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Green Team Sustainability Report

November 29, 2021

To: Tumwater City Council
From: City of Tumwater Green Team
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Background

In 2018, the City adopted several new strategic priorities, including Strategic Priority F: Be a Leader in Environmental Sustainability. With direction from City leadership, City staff from various departments formed the Green Team in early 2019. The City's focus on sustainability was further prioritized in August of 2020. With the reorganization of the Public Works Department, sustainability was emphasized with the creation of the Water Resources and Sustainability Department.

The Green Team prepared this report which calculates the City's current practices related to climate, water, energy, transportation, and solid waste. This is the second consecutive Green Team Sustainability Report and 2020 metrics are compared to 2019 metrics. In addition, this report provides recommendations to meet sustainability goals, updates on ongoing projects, and future policies, projects, or programs that can help meet the City's strategic priorities. This information can help inform City decision-makers as they evaluate sustainability initiatives to meet climate and environmental objectives.

Climate

Greenhouse Gas Emissions

The City of Tumwater produced 3,637 metric tons of CO₂ in 2020. The largest sources of operational emissions were from well pumping (48%), electricity (ELE) and natural gas (NG) use in buildings/facilities (21%), and fleet vehicles (13%) as shown below in Figure 1. Compared to 2019, the largest decreases in emissions came from reductions in gas and diesel usage, as well as general electricity as the City began using green energy from the Skookumchuk Wind Farm in November of 2020. In total, emissions decreased by 453 metric tons of CO₂ in 2020 compared to 2019, it remains unknown how much of this reduction is due to the Covid-19 pandemic.

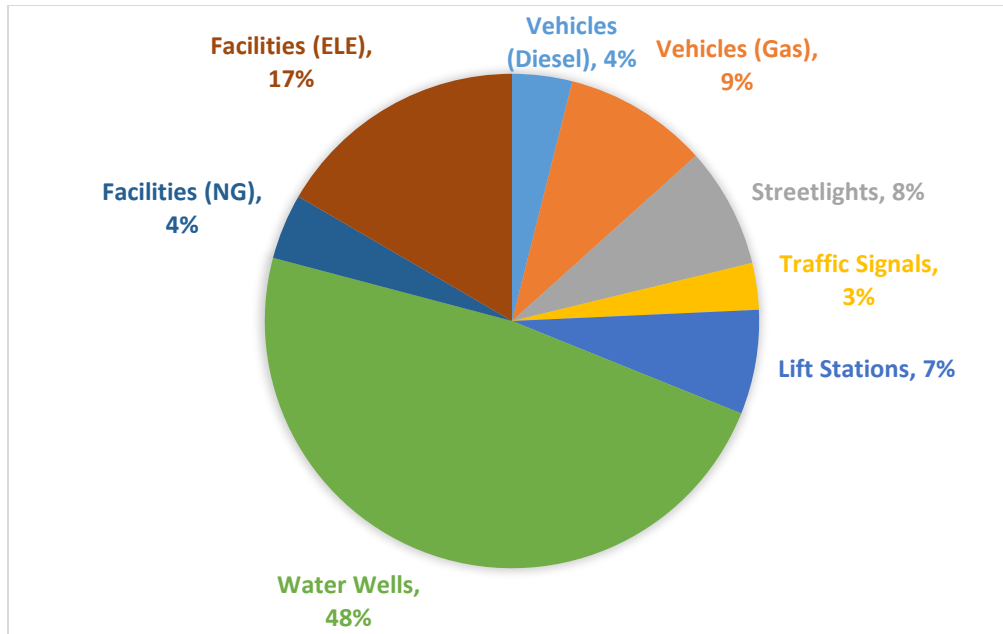


Figure 1: Sources of City GHG Emissions in 2020

Fuel Usage

The vast majority of City vehicles use gasoline or diesel fuel. In 2020, vehicles used 62,513 gallons of gas, an approximate 7,000 gallon decrease from the year before. Figures 2 and 3 show the percentage of fuel used by each department. The police department was still the largest user, accounting for over 47% of the total, while the largest decrease came from the Transportation & Engineering (TED) and Water Resources & Sustainability (WRS), formerly known collectively as the Public Works Department. Much of these decrease in gas usage across the board can likely be attributed to reduced travel and in-office work as a result of the Covid-19 pandemic. Diesel usage reduced by roughly 2,000 gallons between 2020 and 2019. WRS and the Fire Department lead the way in diesel usage, at 39% and 33% respectively, as seen in Figure 3. The City is moving towards using more biodiesel and renewable diesel, both of which produce fewer emissions than standard diesel. While fuel usage decreased in 2020, usage has been on an upward trend, with fuel use increasing 18% from 2014.

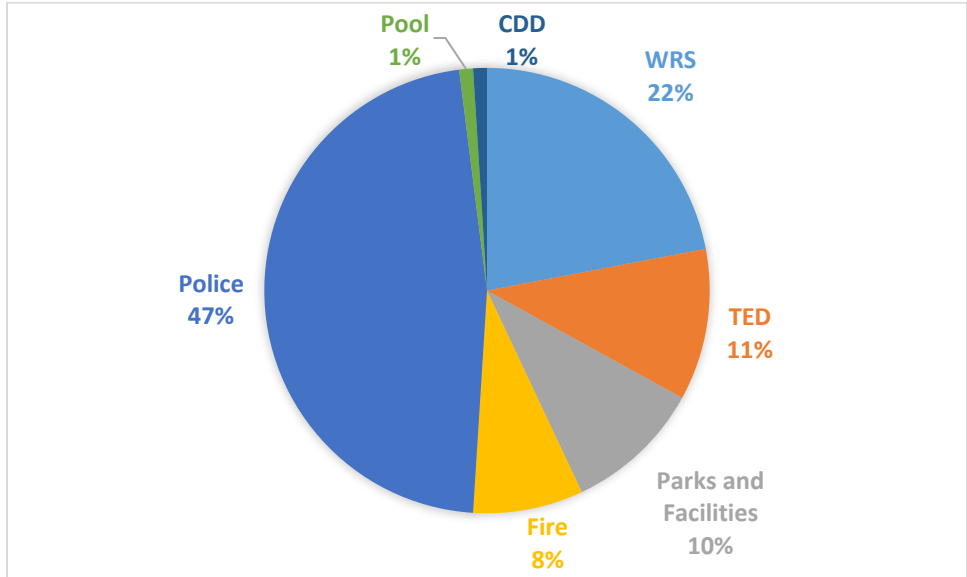


Figure 2 – Gasoline Usage by City Department in 2020

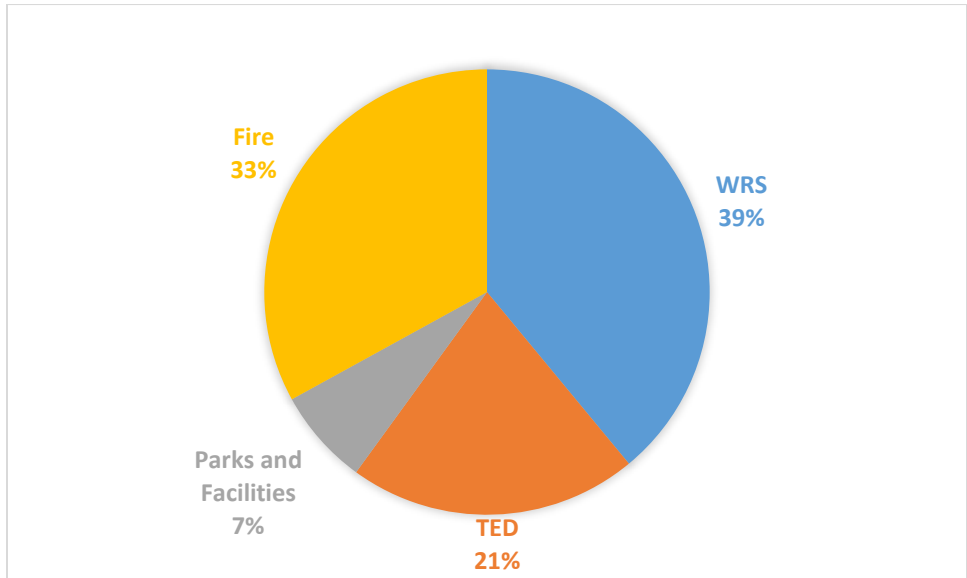


Figure 3: Diesel Usage by City Department in 2020

The City has taken steps to increase the number of electric vehicles in the fleet. In November of 2020, City Administrator Doan sent an email to all department directors stating that electric vehicles should be prioritized for any new vehicle purchases. Departments will now need to justify the use of a non-electric vehicle on future purchases. The City currently has one all electric vehicle, but this number is expected to increase over the coming years. Currently, few electric vehicle options are available for larger vehicles used by the TED and WRS operations divisions, such as vector trucks and street sweepers, but technological advances are occurring quickly and may make this possibility a reality sooner rather than later. This switch to more

electric vehicles coupled with the City now receiving clean electric energy has the potential to greatly reduce our annual carbon footprint.

