CITY OF
BAINBRIDGE ISLAND

CITY COUNCIL STUDY SESSION
TUESDAY, NOVEMBER 19, 2024

COUNCIL CHAMBERS
280 MADISON AVENUE NORTH
BAINBRIDGE ISLAND, WA

AND

REMOTE MEETING ON ZOOM
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AGENDA

1. **CALL TO ORDER / ROLL CALL - 6:00 PM**

2. **APPROVAL OF AGENDA / CONFLICT OF INTEREST DISCLOSURE - 6:05 PM**

3. **REGULAR BUSINESS**

3.A **(6:10 PM) Receive MAKERS Bainbridge Island Fleet Electrification Study Presentation - Executive,** 20 Minutes
Bainbridge Island Fleet Electrification Strategy Presentation
City of Bainbridge Island Fleet Electrification Study Report

3.B **(6:30 PM) Receive Briefing from Washington State Ferries on Terminal Electrification and Traffic Management from Washington State Department of Transportation Staff** 30 Minutes
Bainbridge Island Council Presentation on 11_19_2024 V1.pptx

3.C **(7:00 PM) Receive Briefing from Washington Department of Transportation (WSDOT) Olympic Region Relating to the SR 305 / High School Road Roundabout Project** 30 Minutes
SR 305 High School Road 11-2024.pptx
Example of Non-Motorized Friendly Roundabout Design

4. **COMMITTEE REPORTS - 7:30 PM**

5. **ADJOURNMENT - 7:40 PM**

GUIDING PRINCIPLES

Guiding Principle #1 - Preserve the special character of the Island, which includes downtown Winslow's small town atmosphere and function, historic buildings, extensive forested areas, meadows, farms, marine views and access, and scenic and winding roads supporting all forms of transportation.

Guiding Principle #2 - Manage the water resources of the Island to protect, restore and maintain their ecological and hydrological functions and to ensure clean and sufficient groundwater for future generations.

Guiding Principle #3 - Foster diversity with a holistic approach to meeting the needs of the Island and the human needs of its residents consistent with the stewardship of our finite environmental resources.

Guiding Principle #4 - Consider the costs and benefits to Island residents and property owners in making land use decisions.

Guiding Principle #5 - The use of land on the Island should be based on the principle that the Island's environmental resources are finite and must be maintained at a sustainable level.

Guiding Principle #6 - Nurture Bainbridge Island as a sustainable community by meeting the needs of the present without compromising the ability of future generations to meet their own needs.

Guiding Principle #7 - Reduce greenhouse gas emissions and increase the Island's climate resilience.

Guiding Principle #8 - Support the Island's Guiding Principles and Policies through the City's organizational and operating budget decisions.

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CITY OF BAINBRIDGE ISLAND

City Council Study Session Agenda Bill

MEETING DATE: November 19, 2024 **ESTIMATED TIME:** 20 Minutes

AGENDA ITEM: (6:10 PM) Receive MAKERS Bainbridge Island Fleet Electrification Study Presentation - Executive,

SUMMARY: In January of 2023, the City entered into an agreement with MAKERS Architecture and Urban Design to develop the Bainbridge Fleet Electrification Study (Study). This Study was requested in response to the City's Climate Action Plan (CAP) which calls for a 90% reduction in greenhouse gas emissions by 2045. The CAP identifies the goal of transitioning the City's fleet to 75% electric vehicles (EV's) by 2025 as a potential contribution to reducing greenhouse gas emissions. The Study's goals are to assess the City's system-wide EV and charging infrastructure needs and to develop a comprehensive strategy for EV purchase and electrical infrastructure investment.

The Study's findings are summarized in the presentation attached to this agenda bill.

AGENDA CATEGORY: Presentation **PROPOSED BY:** Executive

RECOMMENDED MOTION: Information only.

COMMUNITY ENGAGEMENT AND OUTREACH:

FISCAL IMPACT:

Amount:	
Ongoing Cost:	
One-Time Cost:	
Included in Current Budget?	No

BACKGROUND: In January of 2023, the City entered into an agreement with MAKERS Architecture and Urban Design to develop the Bainbridge Fleet Electrification Study (Study). This Study was requested in response to the City's Climate Action Plan (CAP) which a 90% reduction in greenhouse gas emissions by 2045. The CAP also identifies the goal of transitioning the City's fleet to 75% electric vehicles (EV's) by 2025. The Study's goals are to assess the City's system-wide EV and charging infrastructure needs and to develop a comprehensive strategy for EV purchase and electrical infrastructure investment.

The Study provides an analysis of the City Fleet including the distribution of fleet vehicles, by vehicle type (light-duty, heavy-duty, etc.) across multiple City worksites. This analysis is used to provide recommendations

on how to best transition the fleet from internal combustion engine (ICE) vehicles to EV's. The Study also provides an overview of currently available charging equipment and provides an assessment of electrical infrastructure needed to support the electrification of the City's fleet. Using these analyses, MAKERS created four phasing strategies that explore varying investment timelines. At the request of the City Manager, MAKERS also considered the impacts of fleet right sizing and fleet leasing on fleet electrification.

The complete Study and presentation are attached to this agenda bill. Key findings include:

* 68% of the City's fleet is potentially eligible for electrification.

* Of the 109 eligible vehicles, 69 have widely available replacement options.

* At this time, procurement of electric vehicles can be delayed

Strategies presented include:

1 – Climate Action Plan Goal

• Install charging infrastructure

• Transition 75% of eligible fleet to electric by 2025

2 – Typical Spending

• Install charging infrastructure

• Replace vehicles at typical spending levels ($625K/yr is the 5-yr avg)

3 – Increased Spending

• Install charging infrastructure

• Replace vehicles at double typical spending levels ($1.2M/yr)

4 – Invest for Climate

• Install charging infrastructure

• Transition 75% of eligible fleet to electric by 2031

ATTACHMENTS:

Bainbridge Island Fleet Electrification Strategy Presentation

City of Bainbridge Island Fleet Electrification Study Report

FISCAL DETAILS:

Fund Name(s):

Coding:

BAINBRIDGE ISLAND FLEET ELECTRIFICATION STUDY

November 2024

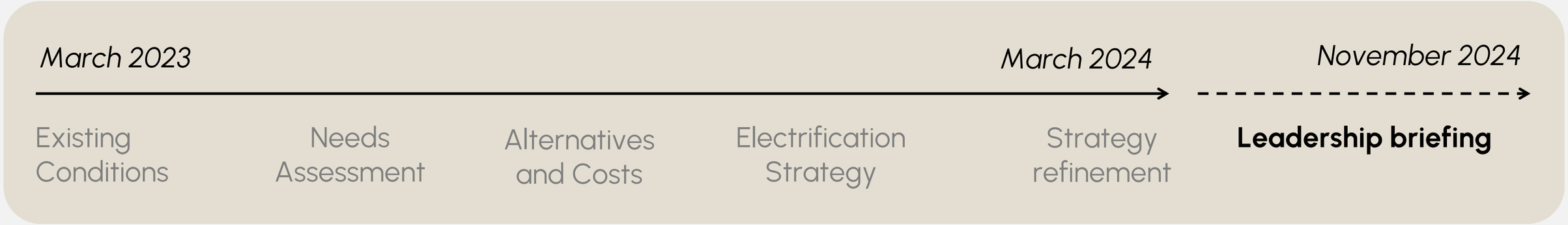
MAKERS

PROJECT OVERVIEW

System-wide assessment of electric vehicle and charging infrastructure needs

Comprehensive strategy for electric vehicle and electrical infrastructure investment

