(546)	756	(732)	810	(854)	520	(546)
Sammamish	409	(677)	517	(818)	546	(702)	409	(677)
Talbot Hill	754	(768)	935	(916)	834	(896)	754	(768)
Tono	755	(445)	567	(524)	548	(699)	548	(445)
Bellingham	695	(578)	1028	(894)	809	(1072)	695	(578)
Krain Corner	250	(222)	480	(351)	377	(308)	250	(222)
O'Brien	681	(554)	807	(694)	672	(627)	672	(554)
Portal Way	443	(565)	441	(772)	337	(740)	337	(565)
S. Bremerton	426	(328)	471	(341)	457	(420)	426	(328)
Sedro Woolley	779	(950)	935	(1134)	867	(995)	779	(950)
Starwood	573	(335)	693	(341)	637	(578)	573	(335)
White River	872	(802)	1029	(945)	955	(887)	872	(802)

Charging limits have a parenthetical () used in order to clearly indicate that the number is a charging (i.e. load) value. The maximum ESS sized is determined by the maximum size that the ESS can operate for all cases. Therefore, the minimum value between the three seasonal cases determines the maximum ESS size for performance under P0 conditions.

Table 3.4 P1 Quantitative Results

Quantitative Results – P1 Results in MW (Green shaded stations are low risk; yellow shaded stations are medium risk)								
Substation	2030 Heavy Summer		2030 Heavy Winter		2030 Light Spring		Maximum ESS Size	
	Generating	Charging	Generating	Charging	Generating	Charging	Generating	Charging
Alderton	96	(366)	510	(581)	529	(655)	96	(366)
Berrydale	756	(167)	848	(181)	702	(437)	702	(167)
Christopher	552	(217)	758	(362)	613	(386)	552	(217)
Frederickson	135	(96)	308	(314)	266	(388)	135	(96)
Fredonia	110	(532)	161	(619)	124	(585)	110	(532)
Lake Tradition	518	(136)	811	(425)	664	(545)	518	(136)
March Point	272	(214)	555	(189)	485	(271)	272	(189)
Midway	432	(164)	530	(207)	446	(262)	432	(164)
Saint Clair	45	(254)	239	(423)	311	(685)	45	(254)
Sammamish	323	(99)	411	(370)	495	(425)	323	(99)
Talbot Hill	552	(242)	741	(459)	688	(590)	552	(242)
Tono	437	(85)	275	(374)	282	(543)	275	(85)
Bellingham	322	(109)	545	(452)	384	(656)	322	(109)
Krain Corner	136	(34)	250	(88)	188	(112)	136	(34)
O'Brien	535	(258)	634	(276)	559	(401)	535	(258)
Portal Way	105	(446)	392	(628)	284	(614)	105	(446)
S. Bremerton	313	(89)	301	(27)	375	(185)	301	(27)
Sedro Woolley	287	(589)	577	(715)	450	(700)	287	(589)
Starwood	373	(181)	545	(250)	459	(299)	373	(181)
White River	583	(379)	838	(434)	715	(592)	583	(379)

Charging limits have a parenthetical () used in order to clearly indicate that the number is a charging (i.e. load) value. The maximum ESS sized is determined by the maximum size that the ESS can operate for all cases. Therefore, the minimum value between the three seasonal cases determines the maximum ESS size for performance under P1 conditions.