Vehicle Type	2019	2020
% of gas-fueled vehicles	85%	76%
% of diesel-fueled vehicles	9%	16%
% of hybrid vehicles	5%	8%
% of electric vehicles	1%	1%

Table 1 – Percentage of Vehicle Types per Year

Energy Efficiency

Natural Gas

In 2020, the City used 33,955 therms of natural gas. The majority of the natural gas was used by City Hall, Fire Stations, and the Operations building. This was a 4,574 therm increase over 2019 usage. While natural gas is considered a cleaner source of energy compared to coal, it still emits carbon dioxide, and contributed 4% of total City greenhouse gas emissions in 2020. In general natural gas use peaks during the colder winters months to help heat buildings and facilities. Increases in natural gas use could be attributed to more doors open to the outside for group meetings while trying to maintain social distancing.

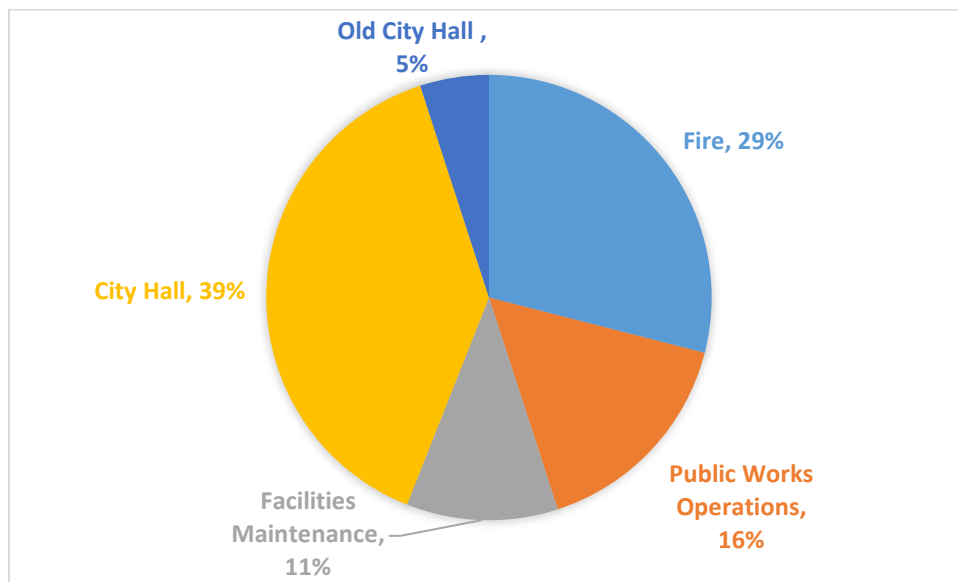


Figure 4 – Natural Gas Use for City Facilities in 2020

Electricity

City buildings/facilities used 5.3 million kWh of electricity in 2020, 97,947 kWh less than the previous year. Approximately 66.58% was used for water supply and movement, 20.16% for buildings and facilities, and 13.27% for streetlights and signals.

City Operations	Type	kWh Used in 2020
Water Supply & Movement	Water Wells	3,101,030
	Lift Stations	440,646
Buildings & Facilities	Buildings/Facilities	1,072,213
Streetlights & Signals	Street Lights	508,383
	Traffic Signals	197,253

Table 2 – Electricity use in City Operations in 2020

Electricity used in lift stations and street lights attributed to the overall small increase in electricity usage in 2020. In average, City electricity usage has decreased since 2014, due to improvements such as converting all City of Tumwater owned streetlights to LED bulbs. Electricity usage does vary throughout the season, as seen in figure 5, but the Covid-19 pandemic does not appear to have had a big effect on energy usage.

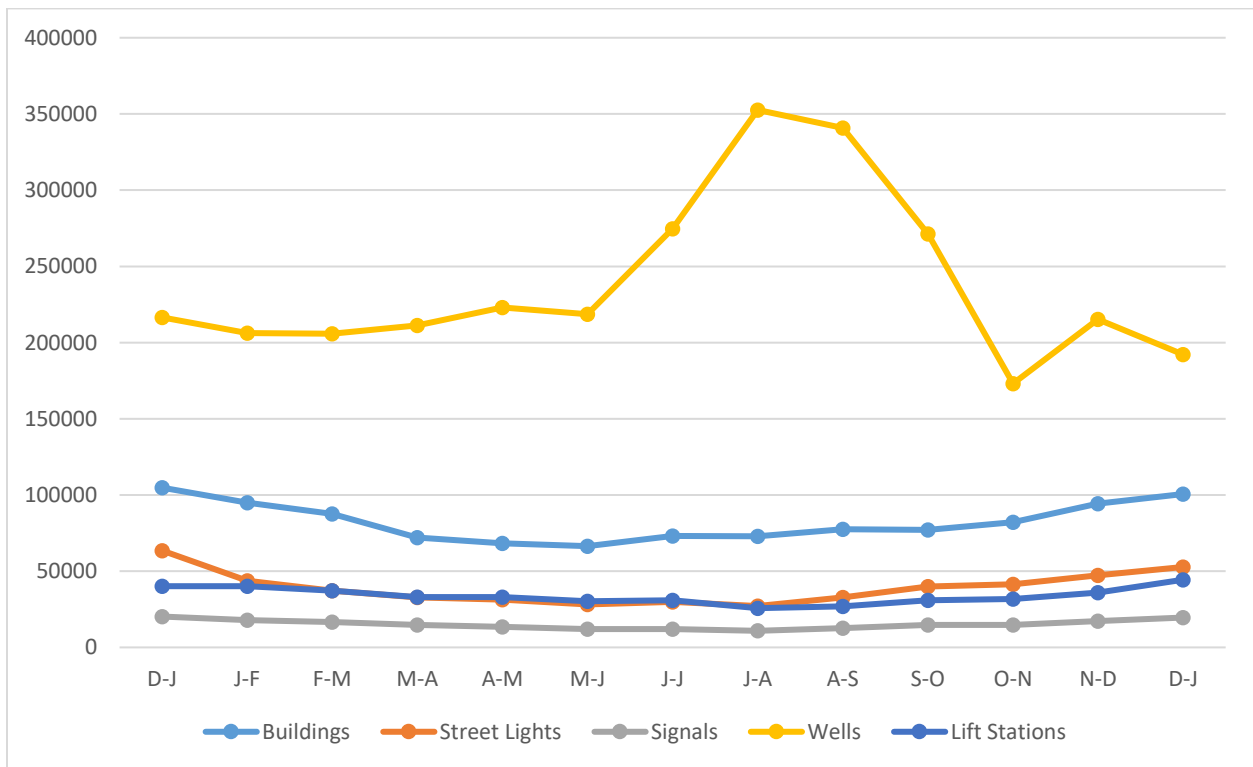


Figure 5 – Electricity Use in Each Sector by Month in 2020

Renewable Energy

PSE Power Purchase

The City has participated in Puget Sound Energy’s (PSE) Green Power program for a number of years. By funding this program, the City helps fund renewable energy facilities including wind

power, solar power, bio, geothermal, and landfill gas. Through this program the City of Tumwater has been investing in the Skookumchuck Wind Project, an approximately 19,500 acre project located along the border of Thurston and Lewis counties. Construction on this project began in May of 2019 and finished November 7, 2020. The City of Tumwater started receiving energy from the project in November, and used 176 megawatt hours of electricity from this source in 2020. The energy produced by the wind project in 2020 helps to keep 118,103 lb of CO₂ from entering the atmosphere.

Solar Power

In 2020, the solar panels at City Hall produced enough electricity to offset 2% of the total electricity used by City buildings and facilities. Since the solar panels were purchased, the cost of solar power has decreased significantly. The Green Team has suggested installing additional solar panels around the City, at places such as lift stations and wells to generate more solar power.