SCHEDULE

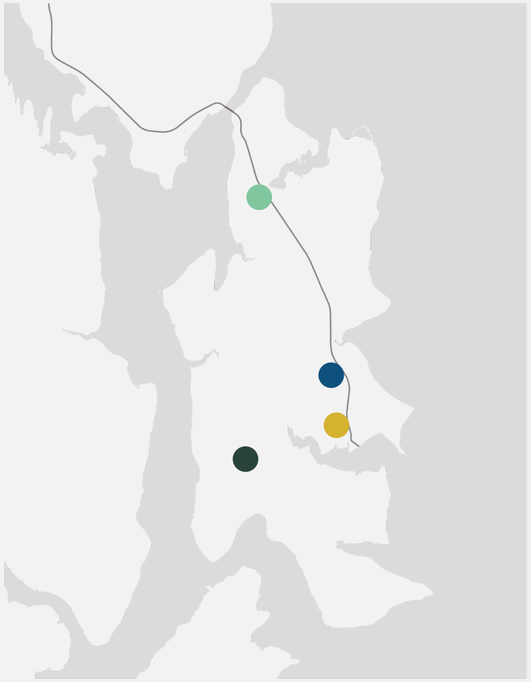


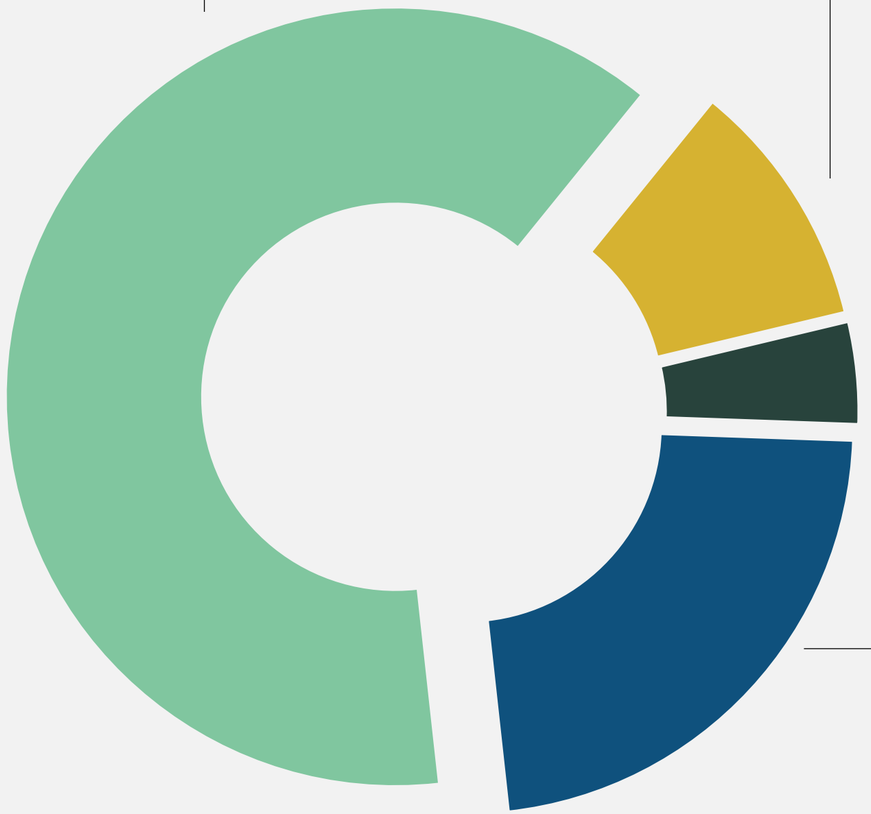
CITY FLEET & EV MARKET REVIEW

FLEET DISTRIBUTION BY FACILITY & USE

163 fleet at four sites*

27% are Police patrol or other take-home vehicles





102 at Public Works

17 at City Hall

5	Planning & Comm. Development
6	Engineering
2	Operations & Maintenance
4	Pool vehicles

7 at Decant Facility

37 at Police/Court

6	Admin
26	Detective & Patrol cars
4	Trailers
1	Information Technology

*excludes boat

ELIGIBLE FOR ELECTRIFICATION

68% of fleet eligible for electrification

Excludes trailers, generators, and truck attachments

Most eligible fleet is light-duty

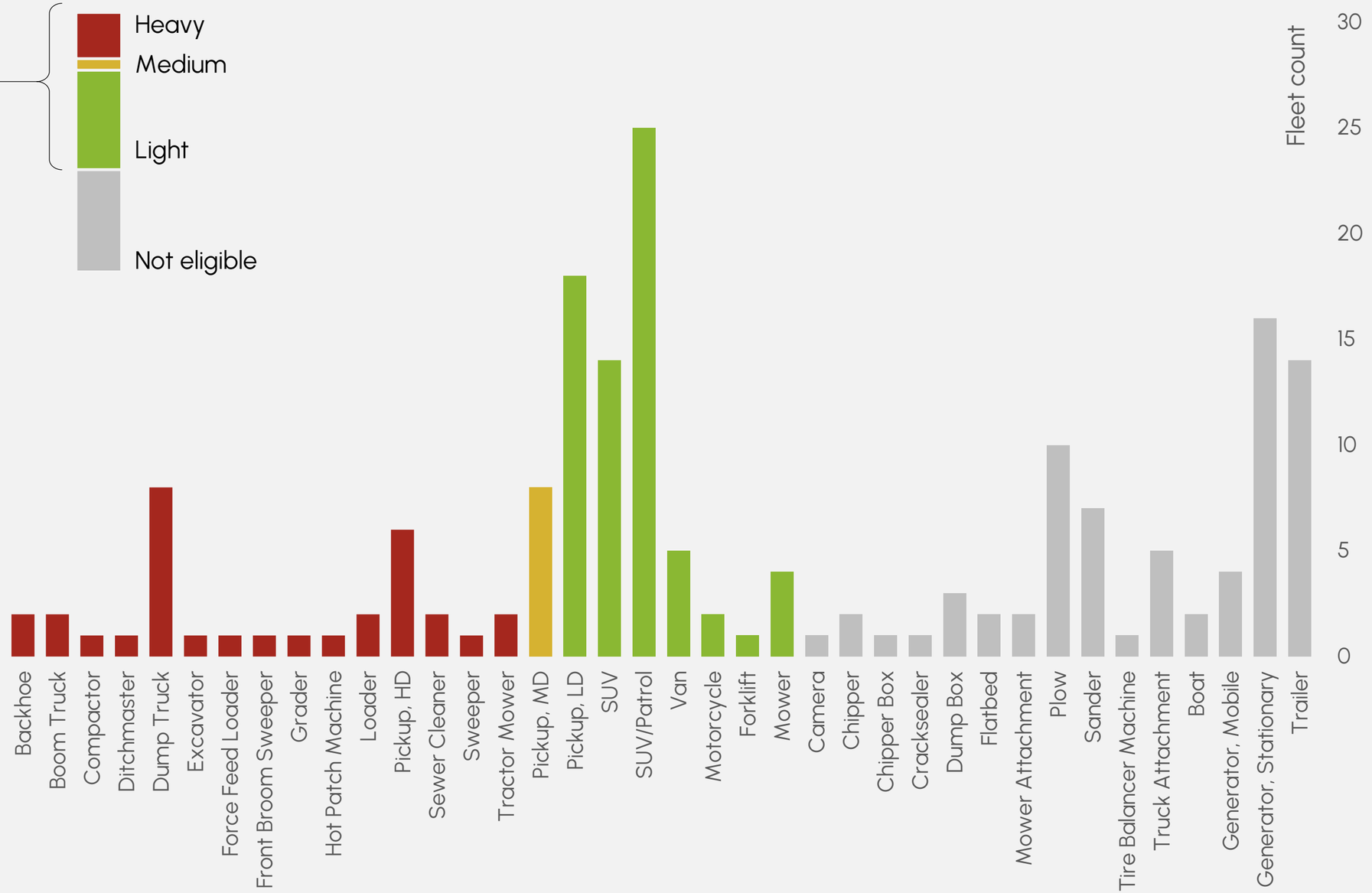
3 electric vehicles today

Variety of heavy fleet

Dump trucks

Pickup trucks

Equipment for special projects and major storm events



RAPIDLY EVOLVING INDUSTRY

Widely available EVs for motorcycles, sedans, SUVs, vans, and light-duty pickups

EVs are developed, but not widely available for remaining fleet*

- Prototypes seeing increased adoption in Europe and Australia and/or are being previewed by North American manufacturers
- Expected to be widely available in 2029
- Limited data on drive range, run time, and payload capacity
- Uncertain pricing – predicted to be cost-comparable with current fossil-fuel vehicles

Source : Ravo E5 Street Sweeper

**Based on current available information and subject to change; can be impacted by supply chain conditions and technological developments*

MARKET REVIEW SUMMARY

EVs are widely available for 63% of Bainbridge's eligible fleet

- 69 of 109 eligible vehicles
- 8 additional vehicles likely to have a widely available EV replacement by 2025
- *Deployment likely impacted by up to one-year procurement delays

Where EVs aren't widely available

- Drop-in diesel replacements that produce less greenhouse gas emissions are widely available
- Other alternative fuel vehicles, like heavy-duty trucks and excavators, are also available

Source : Volvo FMX Electric

*Based on current available information and subject to change; can be impacted by supply chain conditions and technological developments

ELECTRIFICATION STRATEGY

CLIMATE ACTION PLAN GOALS

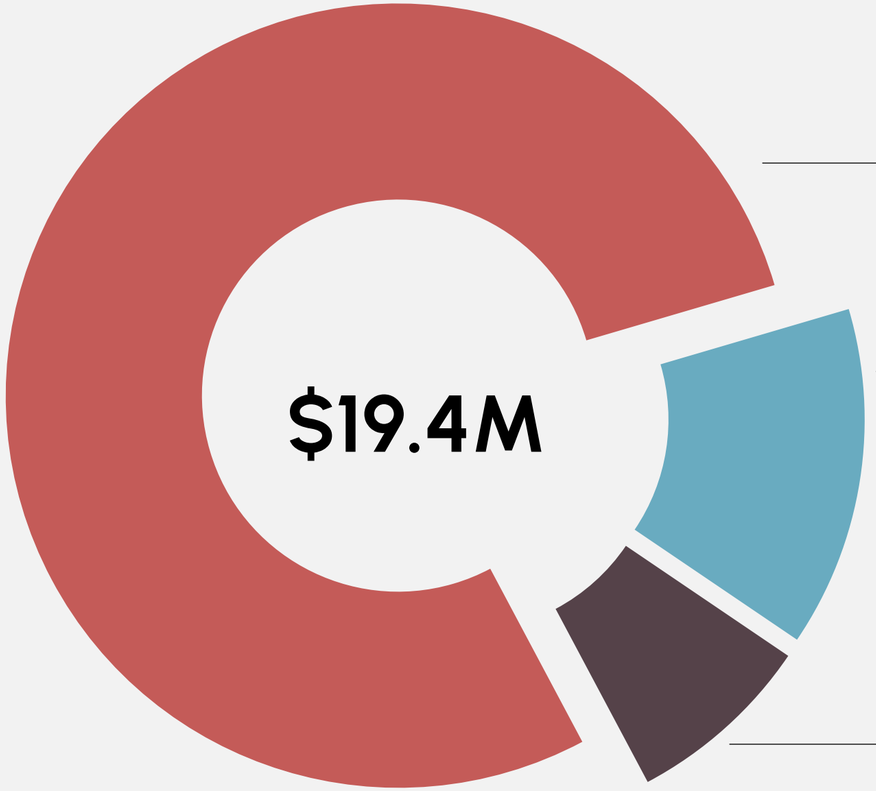
Section 4.1.B: "**By 2025, transition COBI's fleet to 75% electric vehicles** and the remainder to biofuels"

Action 4.B.1.b: "**Install charging infrastructure across municipal locations (City Hall, Public Works, Police Department)** and encourage the installation at the BISD Bus Barn"

ROUGH-ORDER-OF-MAGNITUDE COST ESTIMATE

$19.4M estimated rough order-of-magnitude cost to electrify 100% of eligible fleet in 2023$

Excludes utility fees for added transformer capacity to be determined by PSE



$14.6M Fleet acquisition
- Purchase price
- Upfit costs

$3M Infrastructure
- Design
- Trenching and excavation
- Cable/conduit installation
- Site restoration
- Distribution equipment

$1.8M Equipment
- Chargers (level 2 and 3)
- Backup power (generators)

CHARGING INFRASTRUCTURE PLANS

	Level 2	Level 3	Costs**
City Hall	9	-	$750K
Justice Center	2*	4	$1.25M
PW Upper Lot	7	3	$1M
PW Lower Lot	14	4	$1.8M

** Planned for installation in 2020*
*** Costs in 2024 dollars*

Level 2

30kW AC charger
~ $6,000
~ 25 miles range per hour of charging

Level 3/DCFC

120kW DC fast charger
~ $100,000
~ 200 miles range per ½ hour of charging

Source: Power Electronics

Charging infrastructure layout at Bainbridge Island City Hall

ELECTRIFICATION STRATEGIES EXPLORED

1 – CAP Goal

- Install charging infrastructure
- Transition 75% of eligible fleet to electric by 2025

2 – Typical Spending

- Install charging infrastructure
- Replace vehicles at typical spending levels ($625K/yr is the 5-yr avg)

3 – Increased Spending

- Install charging infrastructure
- Replace vehicles at double typical spending levels ($1.2M/yr)