Table 3.5 P6 Quantitative Results

Quantitative Results – P6 Results in MW (Green shaded stations are low risk; yellow shaded stations are medium risk)								
Substation	2030 Heavy Summer		2030 Heavy Winter		2030 Light Spring		Maximum ESS Size	
	Generating	Charging	Generating	Charging	Generating	Charging	Generating	Charging
Alderton	134*	(76*)	448	(205)	324	(290)	134*	(76*)
Berrydale	515*	(52*)	847	(90)	707	(336)	515*	(52*)
Christopher	484*	(57*)	756	(337)	610	(386)	484*	(57*)
Frederickson	99*	(86*)	275	(284)	222	(389)	99*	(86*)
Fredonia	9*	(378)	101	(421)	69	(479)	9*	(378)
Lake Tradition	521*	(44*)	805	(387)	664	(545)	521*	(44*)
March Point	9*	(54)	201	(62)	172	(78)	9*	(54)
Midway	428*	(56*)	512	(121)	444	(218)	428*	(56*)
Saint Clair	39*	(412)	147	(528)	159	(633)	39*	(412)
Sammamish	323	(46*)	411	(370)	495	(445)	323	(46*)
Talbot Hill	450*	(48*)	622	(359)	833	(896)	450*	(48*)
Tono	592	(122*)	267	(339)	548	(698)	267	(122*)
Bellingham	10*	(108)	418	(67)	382	(657)	10*	(67)
Krain Corner	136*	(34*)	178	(4*)	188	(112)	136*	(4*)
O'Brien	520*	(54*)	225	(176*)	560	(521)	225	(54)
Portal Way	11*	(446)	185	(362)	298	(614)	11*	(362)
S. Bremerton	314	(89*)	79	(23*)	375	(185)	79	(23*)
Sedro Woolley	48*	(590)	519	(622)	447	(755)	48*	(590)
Starwood	370*	(13*)	240	(107*)	460	(311)	240	(13*)
White River	365*	(13*)	382	(121*)	714	(750)	365*	(13*)

Charging limits have a parenthetical () used in order to clearly indicate that the number is a charging (i.e. load) value. The maximum ESS sized is determined by the maximum size that the ESS can operate for all cases. Therefore, the minimum value between the three seasonal cases determines the maximum ESS size for performance under P6 conditions. Those limits with an asterisk (*) indicate that a pre-existing limit was ignored, and the first non-zero ATC transfer limit was recorded for the ESS charging and discharging contingency-based limit.

4. Analysis

A review of Table 3.2, Table 3.3, and Table 3.4, indicate to the user the following:

- A single ESS performs for both discharging (generator) and charging (load) depending upon the substation location
 - Between 248 MW – 802 MW under P0 conditions
 - Between 45 MW – 434 MW for P1 conditions
 - Between 9 MW – 122 MW for P6 conditions
- Summer ratings can be most limiting and generally (but not always) summer may be the defining season for limiting an ESS.
 - This is due to limits being thermally based and higher summer temperatures causing derating of thermally limited equipment.
- Pre-existing conditions exist that should be examined in greater detail if any of these ESS locations are considered for interconnection.
- Limitations exist for P6 summer operations
 - Note that for ESS limits indicated with an asterisk (*) in the tables indicate there pre-existing P6 issues may exist.
- Some P6 contingencies may, surprisingly, perform better than P1 contingencies
 - The reasons for this are complex but, in many cases, the P1 limiting element is removed from service by the P6 contingency and thus a higher limiting element is relevant.

Table 4.1 shows the results for each substation on a contingency category bases, and also shows the maximum size for the ESS when generating or charging. Similarly, to before, the maximum size is the minimum value across the three contingency categories (i.e. P0, P1, and P6).

Further, the table shows the Total Maximum size of the ESS. The Total Maximum size is the minimum value (absolute) between the generating and charging values and represents the maximum size of the ESS that allows for unconstrained use during varying seasonal load conditions, varying operating conditions, and varying contingencies. The Total Maximum size is the value used to show the potential ESS size that might be achieved for NRIS while limiting the risk of additional costly network upgrades (transmission line rebuilds / reconductoring, etc.) outside of those required for interconnection to the substation.

The Operational Agreements determined with the developer could increase the Total Maximum size beyond the P6 charging limitations of the ESS listed in the table below.