Transportation

The City partners with Thurston Regional Planning Council to run the Commute Trip Reduction Program, aimed at incentivizing employees to reduce the number of trips made to and from work each week in single-occupancy vehicles. Due to the ongoing Covid-19 pandemic, teleworking and flexible schedules has dramatically increased after March 2020. Throughout the pandemic, the City had 73 employees who were able to telework at least one day per week, while many more employees reduce their commute to work by one day or more days every two weeks by participating in an alternative or flex schedule.

Water

In 2020, the City used 20 million gallons of water for both indoor/outdoor water use. Out of the 20 million gallons used by the City in 2020, 5.5% was used inside City facilities, while the vast majority (94.5%) was used as irrigation in parks, medians, and right of ways.

Indoor Water Use

Indoor City water use generally stays the same across the years, while some fluctuations occur as improvements like automatic faucets are implemented. Water use is broken down by location in figure 6, with indoor water use at the Golf Course accounting for 38% of the total water use.

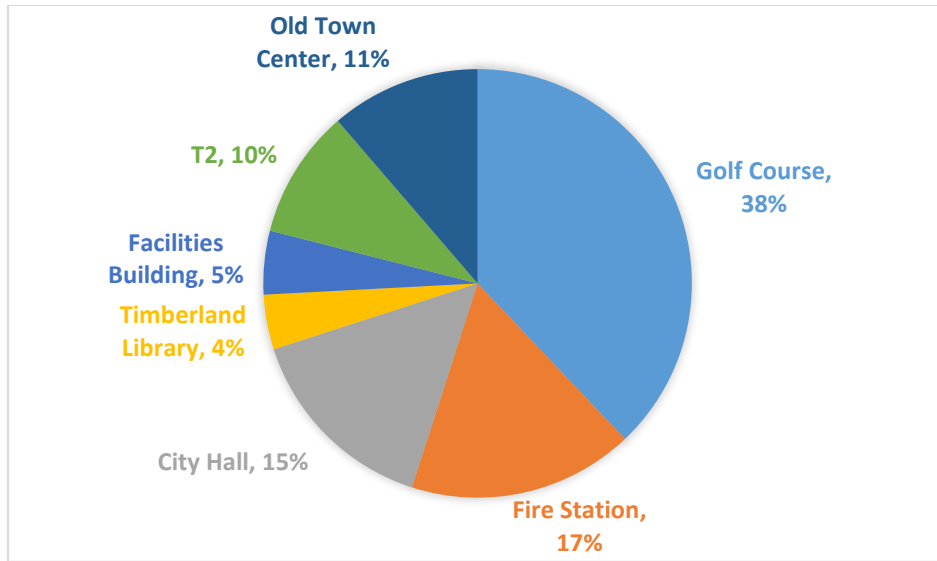


Figure 6 – Indoor City Water Use in 2020

Water use in buildings and facilities that were not deemed essential to be open or to have staff in person (such as the Golf Course and City Hall) reduced dramatically between April and July as employees were sent home due to the Covid-19 pandemic, as shown in figure 7.

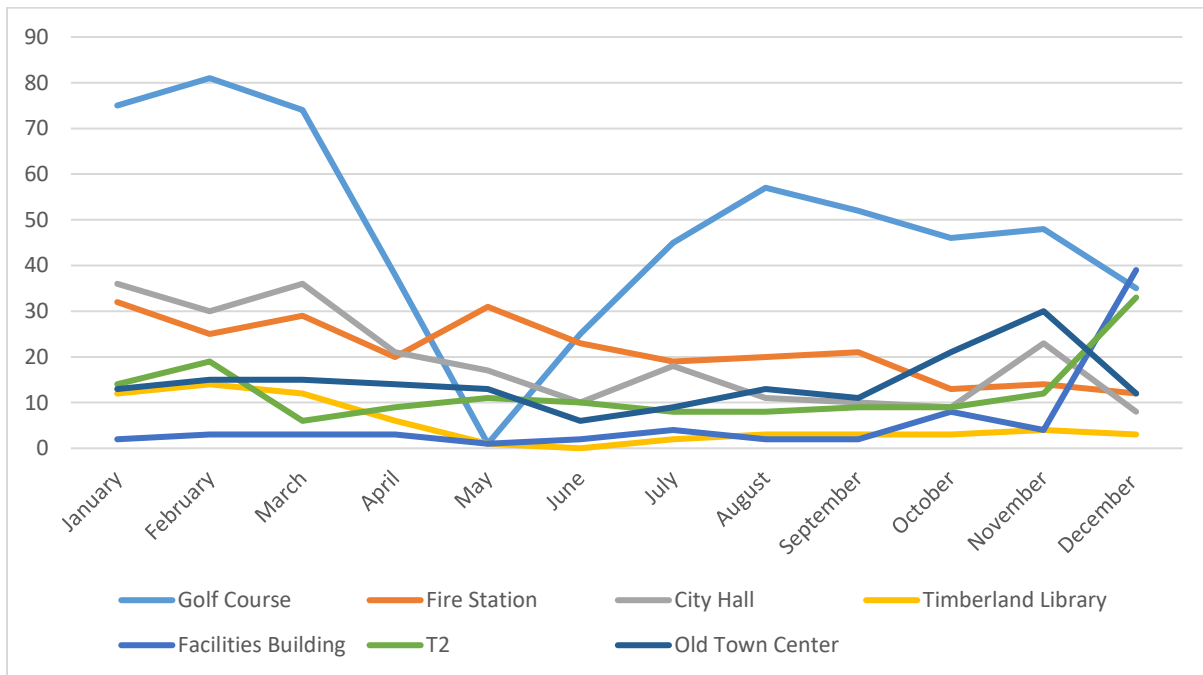


Figure 7 – Indoor Water Use Each Month of 2020

Outdoor Water Use

In 2020, the City used 18.9 million gallons of potable water to irrigate parks, right of ways/medians, and building landscaping. Of the total amount of water used, 47% went to irrigating landscaping along City owned right-of-ways and medians, while 34% was used by

parks and 19% for building landscaping, as seen in figure 8. There was a 1.1 million gallon reduction in water used outdoors in 2020 compared to 2019. Part of this reduction might be the result of the City’s Water Resources and Sustainability Operations crews achieving less than a 5% leak loss throughout the City in 2020. Outdoor water use tends to be fairly similar year to year, however, 2020 water use was the lowest in the last five years, as shown in figure 9.