4 – Invest for Climate

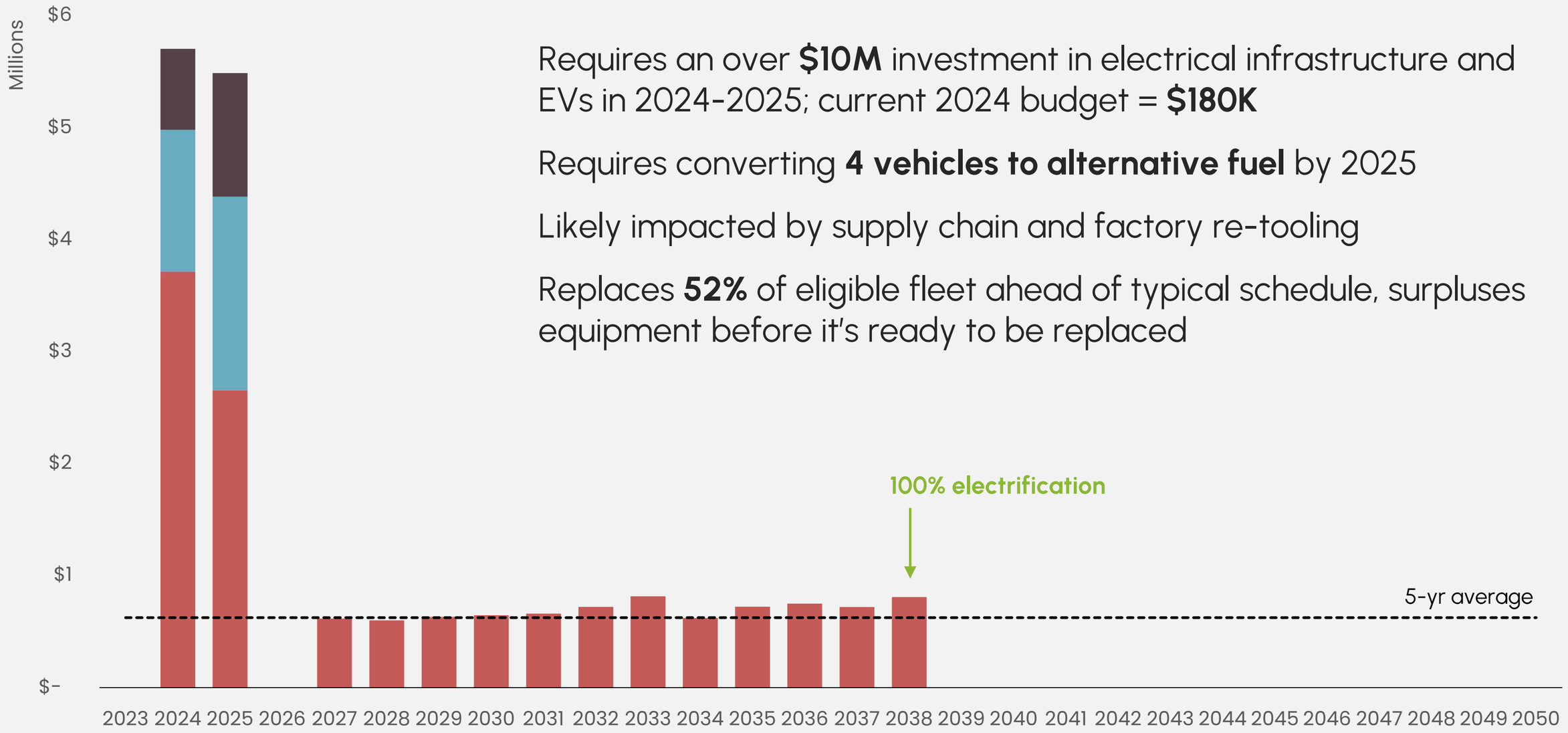
- Install charging infrastructure
- Transition 75% of eligible fleet to electric by 2031

Performance considerations

- Total costs through 2030
- 75% fleet electrification year
- 100% fleet electrification year
- Percentage of vehicles replaced before typical schedule*

**Typical replacement cycles are 10-25 years per City; varies based on vehicle type, condition, and budget*

1 – CAP GOAL



Requires an over **$10M** investment in electrical infrastructure and EVs in 2024-2025; current 2024 budget = **$180K**

Requires converting **4 vehicles to alternative fuel** by 2025

Likely impacted by supply chain and factory re-tooling

Replaces **52%** of eligible fleet ahead of typical schedule, surpluses equipment before it's ready to be replaced

Excludes Puget Sound Energy fees to add or upgrade transformer capacity

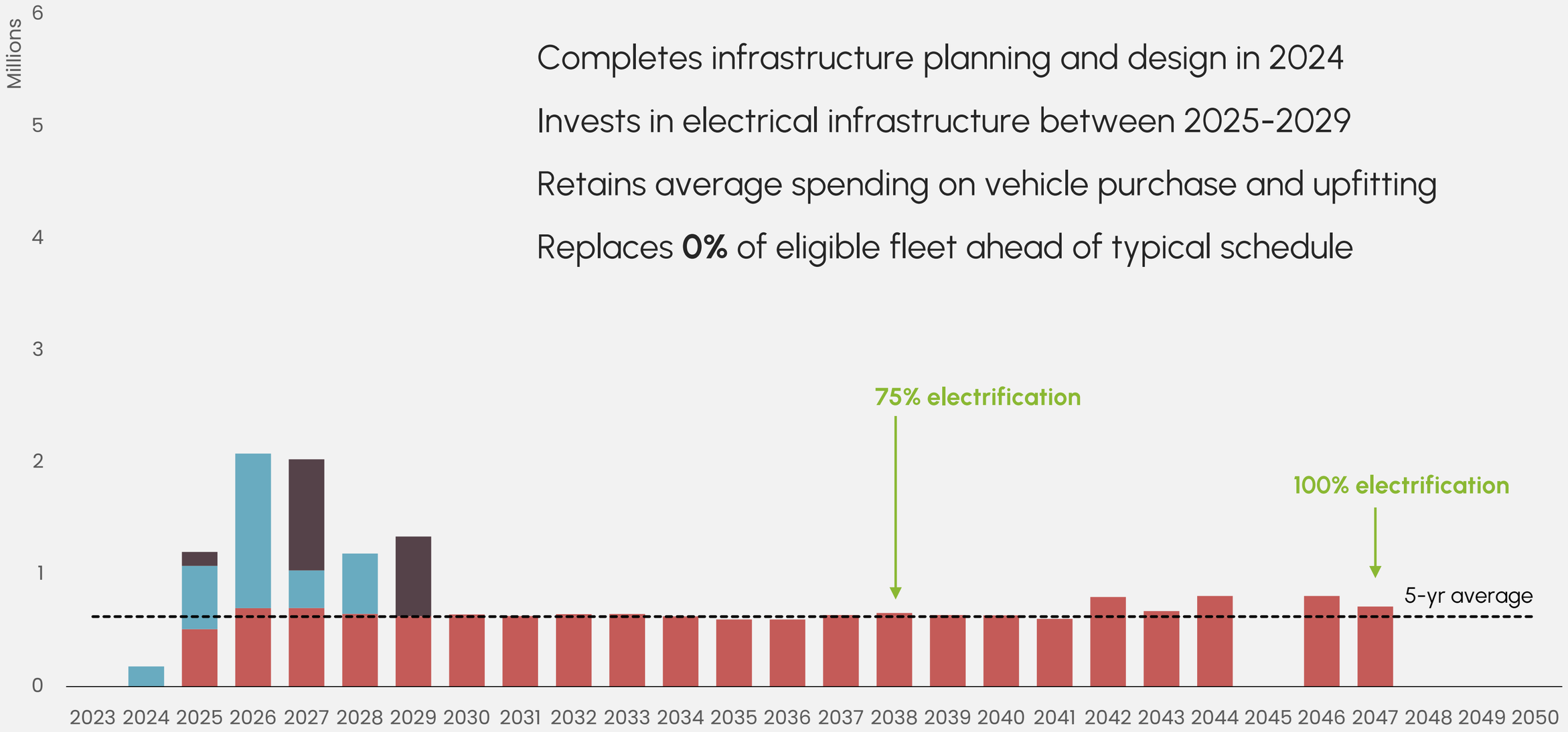
2 – TYPICAL SPENDING

Completes infrastructure planning and design in 2024

Invests in electrical infrastructure between 2025-2029

Retains average spending on vehicle purchase and upfitting

Replaces **0%** of eligible fleet ahead of typical schedule



Excludes Puget Sound Energy fees to add or upgrade transformer capacity

3 – INCREASED SPENDING

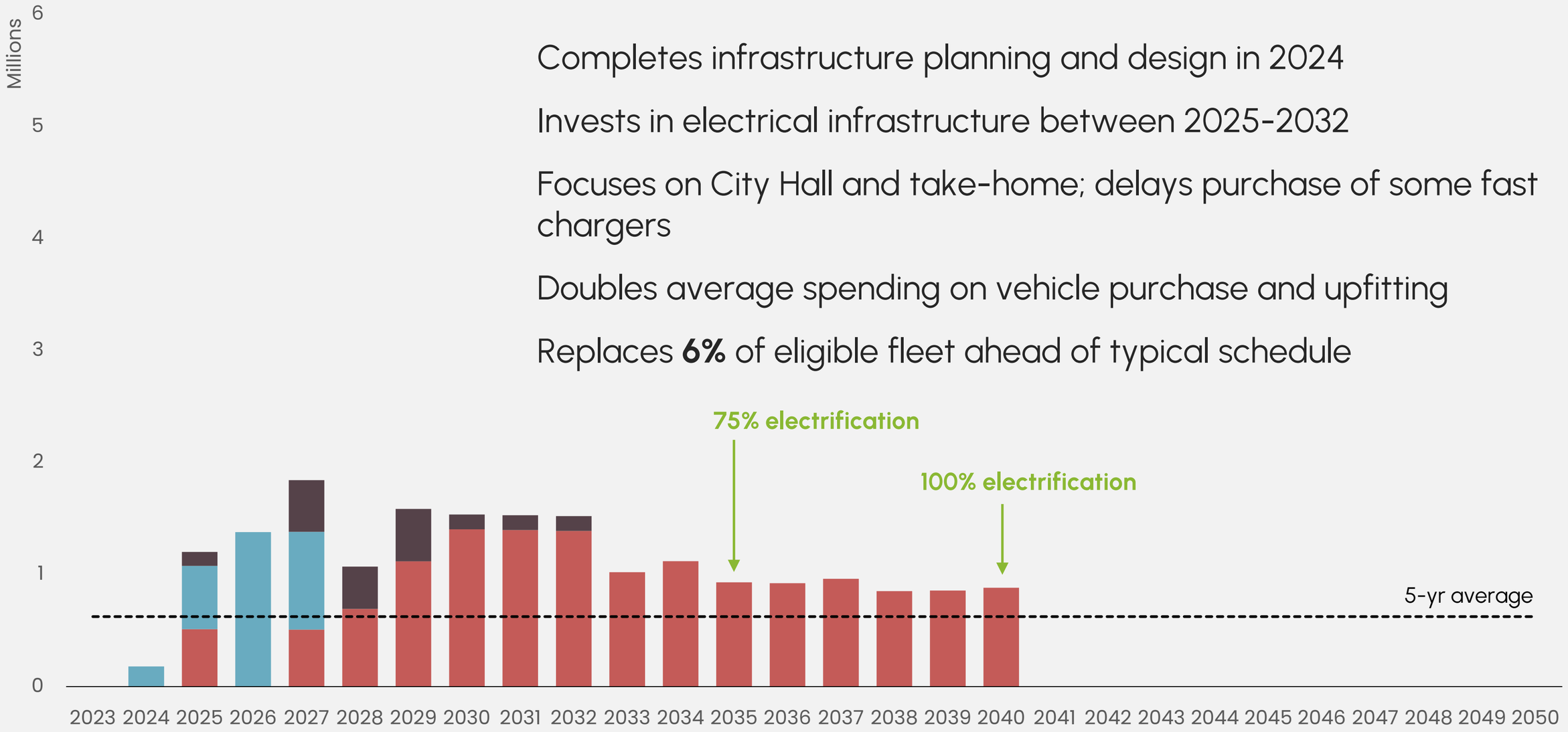
Completes infrastructure planning and design in 2024