Table 4.1 Combined Quantitative Results

Substation	Substation Type	P0 Results		P1 Results		P6 Results		Maximum ESS		Total Maximum
		Generating	Charging	Generating	Charging	Generating	Charging	Generating	Charging	
Alderton	Main & Aux	725	(790)	96	(366)	134*	(76*)	96	(76*)	76*
Berrydale	Main & Aux	982	(248)	702	(167)	515*	(52*)	515*	(52*)	52*
Christopher	Main Bus	751	(419)	552	(217)	484*	(57*)	484*	(57*)	57*
Frederickson	Main Bus	404	(316)	135	(96)	99*	(86*)	99*	(86*)	86*
Fredonia	Main Bus	510	(803)	110	(532)	9*	(378)	9*	(378)	9*
Lake Tradition	Main Bus	725	(534)	518	(136)	521*	(44*)	518	(44*)	44*
March Point	Main & Aux	664	(367)	272	(189)	9*	(54)	9*	(54)	9*
Midway	Main & Aux	550	(263)	432	(164)	428*	(56*)	428*	(56*)	56*
Saint Clair	Main & Aux	520	(546)	45	(254)	39*	(412)	39*	(254)	39*
Sammamish	Main & Aux	409	(677)	323	(99)	323	(46*)	323	(46*)	46*
Talbot Hill	Main & Aux	754	(768)	552	(242)	450*	(48*)	450*	(48*)	48*
Tono	Main & Aux	548	(445)	275	(85)	267	(122*)	267	(85)	85
Bellingham	Brk & half	695	(578)	322	(109)	10*	(67)	10*	(67)	10*
Krain Corner	Main Bus	250	(222)	136	(34)	136*	(4*)	136*	(4*)	4*
O'Brien	Main & Aux	672	(554)	535	(258)	225	(54*)	225	(54*)	54*
Portal Way	Main & Aux	337	(565)	105	(446)	11*	(362)	11*	(362)	11*
S. Bremerton	Main & Aux	426	(328)	301	(27)	79	(23*)	79	(23*)	23*
Sedro Woolley	Main & Aux	779	(950)	287	(589)	48*	(590)	48*	(589)	48*
Starwood	Main Bus	573	(335)	373	(181)	240	(13*)	240	(13*)	13*
White River	Main & Aux	872	(802)	583	(379)	365*	(13*)	365*	(13)	13*

Those limits with an asterisk (*) indicate that a pre-existing limit was ignored, and the first non-zero ATC transfer limit was recorded for the ESS charging and discharging contingency-based limit. As stated above, the Operational Agreements determined with the developer could increase the Total Maximum size beyond the P6 charging limitations of the ESS.

Table 4.2 shows a summary of the results for this effort. The table provides the reader with a convenient listing of the Total Maximum ESS output and the location of the electrical point of interconnection studied, as well as substation type, and operating voltage.

Table 4.2 Location Summary with Maximum ESS Results

Substation	Substation Type	Voltage (kV)	Location		Total Maximum ESS (MW)
			Latitude	Longitude	
Alderton	Main & Aux	115	47.15344	-122.2365	76
Berrydale	Main & Aux	115	47.37803	-122.1311	52
Christopher	Main Bus	115	47.33708	-122.2393	57
Frederickson	Main Bus	115	47.08061	-122.3647	86
Fredonia	Main Bus	115	48.45461	-122.4371	9
Lake Tradition	Main Bus	115	47.53069	-122.0117	44
March Point	Main & Aux	115	48.45714	-122.5625	9
Midway	Main & Aux	115	47.40239	-122.2944	56
Saint Clair	Main & Aux	115	47.03511	-122.7356	39
Sammamish	Main & Aux	115	47.68558	-122.1499	46
Talbot Hill	Main & Aux	115	47.46864	-122.191	48
Tono	Main & Aux	115	46.75539	-122.8775	85
Bellingham	Brk & half	115	48.75939	-122.4604	10
Krain Corner	Main Bus	115	47.23511	-121.9855	4
O'Brien	Main & Aux	115	47.40317	-122.2432	54
Portal Way	Main & Aux	115	48.90361	-122.63	11
S. Bremerton	Main & Aux	115	47.53764	-122.6914	23
Sedro Woolley	Main & Aux	115	48.50458	-122.204	48
Starwood	Main Bus	115	47.29039	-122.3623	13
White River	Main & Aux	115	47.239	-122.2096	13