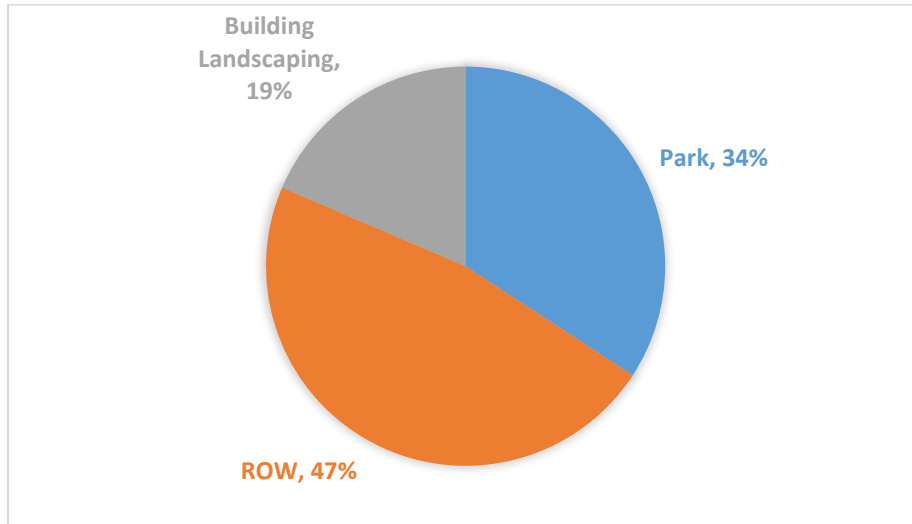


Figure 8 – Outdoor City Water Use in 2020

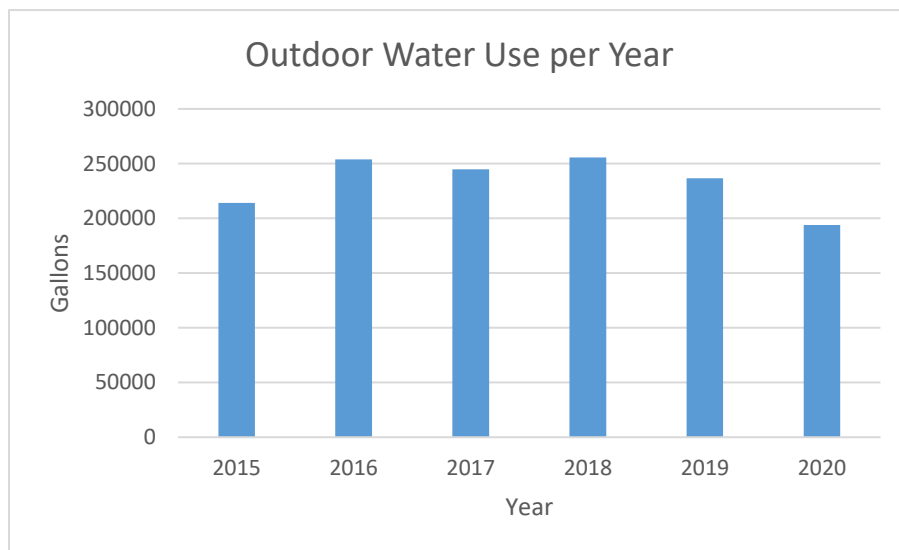


Figure 9 – Outdoor City Water Use Each Year

Reclaimed Water

In 2020, the City used 30 million gallons of reclaimed water at the golf course. Use of reclaimed water is a best management practice for water use management at golf courses, and is a great use of water that has been used once, cleaned to a high level, and can then be used again. Water use at the Golf Course reduced by almost 17% in 2020 compared to 2019. In May of 2020, the Golf

Course finalized a Water Conservation Plan which aimed to reduce excess water use as part of its ongoing Salmon-Safe Certification requirements. The plan includes recommendations to plant native/drought-tolerant vegetation, irrigation system modernization, priority zoning of irrigation during drought conditions, and improvements to soil quality.

Solid Waste

Due to the ongoing Covid-19 pandemic, the Green Team has been unable to perform a waste audit to determine how much waste the City is producing at buildings and facilities. Thurston County is a potential partner in this effort, as their solid waste team has experience performing waste audits with other groups. Once a more regular work schedule is established for City employees, a waste audit should be completed to determine baseline metrics for solid waste, recycling, and composting. The City has a contract with LeMay Pacific to pick up and dispose of our waste, however, LeMay does not weigh the amount of refuse in dumpsters that are smaller than 20 yards, and they only charge a flat fee.

Sustainability Goals

1. Reduce greenhouse gas emissions produced by City activities 45% below 2015 levels by 2030; approximately 3% per year. In 2015 the City produced 3,793 metric tons of CO₂, which means annual emissions must be below 2,086.15 metric tons to meet our goal.
 - a. 2015-2020: Net 4.113% decrease in emissions over five years.
2. Increase the percentage of renewable energy being used by City activities and reduce electricity usage 2% per year; or 20% by 2030 from 2019 levels.
 - a. November 2020, the City started receiving 100% renewable energy
 - b. 2019-2020: Net 1.8% decrease in electricity usage.
3. Increase employee alternative transportation participation during their commutes to work by 30% by 2030.
 - a. 2019-2020:
 - i. Before March 2020, 6% of employees participated in CTR
 - ii. After March 2020, NA as employees schedules were changed due to the Covid-19 pandemic.
4. Reduce water use 3% per year from City activities from 2019 levels.
 - a. 2019-2020: Net 11.4% decrease in water use.
5. Reduce solid waste (garbage) produced by City activities by 10% by 2030.
 - a. 2019-2020: No baseline data.



Appendix A

Top Sustainability Priorities in 2021

This document contains a detailed list of the top sustainability priorities for 2021 as selected by the City of Tumwater's Green Team. Ideas are from the 2020 list of Projects, Programs, and Policies which can be found attached to this document. Each project has an implementation plan identifying City-wide leads, highlighted in yellow, along with stakeholders, cost, timeline, tracking mechanism, and updates.

CLIMATE

PLANTING MORE TREES - ONGOING

The City of Tumwater will hold at least two planting events per year between October and March with the Tumwater or Stream Team volunteer programs and will plant native trees and shrubs on City-owned property. Necessary maintenance and watering will be provided by City of Tumwater staff or through front end planning (e.g. watering bags).

Coordinators:

- Parks and Recreation
 - Todd Anderson
- Water Resources and Sustainability
 - Meridith Greer

Stakeholders:

- City of Tumwater Tree Board
 - Brad
- Stream Team Volunteer Program
 - Meridith Greer
- City of Tumwater Volunteers
 - Todd Anderson



Funding:

- ~\$9.75 per 1 gallon native tree
- Additional financial resources are available in the City's Tree Fund ~\$2,000 per year
- >\$5,000 projects may be funded through state grants like Salmon Recovery Funding Board or the Terry Husseman Account with the Department of Ecology

Timeline:

- Immediate and ongoing
- Plantings should take place during the ideal planting window for Western Washington, October – March

Progress Tracking:

- Track # and type of trees and shrubs
- Use tools like iTree to calculate benefits of new plantings each year including carbon sequestration estimates

Update:

- February 5, 2021, Parks and Recreation staff partnered with students at the Farm Fresh program to plant 450 willow stakes at Isabella Bush Park.
- Earth Day, the Tree Board handed out 40 seedlings, removed invasive species, and plants some shrubs and a redwood tree.
- October 26 and 27, 2021, Parks and Recreation staff partnered with students at the Farm Fresh program to plant 20 native trees and numerous bulbs at Isabella Bush Park.

RENEWABLE DIESEL - ONGOING

Switch from regular diesel to renewable diesel. Order renewable diesel from Associated Petroleum to have delivered to City of Tumwater fueling stations when it is available starting in the second quarter of 2021.

Coordinators:

- Transportation and Engineering
 - Marc LaVack

Stakeholders:

- Water Resources and Sustainability
 - Dan Smith
- Fire Department
 - Shane Brady
- Parks and Recreation
 - Todd Anderson



Cost:

- \$6.50 increase in cost per gallon from regular to renewable diesel, regular diesel is ~\$2.50 per gallon

Timeline:

- Implemented!

Progress Tracking:

- Track number of gallons of renewable diesel used by City vehicles and equipment
- Track cost per year of renewable diesel used

Update:

- Marc LaVack headed up this effort and implemented this project in March 2021. Marc as well as the Green Team were given a shout out in the March 17, 2021 [Inside the City Newsletter](#) (pg. 3).
- July 13, 2021, we have only received one delivery so far, it's proving to be very hard to get

Recommended Action: Discuss with other local jurisdictions the possibility of using renewable diesel to create more regional need for this alternative.

ELECTRICITY

REDUCE HOURS OR DAYS OF OPERATION AT CITY HALL - ONGOING

Move City Hall hours of operations to fewer days per week. Reducing the number of days that City facilities are running at full capacity can help reduce CO₂ emissions, energy consumption, and water use. In addition, create a Green at Home list of resources that City employees can implement at home to reduce their carbon footprint, electricity use, water use, and waste production.

Coordinators:

- Executive Department
 - Tameka Brice

Stakeholders:

- Elected Officials
 - Mayor Kmet
- City Hall Department Directors
 - Dan Smith
 - Brandon Hicks
 - Chuck Denny
 - Heidi Behrends Cerniwey
 - Keren Kirpatrick
 - Mike Matlock
 - Diane Marcotte



Cost:

- Unknown

Timeline:

- Unknown

Progress Tracking:

- Continue tracking City related emissions for 2021
- Track number of days City Hall is open to the public and staff

Update:

- On March, 29, 2021, John Doan announced to City Staff that Tumwater City Hall would reopen on a modified schedule to the public. Starting April 13th, City Hall will be open Tuesday-Thursday from 11am-3pm. City executives will continue to monitor City Hall hours and the ongoing Covid-19 pandemic as they work to keep staff and members of the public safe.
- Meridith is still in the process of attempting to calculate the carbon footprint and water usage per day City Hall is open and fully functioning.
- City Hall has new official hours of operations
 - Tuesday - Thursday 11am - 3pm

UTILITY ENERGY AUDIT - NOT STARTED

Partner with Puget Sound Energy and the Green Team to complete a year-long energy audit to determine opportunities for increased energy efficiencies in all City buildings and facilities. Once audit is complete a list of projects and improvements should be added to the City's Sustainability Plan and implementation plans should be created for each project.

Coordinators:

- Water Resources and Sustainability
 - Meridith Greer
- Executive Department
 - Tameka Brice
- Parks and Recreation
 - Todd Anderson
- Facilities
 - Stan Osborne



Stakeholders:

- All department

Cost:

- Unknown

Timeline:

- Begin audit once City facilities are back on a more normal schedule.