Invests in electrical infrastructure between 2025-2032

Focuses on City Hall and take-home; delays purchase of some fast chargers

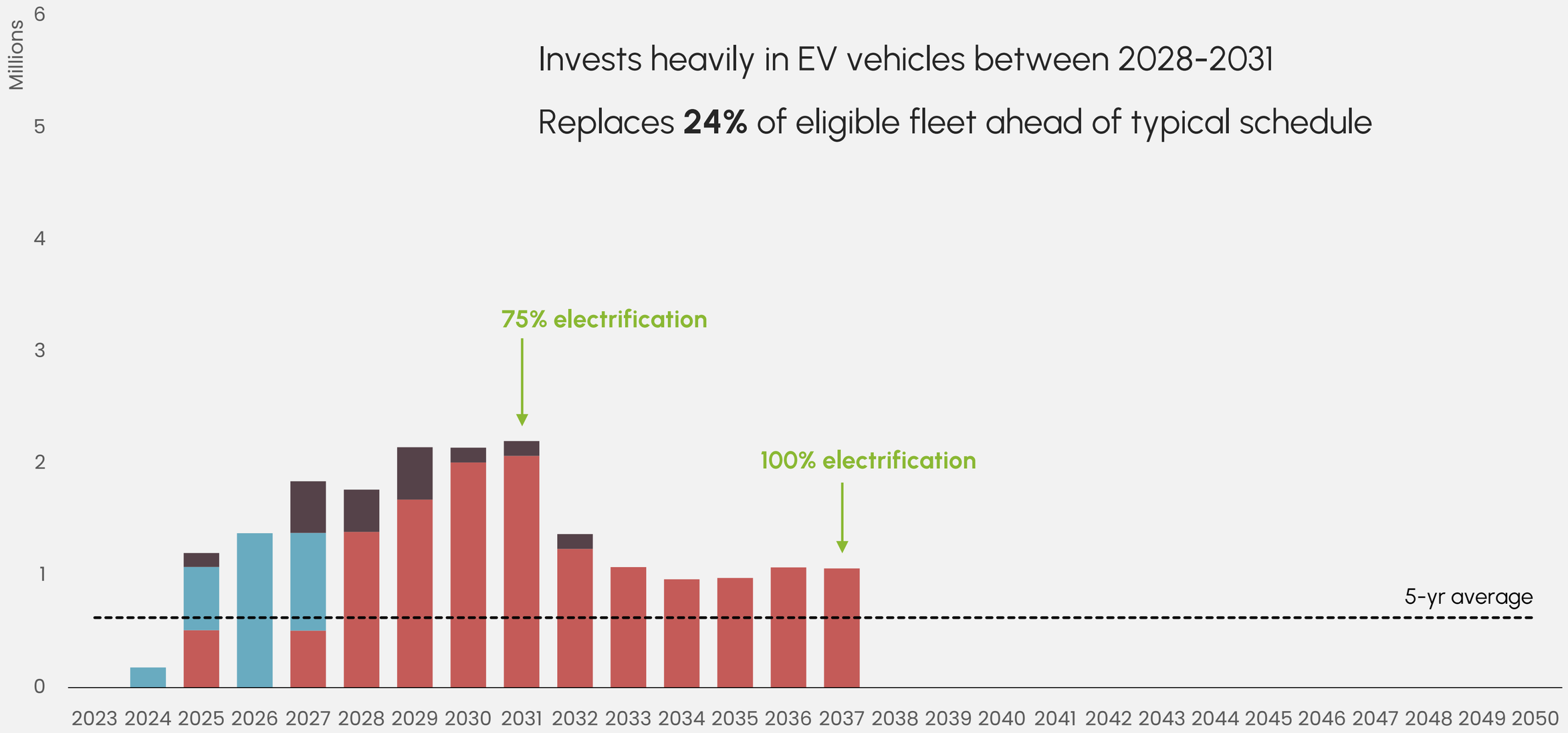
Doubles average spending on vehicle purchase and upfitting

Replaces **6%** of eligible fleet ahead of typical schedule



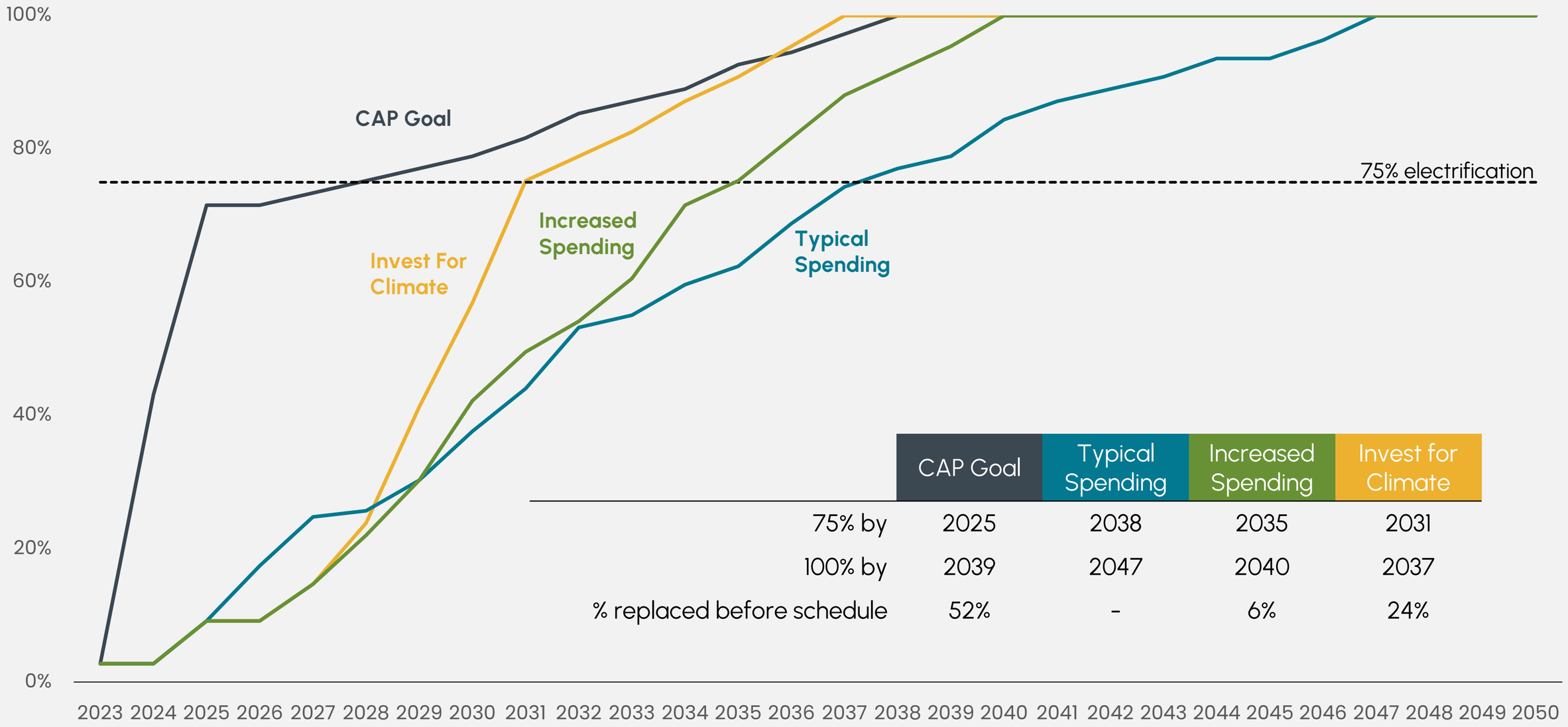
Excludes Puget Sound Energy fees to add or upgrade transformer capacity