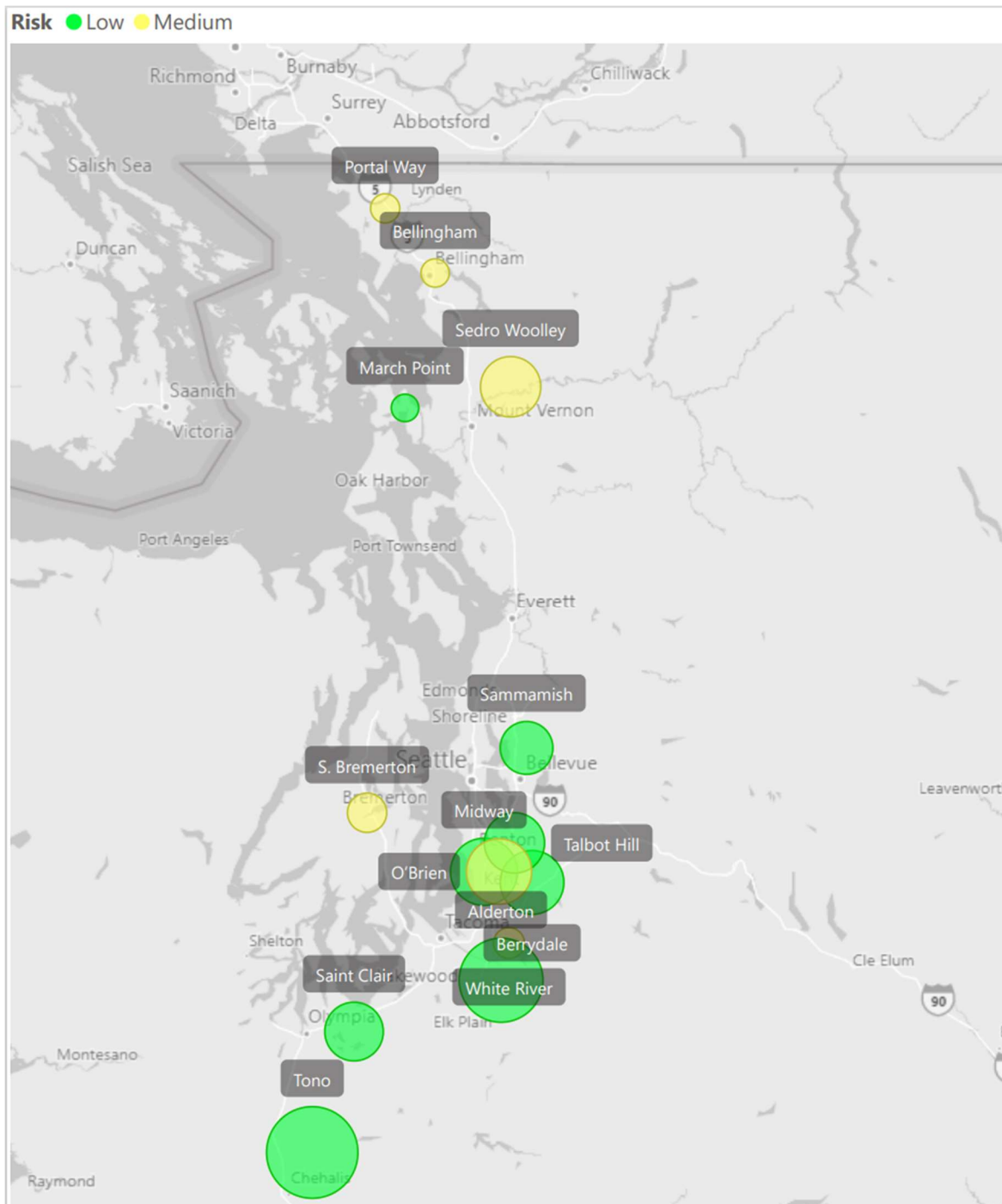
As discussed previously, the main bus substation configuration (without an aux bus) has questionable reliability and interconnecting at a main bus substation has the potential to result in the need for high network costs to rebuild the substation. The substations that are configured with just a main bus (with no aux bus) were removed from the results to create the final results table as shown in Table 4.3. The table provides the reader with a convenient listing of the Maximum ESS output and the location of the electrical point of interconnection studied, as well as substation type, and operating voltage.