Progress Tracking:

- Track electricity usage across City buildings and facilities
- Track electricity related costs

Update:

- Tameka will be reaching out to PSE to see about putting together a training/presentation on energy efficiency at home for City staff.
- Tyler from PSE presented to the Green Team during their September meeting, he is also putting together a presentation for the fall Wellness Fair.

TRANSPORTATION

REWARD STAFF WHO PARTICIPATE IN THE COMMUTE TRIP REDUCTION PROGRAM - ONGOING

Increase the number of staff who participate in the Commute Trip Reduction (CTR) Program by increasing and tailoring incentives to fit City staff needs. Specific reasons Tumwater employees do not participate in CTR programming includes the inconvenience of not having a car, commute taking too long via bus or other mode, and needing a car for family care.

Coordinators:

- Administrative Services Department
 - Melody Valiant

Stakeholders:

- All staff members
- Thurston Regional Planning Council
 - Veronica Jarvis

Cost:

- Unknown



Timeline:

- Program should begin when City staffers are on more regular commuting schedules to City facilities.

Progress Tracking:

- Track the number of City employees
- Track the number of employees who participate in the CTR program
- Continue to track responses to the Commute Trip Reduction Employer Survey Report run every two years by the Thurston Regional Planning Council
 - These reports also include the estimated GHG emissions per employee

Update:

- Melody sent out the Commute Trip Reduction Survey to City staff on November 2nd, this survey will be used to help Tumwater plan for more transportation choices.

WATER

CREATE LANDSCAPING PLANS FOR CITY RIGHT-OF-WAY AND MEDIANS - NOT STARTED

Create plans for City owned right-of-ways and medians that use drought tolerant, native plants, or untraditional alternatives (such as artificial turf) as landscaping to reduce water use and maintenance needs along those areas. Review existing planting plans and planning documents. Work on getting staff who review landscaping plans to look closer at these areas to review plant types, irrigation needs, and maintenance needs.

Coordinators:

- **Transportation and Engineering**
 - **Marc LaVack**
- Water Resources and Sustainability
 - Meredith Greer

Stakeholders:

- Parks and Recreation
 - Todd Anderson
- Executive
 - Tameka Brice
- Tree Board
 - Brad Medrud



Cost:

- Unknown

Timeline:

- These alternatives to traditional vegetation should be implemented in all newly developed medians and right-of-ways. Existing areas should be transitioned as timing and funding allows.

Progress Tracking:

- Track water usage on City owned right-of-way and medians
- Cost of irrigation
- Track staff time maintaining City owned right-of-way and medians

Update:

- Eldon is working on a Capitol Blvd plan (M-E street) that would eliminate the grass and work on different vegetation and drip irrigation systems.

RETROFIT AND UPGRADE CITY IRRIGATION SYSTEMS - NOT STARTED

After the completion of the plans for planting native, drought tolerant, or nontraditional landscapes along City right-of-ways and medians, upgrade or retrofit irrigation systems where appropriate. Innovations to irrigation should also be explored, such as using polymers in soil mixtures.

Coordinators:

- **Transportation and Engineering**
 - **Marc LaVack**
- Water Resources and Sustainability
 - Meridith Greer

Stakeholders:

- Parks and Recreation
 - Jeff Pratt

Cost:

- To retrofit or upgrade all irrigation systems that are in need of an update, it would cost \$136,300. This number will likely decrease as some medians or right-of-ways may no longer require irrigation. Will need to budget for this in the Capitol Facilities Plan.

Timeline:

- Retrofitting and upgrading systems should occur after landscaping plans have been completed for the right-of-way or median.

Progress Tracking:

- Track water usage on City owned right-of-way and medians
- Cost of irrigation
- Track staff time maintaining City owned right-of-way and medians

Update:

- Eldon is working on a Capitol Blvd plan (M-E street) that would eliminate the grass and work on different vegetation and drip irrigation systems.



SOLID WASTE

INSTALL COMPOST RECEPTABLES IN CITY BUILDINGS - ONGOING

Place compost bins in all City departments, especially in lunchrooms and areas where individuals frequently make or eat food. Composting is currently taking place at Old Town Center and potentially the Fire station.

Coordinators:

- Executive Department
 - Tameka Brice
- Parks and Recreation
 - Todd Anderson
- Fire Department
 - Shane Brady
- Police Department
 - Office Rollman



Stakeholders:

- LeMay

Cost:

- Approximately \$20-\$35 extra per month to add one garbage bin sized compost receptacle to our pick-up contract with LeMay.
- Compost could also potentially be used at City Hall if the City Hall Gardens Program begins, reducing the need for LeMay to dispose of the compost.

Timeline:

- Begin implementing as City Hall returns to a more regular work schedule.

Progress Tracking:

- Track approximate weight of organics composted over the first sixth months.
- Survey staff members after sixth months to see the frequency in which they use the compost bins at City facilities.

Update:

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INSTALL RECYCLING AND COMPOST CANS AT CITY PARKS - NOT STARTED

Pilot providing recycling and compost bins at City sponsored events with volunteers serving as “monitors” to assist attendees in placing refuse in the correct bins.

Coordinators:

- Executive Department
 - Tameka Brice
- Parks and Recreation
 - Todd Anderson

Stakeholders:

- Stream Team Volunteers
 - Meridith Greer
- City of Tumwater Volunteers
 - Todd Anderson



Cost:

- Additional staff time may be required to help sort and properly dispose of refuse

Timeline:

- The pilot should launch when holding large events at a single location (such as Brew Fest) becomes safe to do so.

Progress Tracking:

- Waste audits can be performed after events end to determine:
 - How much trash, recycling, and compost was generated by the event
 - The percentage of refuse that was thrown out in the correct bin

Update:

- Kick-In the Grass soccer tournament - third weekend of July
 - We're not able to try this program out during this event, will be looking for future events to work to roll this out.

Appendix B

City of Tumwater Sustainability Projects, Programs, and Policies Breakdown

Updated: December 14, 2021

This document contains a detailed list of projects, programs, and policies that the City of Tumwater’s Green Team has brainstormed to help us reach the sustainability goals laid out by Mayor Kmet and City Council. Projects, programs, and policies are broken down under the five focuses of the Green Team: Climate, Electricity, Transportation, Water, and Solid Waste. All Tumwater related information and data can be found in the 2020 or 2019 Sustainability Reports, other resources are listed as footnotes. WRS – Water Resources and Sustainability; TED – Transportation and Engineering; PR – Parks and Recreation; CDD – Community Development Department; ASD – Administrative Services Department

Climate:

Top 2 priorities as determined by the City of Tumwater’s Green Team:

Project Name	Project Description	Project Coordinator	Project Cost	Project Timeframe (How long will it take to implement)	Anticipated benefit (calculated if possible)	Impact Level	Update
Plant more trees	Plant more trees on Tumwater owned property and along the right of ways	WRS – Meridith Greer Parks and Recreation – Todd Anderson	\$	Immediately and Ongoing	Variable depending on the type and age of the tree. For example, the average mature tree captures 48 pounds of CO ₂ from the air every year in addition to improving air quality and capturing rainfall . Specific costs and benefits for native trees for Tumwater would be slightly different and variable.	High	Ongoing effort
Renewable Diesel	Replacing the use of regular diesel with renewable	TED – Marc LaVack	\$	<6 months	Renewable diesel can provide 80% lower ₂ carbon emissions than traditional diesel . Could reduce City CO ₂ emissions by 163.60 metric tons per year. Currently challenging,	Medium-High	Ongoing effort

¹ <http://www.tenmilliontrees.org/trees/#:~:text=A%20mature%20tree%20absorbs%20carbon,the%20average%20car's%20annual%20mileage.>

² <https://www.worktruckonline.com/320806/everything-you-need-to-know-about-renewable-diesel>

	diesel in City vehicles				but not impossible to get in WA. ³ Price on par with other biodiesels, approx. \$2.94 per gallon, \$0.33 increase in cost ⁴ per gallon than current regular diesel prices .		
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Other priorities as determined by the City of Tumwater’s Green Team