4 – INVEST FOR CLIMATE



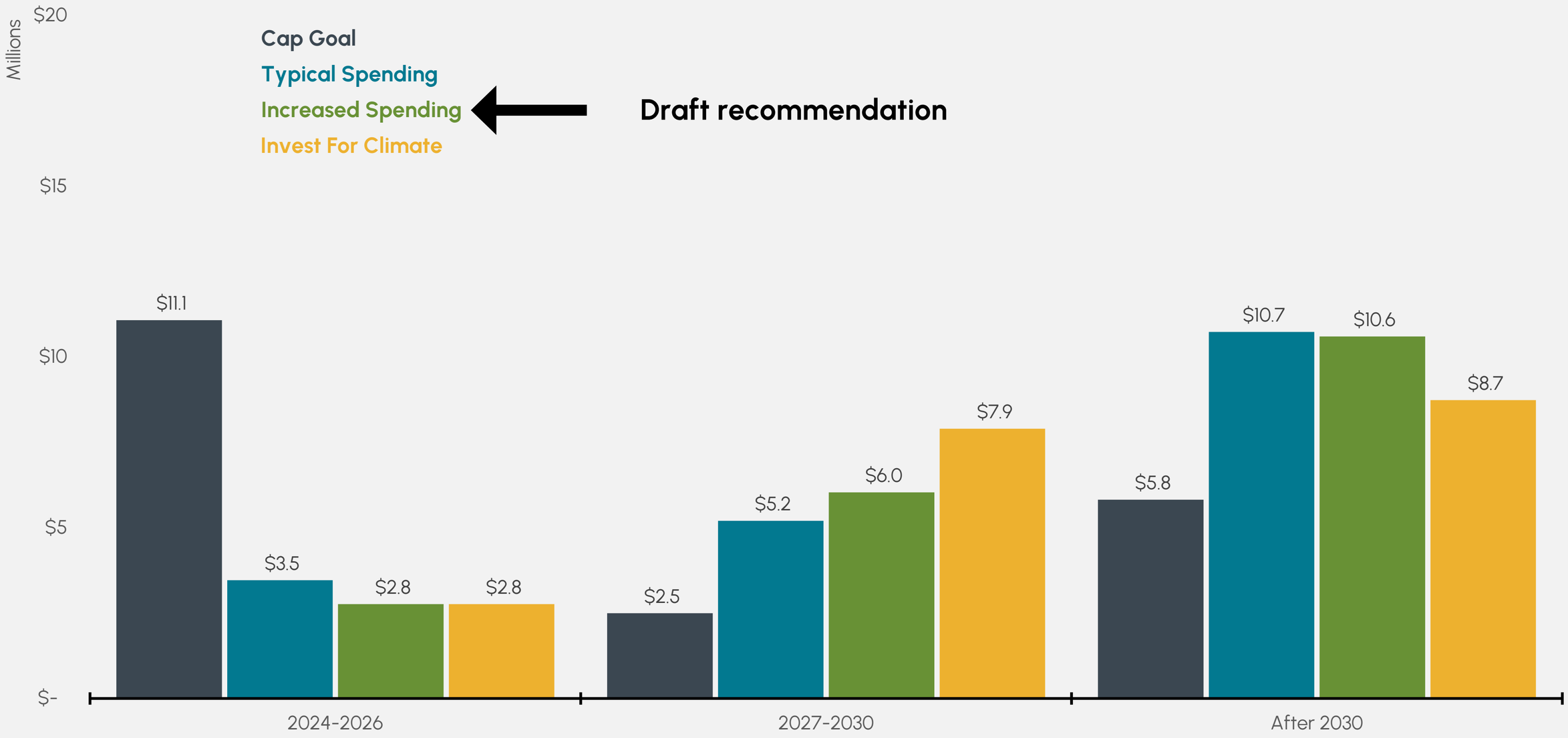
Excludes Puget Sound Energy fees to add or upgrade transformer capacity

ELECTRIFICATION PERCENT COMPARED



	CAP Goal	Typical Spending	Increased Spending	Invest for Climate
75% by	2025	2038	2035	2031
100% by	2039	2047	2040	2037
% replaced before schedule	52%	-	6%	24%

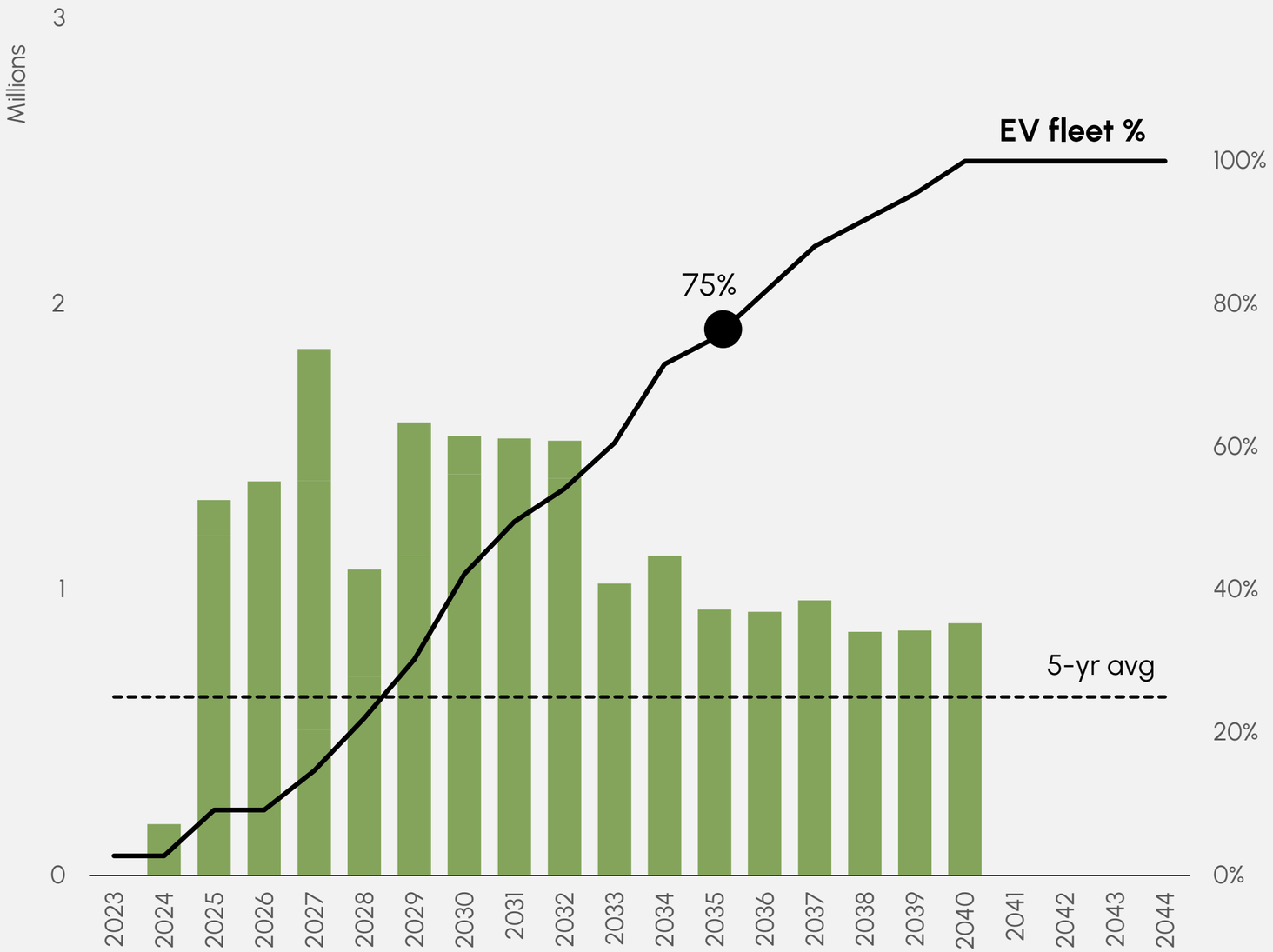
SPENDING BY TIMEFRAME COMPARED ($M)



Excludes Puget Sound Energy fees to add or upgrade transformer capacity

DRAFT RECOMMENDATION – INCREASED SPENDING

- Invests in infrastructure to meet CAP goal and ensures sites are ready
  - City Hall in 2025, Justice Center in 2026, and Public Works in 2027
- 75% electric by 2035 and 100% electric by 2040, 3 and 7 years sooner than typical spending levels
- Requires $1.2M/yr[1] average investment
- Tracks with CETA goals[2]



[1] *Excludes Puget Sound Energy fees to add or upgrade transformer capacity*

[2] *Clean Energy Transformation Act (CETA) - utility must eliminate coal-fired electricity by 2025 and supply 100% electricity from renewable and non-emitting sources by 2045*

OTHER CONSIDERATIONS

- Fleet right-sizing
- Vehicle leasing

FLEET RIGHT-SIZING

Evaluate fleet size and composition to maintain an optimal inventory

- Saves vehicle acquisition and annual maintenance costs
- Lowers fuel and energy use
- Reduces greenhouse gas emissions
- Allows purchase of fleet to meet operational needs that are currently not being met

Other policy considerations

- Review **vehicle assignment policy** based on job role, frequency of field duty, ability to telecommute, and annual miles traveled, such as converting assigned vehicles to pool cars
  - *Cost savings for converting assigned take-home vehicles to pool car may be offset by cost to add charging at City facilities*
  - *27% are Police patrol or other take-home vehicles*
- Consider **alternative transportation**, such as e-bikes to support employee in-person meetings near City facilities

Recommend the City evaluate potential cost savings and operational impacts as a follow-on effort.

LEASING CONSIDERATIONS

Open-end equity lease with Enterprise Fleet

- City makes principal and interest payments on 12-72-month terms with no mileage limits
- Tax credits, if applicable, will reduce lease payments
- Cost of upfitting and downfitting can be included in monthly lease payments, or billed as a one-time expense
- Maintenance can be performed by City staff with local vendor support, when needed
- City returns vehicle after end of term; any equity proceeds will be returned to the City

Enterprise offers limited SUV and light-duty pickup electric vehicles, as of February 2024

- **Applies to 29 of the City's 109 eligible vehicles**
- Model types available may expand in the future

City should monitor General Motors's Envolve municipal leasing program

- Chevrolet Blazer Pursuit Vehicle expected in 2024

	Purchase	5-yr lease	15-year lease
SUV			
Volkswagen ID.4	$39K	*Not available for lease*	
Chevrolet Blazer	$50K	$56K, $11.2K/yr	$168K
Sedan, or compact SUV			
Nissan Leaf	$32K	$30K, $5.9K/yr	$89K
Hyundai Kona EV	$34K	$35K, $7K/yr	$105K
Pickup truck			
Ford F-150 Lightning	$56K	$54K, $10.8K/yr	$162K

Typical replacement cycle for sedans, SUVs, and pickup trucks is 15 years

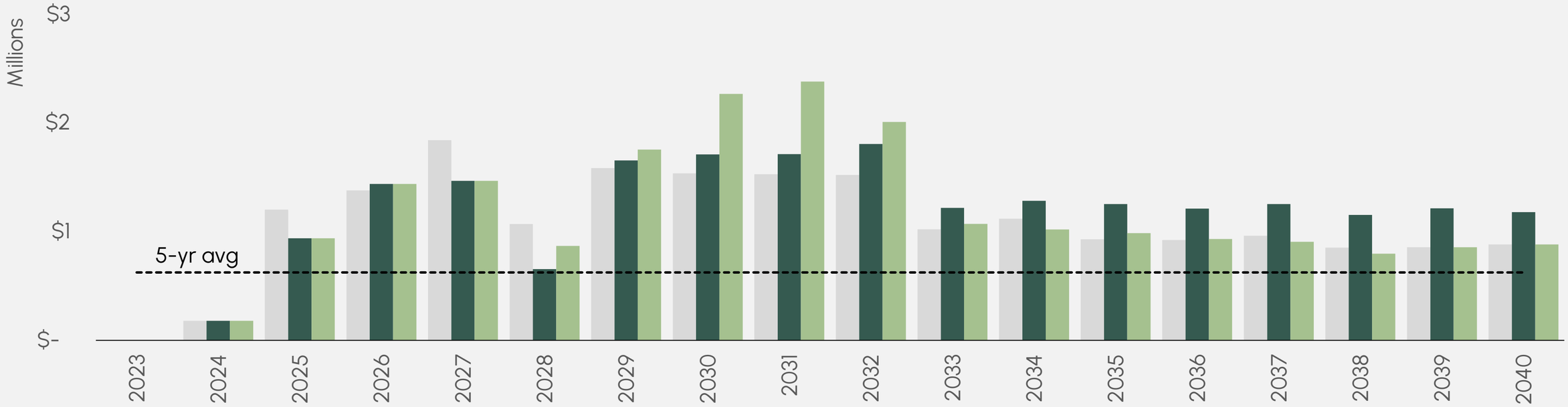
PURCHASE v LEASE COMPARISON

Strategy 3 Baseline recommended purchase strategy

Strategy 3A Lease for 15 years via three consecutive 60-month terms

Strategy 3B Lease for 5 years; then purchase from 2030 on

Costs in million $	3	3A	3B
2024-2026 costs	2.7	2.5	2.5
2027-2030 costs	6	5.5	6.4
After 2030 costs	10.6	14.4	11.8
Total	**19.4**	**22.5**	**20.7**