Table 4.3 Final Results Table

Substation	Substation Type	Voltage (kV)	Location		Total Maximum ESS (MW)
			Latitude	Longitude	
Alderton	Main & Aux	115	47.15344	-122.2365	76
Berrydale	Main & Aux	115	47.37803	-122.1311	52
March Point	Main & Aux	115	48.45714	-122.5625	9
Midway	Main & Aux	115	47.40239	-122.2944	56
Saint Clair	Main & Aux	115	47.03511	-122.7356	39
Sammamish	Main & Aux	115	47.68558	-122.1499	46
Talbot Hill	Main & Aux	115	47.46864	-122.191	48
Tono	Main & Aux	115	46.75539	-122.8775	85
Bellingham	Brk & half	115	48.75939	-122.4604	10
O'Brien	Main & Aux	115	47.40317	-122.2432	54
Portal Way	Main & Aux	115	48.90361	-122.63	11
S. Bremerton	Main & Aux	115	47.53764	-122.6914	23
Sedro Woolley	Main & Aux	115	48.50458	-122.204	48
White River	Main & Aux	115	47.239	-122.2096	13

Figure 4.1 gives an approximate location of the substations with low and medium risk for interconnection. The figure shows that there are many opportunities throughout the native PSE system for interconnecting an ESS.

Figure 4.1 Location of Selected Stations



5. Conclusions and Recommendations

PSC believes that opportunities exist for Puget Sound Energy to install Energy Storage Systems in several stations without undue impact (or required network upgrades) to the surrounding electrical transmission system. We base this conclusion of performance under P6 outages during heavy summer and winter peak load conditions, as required for Network Resource Interconnection Service for use as a capacity resource on PSE's transmission system.

As previously stated, the results of this effort are to be used to help guide proponents to locations (with approximate capacities) that might offer success for interconnection of an ESS for NRIS with limited network upgrades. The formal LGIA process, as detailed under the Puget Sound Energy FERC Open Access Transmission Tariff (OATT), will define required system interconnection upgrades and any potential network upgrades as a result of the more detailed studies (power flow and transient), impacts of projects already in the interconnection queue, affected neighbouring transmission providers, and short circuit analysis.



Puget Sound Energy service area

PSE: Washington's oldest local energy utility

Electric service:

All of Kitsap, Skagit, Thurston, and Whatcom counties; parts of Island, King (not Seattle), Kittitas, and Pierce (not Tacoma) counties.

Natural gas service:

Parts of King (not Enumclaw), Kittitas (not Ellensburg), Lewis, Pierce, Snohomish, and Thurston counties.

Washington state's oldest local energy company, Puget Sound Energy serves approximately 1.1 million electric customers and nearly 840,000 natural gas customers in 10 counties. A subsidiary of Puget Energy, PSE meets the energy needs of its customers, in part, through incremental, cost-effective energy efficiency, procurement of sustainable energy resources, and far-sighted investment in the energy-delivery infrastructure. PSE employees are dedicated to providing great customer service and delivering energy that is safe, dependable and efficient.

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