Project Name	Project Description	Project Coordinator (Individual or department)	Project Cost	Project Timeframe (How long will it take to implement)	Anticipated benefit (calculated if possible)	Impact Level
Purchasing electric Public Works trucks	Replace aging vehicles and all newly acquired City vehicles with electric versions when available.	TED	\$\$\$	Immediately and ongoing	City vehicles used 52,288.50 gallons of gasoline and 17,429.50 gallons of diesel in 2019, spending approx. \$200,000 and contributing 818 metric tons of CO ₂ into the atmosphere. 2020 all ₅ -electric Kia Niro (SUV) costs \$24,590 ⁵ TBD electric trucks and other PW vehicles.	Medium
Anti-idle Policy	Creating a City-wide policy that mandates no-idling (aside from necessary times, such as defogging windows) while using City vehicles.	TED	\$	<6 months	No data on current idling practices among City employees, but could help reduce the 818 metric tons of CO ₂ emitted from City vehicles annually. Nationally, 3 billion gallons of gas are wasted, producing 30 ⁶ million tons of CO ₂ from idling vehicles . Green Team are reviewing a draft of a policy now.	High

³ <https://www.government-fleet.com/156621/what-you-need-to-know-about-renewable-diesel>

⁴ <https://afdc.energy.gov/fuels/prices.html>

⁵ <https://www.kia.com/us/en/niro>

⁶ https://afdc.energy.gov/files/u/publication/idling_personal_vehicles.pdf

Building more environmentally friendly facilities	Creating protocols/policies that require green building standards to be followed in all new City facilities	Executive	\$0 to put a policy in place, \$\$\$ to build green facilities	1 year – 5 years	Very hard to quantify, as building prices fluctuate greatly depending on size, specifications, materials, etc.	Medium
Create new development criteria for City Council to pass to encourage greener building development	Create new development criteria for City Council to pass to encourage greener building development in the community	CDD	\$0	<6 months	Hard to quantify offsets.	Medium
Purchase more park land and open spaces	Look into purchasing more open spaces throughout the City to connect neighborhoods and walking paths	PR	\$\$\$	1-5 years	Hard to quantify.	Medium

Green Building Tracking	Develop data methodology to monitor use & impacts of green building incentives, to inform future incentives & develop recommendations for policy & program.	CDD, WRS	\$	5-10 years	Hard to quantify the benefit, but a priority from the Thurston Climate Mitigation Plan.	Unknown
Land Use Incentives	Provide land use incentives (floor area ration, density bonus, height bonus, parking reductions) for zero-net carbon buildings or other applications that dramatically increase energy efficiency.	CDD	\$\$	<5 years	Hard to quantify the benefit, but a priority from the Thurston Climate Mitigation Plan.	Unknown
Group Purchasing	Develop/support a City-sponsored group solar purchasing program.	Executive	\$\$\$	>10 years	Hard to quantify the benefit, but a priority from the Thurston Climate Mitigation Plan.	Unknown

Electric Appliances in New Construction	Update municipal code to require electric appliances in new construction	CD	\$	5-10 years	Hard to quantify the benefit, but a priority from the Thurston Climate Mitigation Plan.	Unknown
Natural Gas Ban	Ban all new natural gas connections in new buildings	CD	\$	5-10 years	Hard to quantify the benefit, but a priority from the Thurston Climate Mitigation Plan.	Unknown
Legislative Agenda	Prioritize combating climate change in the municipality's legislative agenda each year. Instruct municipal lobbyist to track and report on climate bills, and to advocate for those bills that will help reduce local emissions.	Executive	\$	Immediate & Ongoing	Hard to quantify the benefit, but a priority from the Thurston Climate Mitigation Plan.	Unknown
Telecommuting Infrastructure	Develop grants and provide financial resources for the installation of infrastructure necessary to support teleworking	ASD	\$\$	>10 years	Hard to quantify the benefit, but a priority from the Thurston Climate Mitigation Plan.	Unknown

Social Research and Behavior Change	Work with higher education institutions to research effective behavior change through marketing and education.	WRS	\$\$	Immediate & Ongoing	Hard to quantify the benefit, but a priority from the Thurston Climate Mitigation Plan.	Unknown
Emissions Inventory	Prepare and publish an annual emissions inventory that tracks greenhouse gas emission by jurisdiction and source category.	WRS	\$	Immediate & Ongoing	Hard to quantify the benefit, but a priority from the Thurston Climate Mitigation Plan.	Unknown
Performance Measures	Develop community GHG reduction goals and performance measures.	WRS	\$	Immediate & Ongoing	Hard to quantify the benefit, but a priority from the Thurston Climate Mitigation Plan.	Unknown
Vulnerable Population	Develop a data and monitoring mechanism that is specific to marginalized groups and their needs related to climate change and climate reality and develop a plan to	WRS, CDD	\$	5-10 years	Hard to quantify the benefit, but a priority from the Thurston Climate Mitigation Plan.	Unknown

	address these vulnerabilities with solutions that help reduce GHG emissions.					
Social Cost of Carbon	Develop and adopt policies that require the use of a “social cost of carbon measure” in zoning, development, construction, and transportation.	WRS, CDD	\$	5-10 years	Hard to quantify the benefit, but a priority from the Thurston Climate Mitigation Plan.	Unknown
Employee Volunteer Days	Allow employees to take a paid day off to volunteer in the community.	ASD	\$\$	>5 years		Unknown
Employee-Run Garden Plots	Create garden plots at City Hall where staff members can grow plants.	ASD	\$	>1 year		Unknown
Switch to Electric Small Equipment	Transition gas powered small tools like mowers and hedge trimmers to electric.	WRS, TED, PR	\$\$	As equipment is phased out	Electric equipment generates no tailpipe emissions, with emissions only coming from electricity generation. According to the EPA, one gas lawn mower emits 89 pounds of CO ₂ and 34 pounds of other pollutants per year ⁸	Medium

⁸<https://www.onlynaturalenergy.com/grass-lawns-are-an-ecological-catastrophe/#:~:text=According%20to%20the%20EPA%2C%20one,a%20100%2Dmile%20car%20trip.>

Electricity:

Top 2 priorities as determined by the City of Tumwater's Green Team:

Project Name	Project Description	Project Coordinator	Project Cost	Project Timeframe (How long will it take to implement)	Anticipated benefit (calculated benefit if possible)	Impact Level	Update
Move City Hall to a 4 day work week to reduce commuting hours and hours needed to have City buildings fully operational	This one is kind of happening now due to Covid-19! Reducing the number of days City facilities are running at full capacity can help reduce CO ₂ emissions, energy consumption, and water use.	Executive – Tameka Brice	\$	<1 year	Could look at energy and water use reduction over the past four months while City Hall was shut as an example of savings that could be realized by moving to a four-day workweek or encouraging more teleworking.	Medium	Ongoing
Utility Energy Audit	Work internally or with an outside partner like PSE to perform an audit on all energy uses throughout the City.	WRS – Meridith Greer	\$	<6 months	Completing an audit like this will help set a baseline on where energy is being used and opportunities for efficiency and energy-saving measures. In 2019, the City used 29,381 terms of natural gas, spending \$135,000, and 53 million kWh of electricity. The City does currently have solar panels on City Hall, which in 2019 produced 23,450 kWh of power, offsetting 2% of the City's yearly electricity needs.	High	Will begin once a more established City Hall schedule is finalized

Other priorities as determined by the City of Tumwater’s Green Team

Project Name	Project Description	Project Coordinator (Individual or department)	Project Cost	Project Timeframe (How long will it take to implement)	Anticipated benefit (calculated benefit if possible)	Impact Level
Automatic thermostats that turn off when facility or operations doors are open	Installing automatic thermostats on City facility doors that turn off heating or cooling when doors are kept open for extended periods of time.	PR	\$	<1 year	It’s hard to quantify how much electricity would be saved as it is unknown how much energy is lost as a result of this problem now, but 21% of the electricity used in 2019 came from buildings and facilities.	Medium
Use water pipes to generate electricity	Retrofit water pipes to generate electricity while water is flowing through them to either offset	WRS	\$\$\$	>5 years	A company called Lucid Energy has been working with several cities to replace pressure-release valves in drinking water networks to capture energy ⁸ . The City of Portland spent \$1.7m in 2015 to install 50 new pipes, generating 1,100MWh of	Medium

8

<https://www.power-technology.com/features/city-water-infrastructure-hydropower/#:~:text=in%2Dpipe%20turbines.-,Portland%2Dbased%20company%20Lucid%20Energy%20is%20generating%20power%20in%20several,that%20has%20previously%20been%20wasted.>

	electricity used in pumping water or selling back to the grid.					
Install VFD pumps at wells	Installing variable frequency diver (VFD) pumps can help adjust the flow or pressure in pipes to the actual water demand.	WRS	\$\$\$	<5 years	Running a 100-horsepower pump motor continuously for a year can rack up more than \$40,000 in energy costs. More efficient motors can reduce this cost and typically installed costs of VFD systems range from \$200 to \$500 per horsepower (HP) . Pumping used for water supplies accounts for 65% of the electricity used in 2019, 3,166,483 kWh.	Medium-High
Replace all city lights with LED	Replace all streetlights with LED light bulbs	TED	\$	>1 year	This project would be the completion of an ongoing effort to replace streetlight bulbs. While LED bulbs cost more per blub than incandescent, roughly \$8, they have an almost 25x longer lifespan (almost 3 years), and use 6x less energy . Streetlights and signals represented 15% of all electricity used in 2019, 424,834 kWh were used for streetlights specifically.	High
Turn off lights in park facilities that are closed to the public	Turn off power to park facilities while they are closed overnight.	PR	\$	>6 months	Some park facilities continue to have lights on or power running to electrical outlets even when the Park is closed, shutting off some of these electricity outputs might reduce the 37,052 kWh used by Parks in	Low

9

[https://www.pumpsandsystems.com/vfd-cost-effective-option-your-application#:~:text=Typical%20installed%20costs%20of%20VFD,%24500%20per%20horse power%20\(HP\).](https://www.pumpsandsystems.com/vfd-cost-effective-option-your-application#:~:text=Typical%20installed%20costs%20of%20VFD,%24500%20per%20horse power%20(HP).)