Assumptions

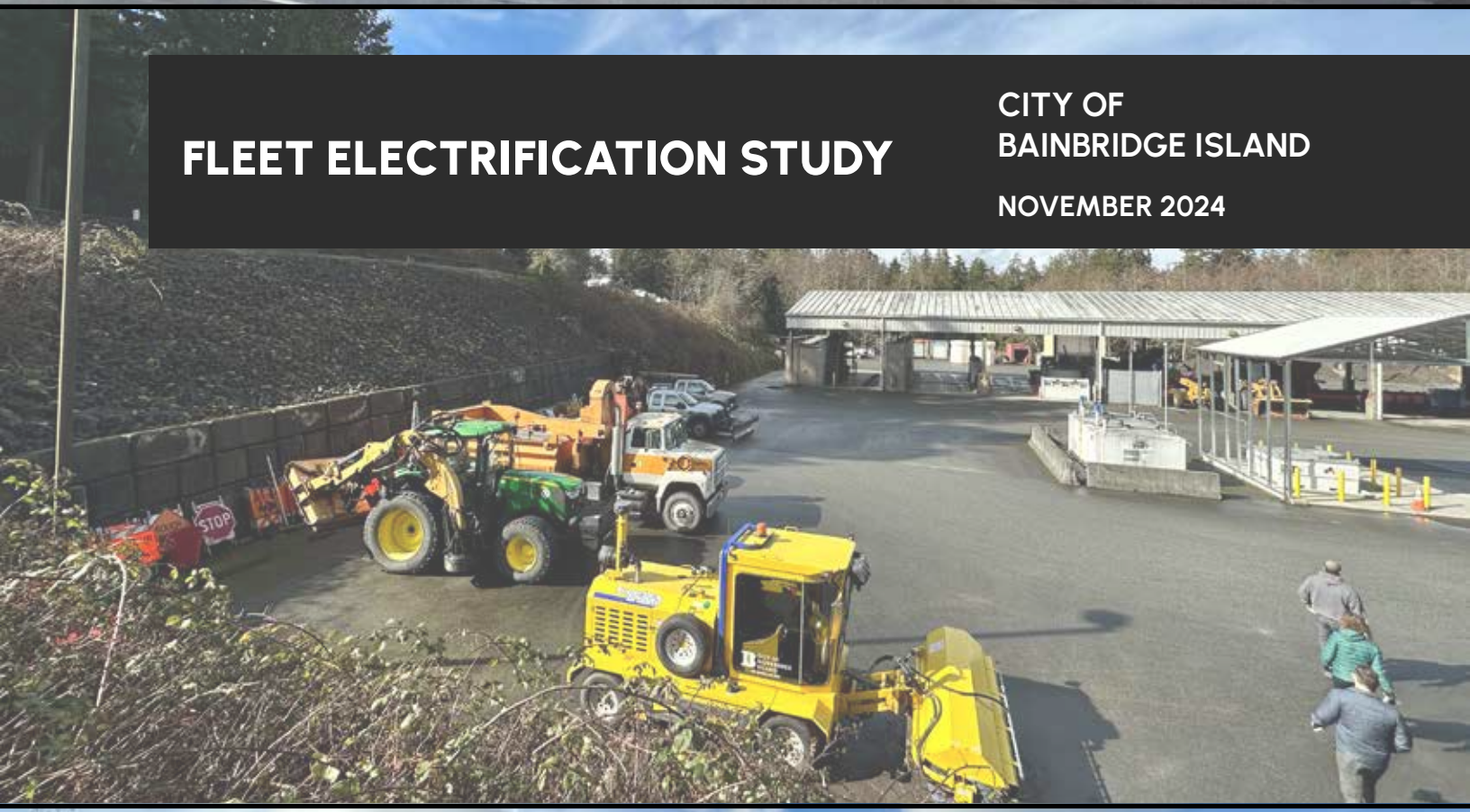
- ***For model types that are not regular SUVs and LD pickups, assumes only purchases***
- *15-year replacement cycle for SUVs and LD pickups to align with lease term options; typical is 14 years or 125,000 miles, whichever comes first*
- *Includes upfitting expenses; excludes maintenance costs, salvage value, and tax credit benefits*

Thank you !

FLEET ELECTRIFICATION STUDY

CITY OF
BAINBRIDGE ISLAND

NOVEMBER 2024



ACKNOWLEDGMENTS

CITY OF BAINBRIDGE ISLAND

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TABLE OF CONTENTS

PROJECT OVERVIEW

In November 2020, the City of Bainbridge Island's (City or COBI) first Climate Action Plan (CAP) was approved by City Council as a collaborative effort between the newly established Climate Change Advisory Committee, City staff, and community stakeholders. One of the three overarching goals of the CAP is to reduce 2014 GHG emissions by 90% by 2045, with interim milestones of 25% reduction by 2025 and 60% by 2035.

A 2019 greenhouse gas (GHG) emissions inventory study for Bainbridge Island found that City fleet operations account for 20% of municipal GHG emissions. To reduce fleet emissions, the CAP outlines three key strategies:

- Goal 4.1.B: "By 2025, transition the City of Bainbridge Island's fleet to 75% electric vehicles and the remainder to biofuels."
- Action 4.B.1.a: "Transition COBI's fleet to primarily electric vehicles, use biofuels where not an option, and encourage other Bainbridge Island taxing districts to also develop a plan."
- Action 4.B.1.b: "Install charging infrastructure across municipal locations (City Hall, Public Works, Police Department) and encourage the installation at the Bainbridge Island School District Bus Barn."

In response to the goals set by the CAP, the City commissioned MAKERS architecture and urban design to develop this Fleet Electrification Study (study). MAKERS developed this study in collaboration with the City of Bainbridge Island and Art Anderson Associates.

FLEET ELECTRIFICATION STUDY

The goals of this study are to:

- Assess system-wide electric vehicle and charging infrastructure needs for the City's fleet.
- Develop a comprehensive strategy for electric vehicle (EV) purchase and electrical infrastructure investment.

This study's recommendations outline a series of investments in electric service and charging infrastructure that will unlock the carbon and cost savings offered by fleet electrification.

Figure 1. Pool vehicles at City Hall

Figure 2. Medium-duty fleet at the Public Works Campus

BAINBRIDGE ISLAND'S 2019 EMISSIONS ARE EQUAL TO...

- Annual emissions of 50,000 passenger vehicles
- Annual energy use of 30,000 households
- 262 million pounds of coal burned

CITY FLEET

FLEET DISTRIBUTION

The City's fleet currently consists of 163 vehicles and equipment at four in-scope facilities[1]: City Hall, the Justice Center, the Public Works Operations & Maintenance Yard (campus), and the Decant Facility; see Figure 3 and Figure 4. These fleet are primarily utilized by four City departments: Finance & Administrative Services (FAS), Planning & Community Development (PCD), Police, and Public Works; see Figure 5.

City-owned vehicles fall into one of three use types:

- Fleet vehicles parked at City facilities and used by assigned staff for off-site jobs.
- Take-home vehicles housed at assigned staff residences overnight.
- Pool vehicles housed at City facilities and shared by staff for official City business.

FAST FACTS

- Vehicles account for 64% of the City's total fleet; equipment accounts for 36%.
- The Public Works department operates 120 fleet, or 74% of the City's total. The Public Works campus on NE Hidden Cove Rd houses 102 of these 120 Public Works fleet. The remaining 26% of the City's fleet are used by FAS, PCD, and Police.
- Take-home vehicles, including Police patrol cars and some administrative vehicles, account for 27% of the City's fleet.
- Four pool vehicles account for 2% of the City's fleet and are located at City Hall.

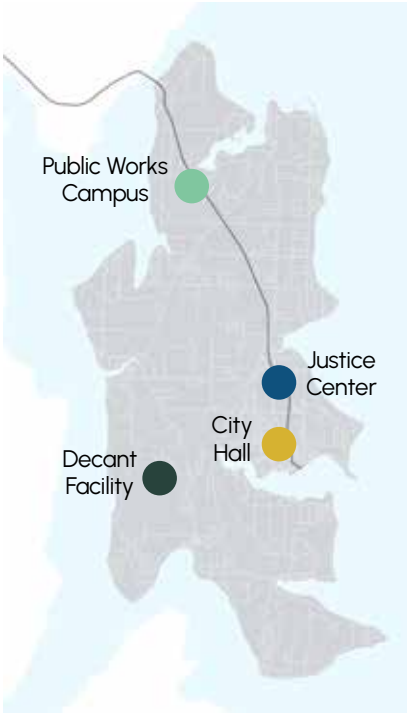


Figure 3. City fleet locations

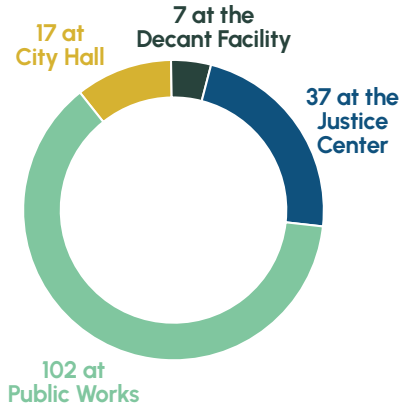


Figure 4. City fleet distribution by facility

Site	Fleet vehicles	Take-home vehicles	Pool vehicles
Finance & Administrative Services			
Justice Center	1	-	-
Planning & Community Development			
City Hall	1	4	1
Police			
Justice Center	6	30	-
Public Works			
City Hall	6	2	3
Public Works Campus	94	8	-
Decant Facility	7	-	-

Figure 5. City fleet by department, location, and vehicle use type as of 2023

1 *City vehicles and equipment located at pump stations, the Eagle Harbor Marina, the Sands Avenue Well site, the Sewer Lift Station, the Wastewater Treatment Plant, and police boats and generators located at the Queen City Yacht Club are not in the scope of this study.*

FLEET TYPE

The City's fleet is classified into two broad categories - rolling stock and non-rolling stock.