10

<https://www.thesimpledollar.com/save-money/the-light-bulb-showdown-leds-vs-cfls-vs-incandescent-bulbs-whats-the-best-deal-now-and-in-the-future/>

					2019, which only accounts for 0.7% of the total electricity used in 2019 by the City.	
Reduce the number of streetlights installed in new developments	Reduce the number of streetlights permitted and approved for new developments and redevelopments with updated policies or ordinances	CD	\$0	>1 year	Hard to quantify without current data on the number of streetlights in new developments.	Low
Install more solar panels at: well houses, City buildings, parking lots, etc. Facilities staff get training to install/lower cost/shorten the payback period	Install more solar panels on City-owned facilities and properties. Additionally, train facilities staff members on installing solar panels.	PR	\$\$	1-10 years	The solar panels on City Hall produced 23,450 kWh in 2019, offsetting 6.5% of City Hall electricity use and 2% of the total amount of electricity used by City buildings and facilities. Prices for solar panels have been falling across the US, which decreases the pay-back period for the panels.	Medium
Replace hot water tank at Historical Park	Replacing or removing the hot water tank in the restroom	PR	\$	<1 year	In a home, a typical hot water heater runs for three to five hours per day. A 4,000-watt heater used for three hours a day at \$.10 per kWh will cost about \$1.20 per day, about \$26.50 per month, and	Low

	at Historical Park				\$438 per year ¹¹ . The heater at Historical Park is probably used for fewer hours during the winter months when the Parks are less busy but used for longer during peak summer months.	
Replace electric furnace at the library with more efficient heat pump	The library uses an electric furnace to heat the building, replacing the central heating system can help save money and reduce electricity use.	PR	\$\$\$	<5 years	In 2019, the Tumwater Public Library used 220,025.6 kWh, 20% of the total electricity used by all buildings and facilities, and 4% of all electricity used. Unsure how much it would cost to replace and upgrade the system.	Medium-High
Solar-Ready Building Code	Adds a high priority to municipality's legislative agenda –State-level amendments to State building code requirement solar-ready construction.	CD		>5 years	Hard to quantify the benefit, but a priority from the Thurston Climate Mitigation Plan.	Unknown
SolSmart	Pursue SolSmart designations	CD	\$\$	5-10 years	Hard to quantify the benefit, but a priority from the Thurston Climate Mitigation Plan.	Unknown

¹¹

http://energyusecalculator.com/electricity_waterheater.htm#:~:text=A%20typical%20water%20heater%20will,a%20day%20%40%20%240.10%20per%20kWh.&text=The%20average%20use%20of%20hot,lower%20your%20hot%20water%20use.

	and adopt solar- friendly					
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Transportation:

Top 2 priorities as determined by the City of Tumwater's Green Team:

Project Name	Project Description	Project Coordinator	Project Cost	Project Timeframe (How long will it take to implement)	Anticipated benefit (calculated benefit if possible)	Impact Level	Update
Reward staff who participate in the Commute Trip Reduction Program	Increase the monetary incentive for people to take part in the Commute Trip Reduction Program.	ASD – Melody Valiant	\$	<1 year	Currently, the City offers up to \$60 per month to non-represented employees who eliminates a single-occupant vehicle from the roadway (e.g. commuting, walking, biking, taking a bus, or vanpooling). In 2019, 6% of employees participated in the program. Alternative/flex schedules were used by 53% of employees who work in the office one fewer days over two weeks in 2019. During the Covid-19 pandemic, over 100 employees, roughly half the workforce, are telecommuting all or part of the week. Might need a survey to determine how much of a monetary increase would be required for more people to participate in the program.	Medium	Will begin once a more established City Hall schedule is finalized
Walking/Biking Infrastructure	Coordinate cities of Thurston Counties Master Bicycle and Pedestrian plans into a large regional plan to expand	TED – Mary Heather Ames	\$	<5 years	Hard to quantify the benefit, but a priority from the Thurston Climate Mitigation Plan.	Medium	Determined to not be a good fit for the Green Team as this is a larger regional effort.

	walking and biking infrastructure, including separated and protected opportunities.						
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Other priorities as determined by the City of Tumwater’s Green Team

Project Name	Project Description	Project Coordinator (Individual or department)	Project Cost	Project Timeframe (How long will it take to implement)	Anticipated benefit (calculated benefit if possible)	Impact Level
Staff attending the same offsite meeting should commute with coworkers	Create a City Policy encouraging staff attending the same offsite meetings to commute together	Executive	\$0	<6 months (but dependent on safety procedures and social distancing protocols)	Create a policy that encourages employees to carpool when safe and efficient. Hard to quantify as it’s currently unknown how often this practice does not occur normally.	Medium
Install air pressure monitoring valves on all City vehicles	Install air pressure monitoring valves on City vehicles and establish a protocol to	TED	\$	<6 months	Low tire pressure can reduce fuel efficiency by 0.2% for every 1 psi drop ¹² . Higher tech options include automatic monitoring systems with alarms that monitor in real-time, prices generally run between \$50 and \$100 per vehicle. Tire pressure caps with colored bands indicating	Medium-High

¹²

<https://www.fueleconomy.gov/feg/maintain.jsp#:~:text=Updated%20Information,are%20safer%20and%20last%20longer.>

	have them checked quarterly(?) by the fleet department				pressure level are cheaper, running under \$10 for four.	
Coordinated long term planning-future infill	Coordinate long-term plans with transit agencies to project where increased density would support more transit corridors	CD	\$	<5 years	Hard to quantify the benefit, but a priority from the Thurston Climate Mitigation Plan.	Unknown
Middle-Density Housing	Reevaluate and change zoning as needed to allow for a range of housing types to promote social-economic integration of housing near the region's urban centers or moderate-density zones	CD	\$	<5 years	Hard to quantify the benefit, but a priority from the Thurston Climate Mitigation Plan.	Unknown

20-Minute Neighborhoods	Increase the number of 20-minute neighborhoods (walkable environment, destinations that support a range of basic living needs and a residential density)	CD	\$\$\$	5-10 years	Hard to quantify the benefit, but a priority from the Thurston Climate Mitigation Plan.	Unknown
Accessory Dwelling Units (ADU)	Amend development codes to allow for attached and detached ADU's in urban residential areas	CD	\$	<5 years	Hard to quantify the benefit, but a priority from the Thurston Climate Mitigation Plan.	Unknown
Congestion Mitigation	Develop congestion mitigation programs to increase transportation efficiency, reduce delay, and reduce emission such as signalization	TED	\$\$\$	Immediate and Ongoing	Hard to quantify the benefit, but a priority from the Thurston Climate Mitigation Plan.	Unknown

	coordination improvements and speed harmonization techniques					
Free Electric Vehicle Parking	Allow free parking for all electric vehicles at government buildings and in city centers to encourage the adoption of electric vehicles.	CD	\$\$	5-10 years	Hard to quantify the benefit, but a priority from the Thurston Climate Mitigation Plan.	Unknown
Electric Vehicle Ready Building Code	Require all new residential construction to be built EV ready. Create a simple and consistent residential charging station permitting process to reduce costs and time to development.	CD	\$	<5 years	Hard to quantify the benefit, but a priority from the Thurston Climate Mitigation Plan.	Unknown