ROLLING STOCK

For purposes of this study, "rolling stock" indicates self-propelling vehicles that have a powertrain unit. Most rolling stock use biodiesel, gasoline, or renewable gasoline for fuel. Rolling stock are divided into three sub-categories as defined by the Federal Highway Administration (FHWA) and Department of Energy (DoE):

- **Light-duty:** Class 1-3 vehicles with a manufacturer's gross vehicle weight rating (GVWR) less than 6,001 pounds, including motorcycles, passenger cars (such as minivans, sedans, sport utility vehicles, and small pickup trucks), and off-road vehicles intended to operate on non-paved roads (mowers, golf carts, etc.).
- **Medium-duty:** Class 4-6 vehicles with a GVWR between 6,001 and 14,000 pounds, including mid-sized trucks and vans that have two to three axles and/or six tires.
- **Heavy-duty:** Class 7-9 vehicles with a GVWR greater than 14,000 pounds, including those with four or more axles such as dump trucks, vactor trucks, and larger service vehicles.

NON-ROLLING STOCK

In this study, non-rolling stock includes fleet that are incapable of self-propulsion and lack a powertrain unit. Non-rolling stock fleet include a variety of trailers, truck attachments, plows, sanders, generators, etc.

FAST FACTS

- Rolling stock fleet that are eligible for electrification total 109 vehicles, or 67% of the citywide fleet; the remaining 33% are non-rolling stock and not eligible for electrification.
- Three (or 3%) of the 109 vehicles eligible for electrification are electric today. These include the following:
  - One (1) Ford Mustang Mach-e purchased for the Community Services Officer in 2022 is parked at the Justice Center but charged at the Public Works Campus. The City is expected to install two Level 2 chargers at the Justice Center in 2024 to support charging needs for this vehicle.
  - Two (2) Volkswagen ID.4 purchased in 2023 are parked at City Hall but rely on public Level 2 chargers.
- R99 renewable diesel fuel powers 41 of the 109 eligible fleet; the remaining fleet use propane or unleaded gasoline.

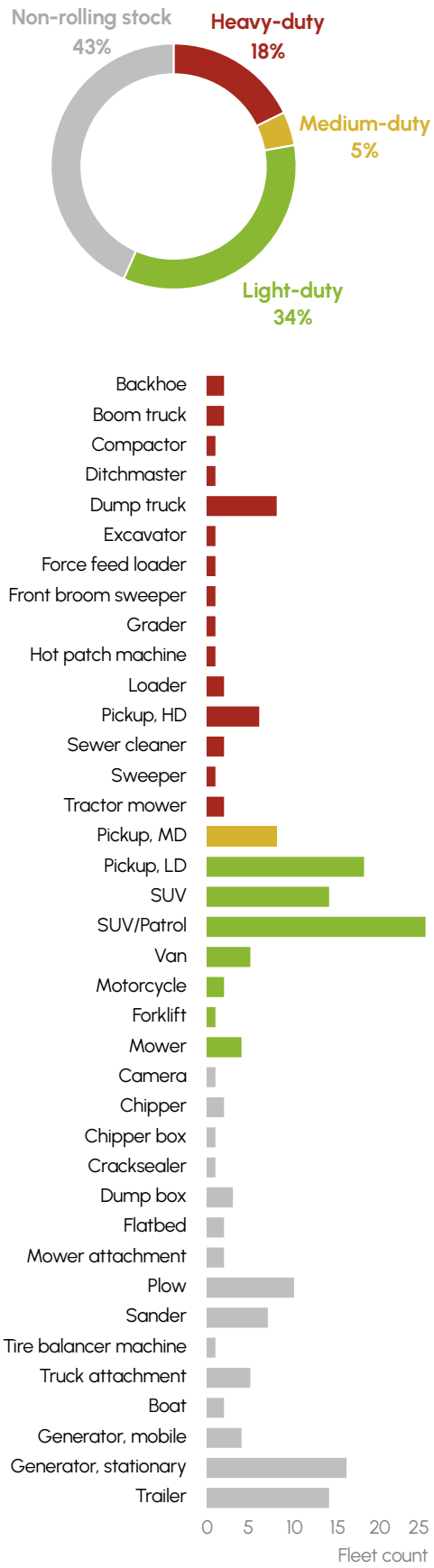


Figure 6. 2023 City fleet by type

ELECTRIC VEHICLE INDUSTRY

The transportation industry is at an early stage of radical re-invention that will impact all aspects of mobility—how people and goods will move, how vehicles will be controlled and fueled, and how transportation will be paid for. It is important to understand the technological context of this transition before converting to electric.

EVs include vehicles that derive all or part of their power from electricity and use batteries to power an electric motor. In this study, this includes battery electric vehicles (BEVs) and plug-in hybrids (PHEVs), but excludes hybrid vehicles.

Commercial EV and PHEV sales increased by 31% globally in 2023[1]. Key reasons for increased EV adoption include reduced upfront costs, cheaper battery and maintenance costs, increased tax credits, and government policies. However, challenges remain for consumers due to unreliable and inaccessible public charging infrastructure, higher upfront costs over an average car with an internal combustion engine (ICE), and recent slowdowns in EV production. The same challenges are being faced by governments working to transition their municipal fleet to electric.

Figure 7. Volvo FMX Electric truck
Source: Volvo

Figure 8. E5 street sweeper, currently being considered by the City for purchase in 2026
Source: Ravo

LIGHT- AND MEDIUM-DUTY VEHICLES

As of 2024, there are multiple light- and medium-duty EVs suitable for municipal fleet use that are cost-comparable with ICE vehicles and have longer drive ranges than previous electric models. Despite increased availability, EVs remain a fraction of total light-duty vehicle models currently available to fleet buyers[2].

HEAVY-DUTY VEHICLES

Heavy-duty EV model designs are rapidly advancing and regularly previewed at trade fairs and automobile shows. While production is currently limited in North America, some manufacturers such as Volvo have started to successfully operate heavy-duty electric fleet in Europe. Tests of Volvo's FMX Electric in Sweden have shown the vehicle can sustain operations with heavy payloads, long distances, and in sub-zero temperatures. The pricing and time frame for availability in North America, however, is still uncertain.

Most manufacturers are expecting wider availability for heavy-duty EVs by 2027-2029 and are predicting comparable costs to ICE vehicles. Schedules are based on current available information and may be impacted by supply chain conditions, technological developments, and automakers' production schedules.

MARKET REVIEW SUMMARY

According to EV manufacturers, EV equivalents are widely available for 70% of the City's eligible vehicles. This includes 69 of the 109 eligible vehicles, with eight additional vehicles likely to have EV equivalents by 2025. That said, actual availability may be impacted by supply chain issues and long procurement lead times.

For the 30% of eligible City fleet currently lacking EV equivalents, alternative fuel options are generally available.

Electric vehicle models are available for around 70% of the City's eligible fleet.

1 *"Global electric car sales rose 31% in 2023 - Rho Motion", by Nick Carey. 2023, Reuters.*
2 *"Electric Transportation". 2023, Edison Electric Institute.*

FLEET RECOMMENDATIONS

Recommended electric models to replace City vehicles are identified below. Models were chosen based on availability and ability to meet operational needs. Rough order-of-magnitude (ROM) costs for vehicles are based on recent City EV investments, manufacturer's suggested retail price, and limited pre-order information from municipalities. Research shows EV costs will likely be comparable to average ICE vehicles and are not expected to increase significantly.[1]

Upfit markup percentages are estimated based on upfitting expenses for existing fleet, which include modifications and accessories like decals, lights, and attachments that customize a vehicle to meet operational needs. Upfit markups should be reviewed on a case-by-case basis during fleet procurement.

Fleet type	Recommended electric model	Cost range (2023$)	Upfit markup
Light-duty vehicles			
Van	Ford E-Transit	$40,000	19-29%
Pickup, light-duty	Ford F150 Lightning	$30,000	4-38%
SUV/Patrol	Ford Mustang Mach-E	$40,000	18-76%
SUV	Volkswagen ID.4	$40,000	11-33%
Mower	John Deere Z370R Ztrak	$6,400	-
Forklift	Toyota 8BNCU20	$47,000	-
Motorcycle	Zero SR/F	$24,000	-
Medium-duty vehicles			
Pickup, medium-duty	Ford F150 Lightning	$40,000	10-21%
Heavy-duty vehicles			
Compactor	BOMAG BW 120 AD e-5	$2,500	-
Force feed loader	Case 580 EV[2]	$75,000-$155,000	1%
Front broom sweeper			7%
Grader/loader			1%
Tractor mower			-
Backhoe	John Deere E-Power Backhoe	$60,000	1-2%
Sweeper	Ravo 5 E-Series	$265,000	2%
Excavator	Volvo ECR25 Electric	$125,000	-
Boom truck	Volvo FMX Electric[2]	$30,000-$240,000	3%
Dump truck			1-8%
Pickup, heavy-duty			7-24%
Sewer cleaner			1%

Figure 9. EV fleet recommendations by vehicle type

1 ICCT. (2022). *Assessment of light-duty electric vehicle costs and consumer benefits in the United States in the 2022-2035 time frame.* [White paper].

2 *Assumes chassis for the selected models can be modified to meet operational needs; price range will vary based on modification level required.*

EQUIPMENT AND INFRASTRUCTURE

The City's transition to electrical vehicles will require investments in charging equipment, backup power, and electrical infrastructure, as described below. See Appendix A: Electrical Infrastructure Estimates for details.

CHARGING EQUIPMENT

Three levels of charging equipment are commonly used for EVs:

- **Alternating current (AC) Level 1 chargers** utilize wall outlets and offer about five miles of range per hour of charging.
- **AC Level 2 chargers** serve as home, workplace, or public charging stations.
- **Level 3 chargers, or direct-current (DC) fast chargers**, are utilized for fleet or commercial charging.

FACILITY CHARGING NEEDS

Charging needs were determined in collaboration with City staff and informed this plan's recommendation to install both Level 2 and DC fast chargers at City facilities; charger basics are summarized in Figure 11 at right.

Level 2 chargers are appropriate for most municipal fleet parked at City facilities, which typically have low vehicle miles traveled and long overnight dwell times. DC fast chargers are more suitable for critical response vehicles such as plow trucks, patrol cars, and other on-call vehicles that must be recharged quickly. DC fast chargers can support opportunity charging by providing a quick but efficient charge in a short period of time.