Electric Vehicle Integration	Reevaluate regulations and make necessary changes to ensure charging stations are able to be permitted in locations where they are needed.	D	\$	<5 years	Hard to quantify the benefit, but a priority from the Thurston Climate Mitigation Plan.	Unknown
Barriers to Transportation Alternatives	Develop a regional inventory to identify gaps in connectivity for safe cycling and walking.	TED	\$	Immediate and Ongoing	Hard to quantify the benefit, but a priority from the Thurston Climate Mitigation Plan.	Unknown

Water

Top 2 priorities as determined by the City of Tumwater's Green Team:

Project Name	Project Description	Project Coordinator	Project Cost	Project Timeframe (How long will it take to implement)	Anticipated benefit (calculated benefit if possible)	Impact Level	Update
Create landscaping plans for City right-of way	Prioritizing the planting of native and drought-tolerant plants along City property and right of way	WRS – Meridith Greer	\$	Immediate and Ongoing	In 2019, the City used 20 million gallons of potable water to irrigate lawns at City facilities, parks, and medians. Replacing lawns and other high water use City-owned and maintained areas with drought-tolerant plants that require less maintenance and water. Hard to quantify exact water savings.	Medium-High	Working on a pilot program of this between M-E Street on Capitol Blvd.
Retrofit and upgrade City irrigation systems	Upgrade, replace, and retrofit existing irrigation systems to increase efficiency and reduce water loss from leaks	TED – Marc LaVack	\$\$	>3 years	The majority of the current irrigation infrastructure is old and inefficient. In 2019, the City of Tumwater's outdoor water use was 20,659,645 gallons. Eldon Newell created a retrofit plan to upgrade and replace parts of the current irrigation system that he anticipates could reduce irrigation water use by 30%, saving 6,197,893.5 gallons of water per year. Based on equipment quotes, Eldon believes this would cost \$136,300.	Medium-High	Will begin after the project above finishes.

Other priorities as determined by the City of Tumwater’s Green Team

Project Name	Project Description	Project Coordinator (Individual or department)	Project Cost	Project Timeframe (How long will it take to implement)	Anticipated benefit (calculated benefit if possible)	Impact Level
Increase Recycled water usage	Some forms of water can be captured and used again for nonpotable uses, such as irrigation	WRS	\$\$	>2 years	In 2019, the City used 4.5 million gallons of water on indoor uses, 1.53 million of which was used at City Hall, Fire Stations, and the Library. Some of the water used for things like sinks at these facilities could be diverted as grey water and used for irrigating the landscape outside these facilities.	Low
Perform a Water Audit	Work internally or with an outside partner to perform a thorough audit on all water uses throughout the City.	WRS	\$	>1 year	Completing an audit like this will help set a baseline on where water is being used and opportunities for efficiency and water-saving measures. In 2019, the City used 25 million gallons of water for both indoor and outdoor water use.	High

Solid Waste

Top 2 priorities as determined by the City of Tumwater’s Green Team:

Project Name	Project Description	Project Coordinator	Project Cost	Project Timeframe (How long will it take to implement)	Anticipated benefit (calculated benefit if possible)	Impact Level	Update
All City facilities should have compost receptacles	Place compost bins in all City departments, especially in lunchrooms and areas where individuals frequently make or eat food.	Executive – Tameka Brice	\$	<6 months	Hard to quantify given no baseline on current amounts of solid waste generated at City facilities. Two options with what to do with compost waste: 1) LeMay does offer commercial compost pick-up or 2) Smaller amounts of compost could be used in City right or ways and gardens as soil amendments.	Medium	Will begin once a more established City Hall schedule is finalized
Install more public recycling and compost cans	Install more recycling and compost bins in public spaces such as parks	PR – Todd Anderson, Stan Osborn, Jeff Pratt	\$	<3 years	Hard to quantify given no baseline on the current amount of compostable or recyclable items are thrown out because of a lack of bins in City-owned public spaces. Would require more staff time to pick up full cans and potentially have to sort items.	Medium	Plan to roll out a pilot program of this at a City-sponsored event

Other priorities as determined by the City of Tumwater’s Green Team

Project Name	Project Description	Project Coordinator (Individual or department)	Project Cost	Project Timeframe (How long will it take to implement)	Anticipated benefit (calculated benefit if possible)	Impact Level
Complete a City-wide dumpster and recycling audit	Collect and analyze data on the location and use of dumpsters at City facilities to determine where dumpsters/ education might be needed.	WRS	\$	<6 months	Hard to quantify without completing this baseline survey.	Unknown
Implement a City-wide “green” purchasing policy favoring local goods and services	A policy that emphasizes purchasing green alternatives (including reusable materials) that are locally sourced	Executive	\$	<6 months	Hard to quantify without baseline metrics on solid waste from City facilities and events as well as general purchases that staff make.	High

Choose the least hazardous alternative with materials	Create a policy that encourages employees to purchase the last hazardous option when possible	Executive	\$	<6 months	Hard to quantify given no baseline data on current materials purchased.	Medium
All City events should use compostable products	Create a policy that encourages the use of compostable	Executive	\$	<6 months	Hard to quantify given no baseline data on current amounts of solid waste produced during City events.	Medium

	products at City sponsored					
Automatically set all printers to print on both sides of the paper	Set all printer defaults to printing on both sides of the sheet	ASD	\$	<6 months	Hard to quantify given no baseline on current numbers of printers that do not adhere to this process already. Completed a few year ago. All but one printer have already switched to this as the default.	High
Host zero-waste events	Attempt to make some City events zero waste	Executive	\$	<2 years	Hard to quantify given no baseline on the current amount of trash that is generated at City events. Zero waste events produce no trash, only compost and recycling options. It would likely cost a bit more to purchase more eco-friendly products, for example, compostable plates are roughly twice as expensive as generic plastic or paper ones. Additionally, more waste containers would need to be brought in and taken out of the event space.	Medium-High
Compost paper towels	Place paper towels in the compost rather than the trash	All employees	\$	<1 year	Hard to quantify given no baseline on the current amount of paper towels that are thrown out. Paper towels that are free of chemicals can be composted, and the bacteria or food will break them down in the compost ¹³ . This will require compost bins in every bathroom, a place to put compost, new signage informing people of the change, and potentially changing paper towel brands.	Medium
Increase the # of customers receiving e-	Enroll more water and sewer	Finance	\$	<1 year	Tumwater currently has just over 10,000 water and/or sewer customers. Of those, only ~1,500 receive e-bills, the rest receive hard copy paper	High

¹³ <https://stanfordmag.org/contents/taking-paper-towels-to-the-compost-pile-nitty-gritty>

	customers in e-billing				bills monthly. Encourage people to switch once or twice a year, in Johnson boxes and utility bills, new customer sign ups advertised, advertised on the website.	
Switch to paperless payroll	Move payroll online to reduce paper waste	Finance	\$	<1 year	The Finance Department is currently looking at ways to email direct deposit slips to employees instead of printing copies. On average, payroll prints over 5,000 direct deposit slips to give to employees annually. Currently working on it, held up by HR and labor laws. Going to	High
Use recycled paper	Create a policy that encourages the use of recycled paper when possible	Executive	\$	<1 year	Hard to quantify with no data on how many pages the City prints each year. Encourage employees to print on recycled paper when possible.	Medium-High
Have volunteers attending large events to assist in ensuring proper recycling disposal	Create a task during large events where volunteers can help work trash, recycling, and compost bins to ensure proper disposal	PR, WRS	\$	<1 year	Hard to quantify given no baseline data for waste generated at Tumwater events or percentage of successfully recycled or composted materials at Tumwater events. Studies have shown having volunteers stationed at trash, recycling, and composting bins can significantly increase the percentage of items discarded in their proper containers .	Medium-High
Take time to remove	See if vendors have	All Departments	\$	6 months - 1 year	Hard to quantify without knowing how many newsletters or magazines are sent to City staff	Medium

department from mailing lists	electronic newsletter or magazine options to subscribe to instead				members and departments that could be received online instead.	
Increase use of electronic options for paperwork	Look into creating electronic options for many of the uses of paper in the City	ASD	\$	>5 years	Hard to quantify without knowing how much paper waste is currently produced though internal paperwork.	Medium
Purchase rechargeable batteries	Reduce the number of single use batteries that the City uses	All Departments	\$	>6 months	Hard to quantify without knowing how many batteries are used yearly by the City. However, rechargeable batteries can be recharged between 500 and 1,000 times, but cost about \$3.00 more per battery compared to traditional AA batteries. ¹⁵	Medium - High