Recommended charger types and quantities correspond with the type and quantity of electric fleet a facility is anticipated to accommodate in the future; see Figure 10.

	Level 2 chargers	DC fast chargers
City Hall	9	-
Justice Center[1]	-	4
Public Works upper lot	7	3
Public Works lower lot	14	4
Decant Facility[2]	-	-

Figure 10. Recommended new EV chargers at City facilities

	Level 2 chargers	DC fast chargers
Charger type	30kW AC charger	120kW DC fast charger
Charger cost[3]	$6,000	$100,000
Drive range (30 min charge)	12.5 miles	200+ miles
Charging speed[4]	4-10 hours	< 1 hour
Volts	240	300-800

Figure 11. Level 2 and DC fast charger basics

Figure 12. Level 2 charger

Figure 13. DC fast charger

1 *Excludes two Level 2 chargers planned for installation at the Justice Center in 2024.*
2 *No Level 2 or DC fast chargers are planned at the Decant Facility due to insufficient eligible vehicles. Level 1 charging solutions could be pursued if desired.*
3 *Charger cost does not include cost of infrastructure.*
4 *Charging speed from empty to 80% according to the U.S. Department of Transportation.*

POWER GENERATING EQUIPMENT

As the City transitions to EVs, reliable backup power sources will be needed to ensure operations can continue through electrical disruptions. Diesel generators are recommended as they are readily available, reliable, and relatively inexpensive at about $70,000 per unit.

Despite recent investments in "green" energy sources such as battery storage units or solar power, these technologies are not currently recommended as back-up power solutions due to their high cost and/or limited charging capacity.

ELECTRICAL INFRASTRUCTURE

Electrical infrastructure investments will ensure sites can support the electrical load of EV charging equipment. This infrastructure includes transformers, junction boxes, switch gears, etc. Installation often requires removal of pavement to lay conduits or install transformers. As the property owner, the City is responsible for infrastructure and site improvements and is typically required to pay Puget Sound Energy to upgrade transformer capacity.

Conceptual layouts of recommended electrical infrastructure at City Hall, the Public Works campus, and the Justice Center are shown on page 11 through page 13. See Appendix A. Electrical Infrastructure Investment for more information.

CITY HALL

Recommended investment at City Hall includes installing nine Level 2 chargers to support 16 light-duty vehicles. As these vehicles are parked overnight, have 14 hours or more of dwell time, and are not required to charge every day based on their typical daily miles driven, it is appropriate to install nine Level 2 chargers. This recommendation assumes charging stations can be shared between fleet and will be located in the back parking lot for fleet use only; see Figure 14 for the proposed layout.

To accommodate proposed charging infrastructure, it is recommended that the site's existing 45kVA transformer be upgraded and a 300kVA transformer be installed in the northeast corner of the site, the same location as the existing transformer. This recommendation assumes the new charging system will be independent from existing City Hall electrical infrastructure feeding the building.

A new 300kVA diesel generator located in the southwest portion of the back parking lot will provide emergency power for this system that is separate from the existing generator feeding the building in the northeast corner of the site.

FAST FACTS

16 light-duty EVs

9 Level 2 chargers

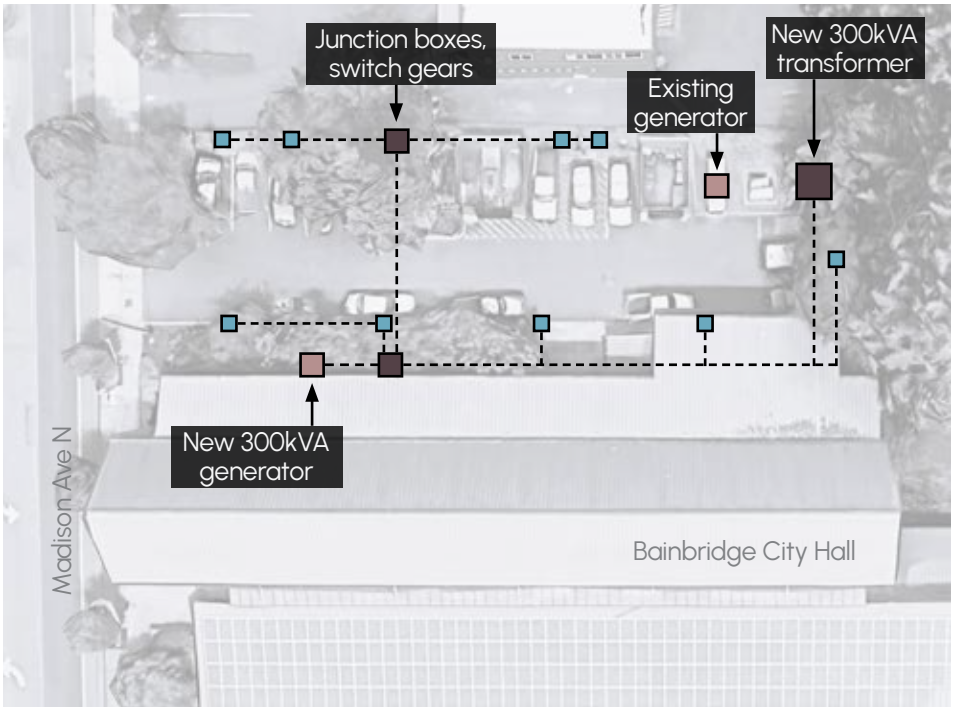


Figure 14. Proposed City Hall electrical equipment and infrastructure layout

PUBLIC WORKS

The Public Works campus will eventually need to accommodate overnight charging for 52 future vehicles, including light-, medium-, and heavy-duty vehicles used to support a variety of Public Works functions, including on-call or emergency needs. The charging infrastructure at this site recommends installing 14 Level 2 chargers and four DC fast chargers in the lower lot, with ten of the Level 2 chargers located inside the covered parking structure. In the upper lot, seven Level 2 chargers and two DC fast chargers are recommended to be installed, with one Level 2 charger available for staff or visitor use. This mix of chargers and their distribution between lower and upper lots ensures vehicles with longer dwell times and fewer miles driven have access to Level 2 chargers and DC fast chargers can support opportunity charging for critical fleet and provide rapid charging for vehicles coming to the campus for maintenance.

The existing transformer at the south end of the upper lot, owned by Puget Sound Energy, will help accommodate some of the added electrical load. However, a new 1500 kVA transformer is recommended to be installed on the east side of the upper lot in order to support the site's planned transition to EVs.

Emergency power for this site will require either installing a new standalone emergency generator, a new mobile generator, or an upgrade of the existing generator. See Figure 15 for the proposed electrical equipment and infrastructure layout; generators are not pictured as their locations will be refined during future design efforts beyond the scope of this study.

FAST FACTS

13 light-duty EVs

8 medium-duty EVs

31 heavy-duty EVs

21 Level 2 chargers

6 DC fast chargers

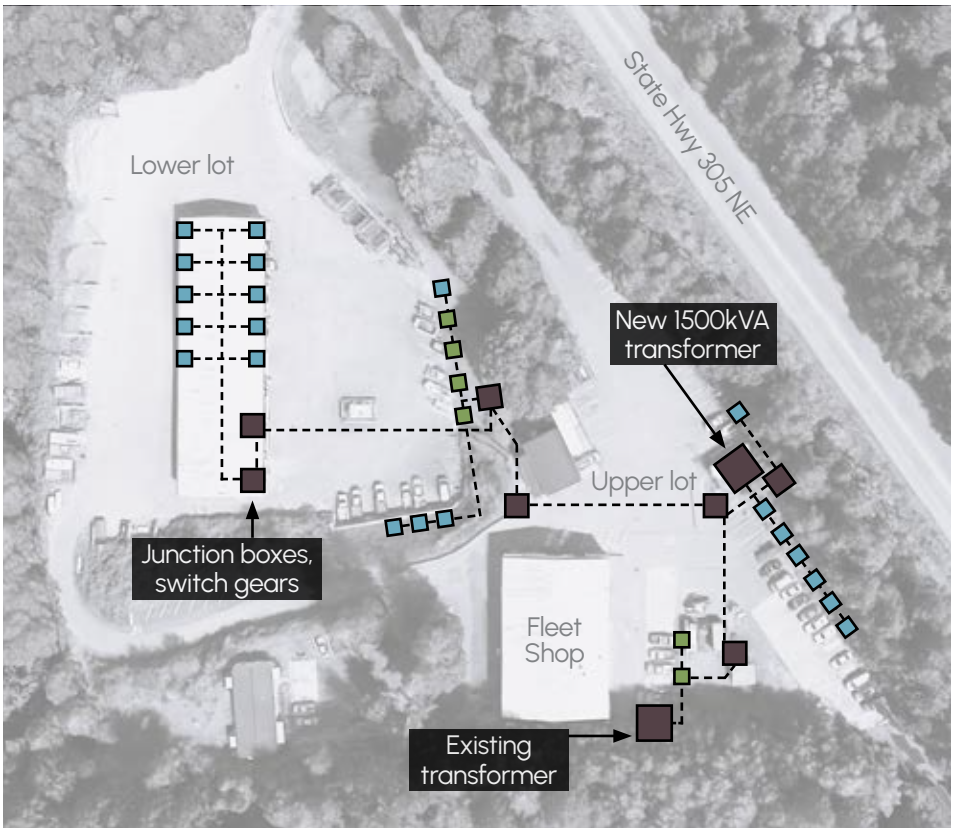


Figure 15. Proposed Public Works electrical equipment and infrastructure layout

JUSTICE CENTER

The Justice Center site must accommodate electric load for three light-duty fleet vehicles and provide some charging for 30 take-home light-duty vehicles anticipated for future administrative and patrol use. Although the majority of assigned vehicles are not parked at the Justice Center overnight, these vehicles will benefit from rapid charging as they are used by first responders and drive more than most City fleet.

Three DC fast chargers are recommended to be installed in the secure Police parking lot, and one DC fast charger is recommended to be installed in the east parking lot for public or staff use. The City has plans to install two Level 2 chargers at the Justice Center in 2024[1]. See Figure 16 for the proposed layout. Charging options at non-City owned sites for take-home vehicles were not evaluated as part of this study.

The site's existing 500kVA transformer will be insufficient to meet the desired charging needs. A new 1000kVA transformer is recommended to be installed next to the existing transformer.

The existing 150kW generator will not supply sufficient emergency power to this system, so a standalone emergency generator or mobile generator is recommended be installed near the existing generator. It is not recommended to upgrade the existing generator due to its location and capacity. See Figure 16 for the proposed electrical equipment and infrastructure layout.

FAST FACTS

33 light-duty EVs; includes 30 take-home fleet

4 DC fast chargers

2 Level 2 chargers, planned in 2024[1]

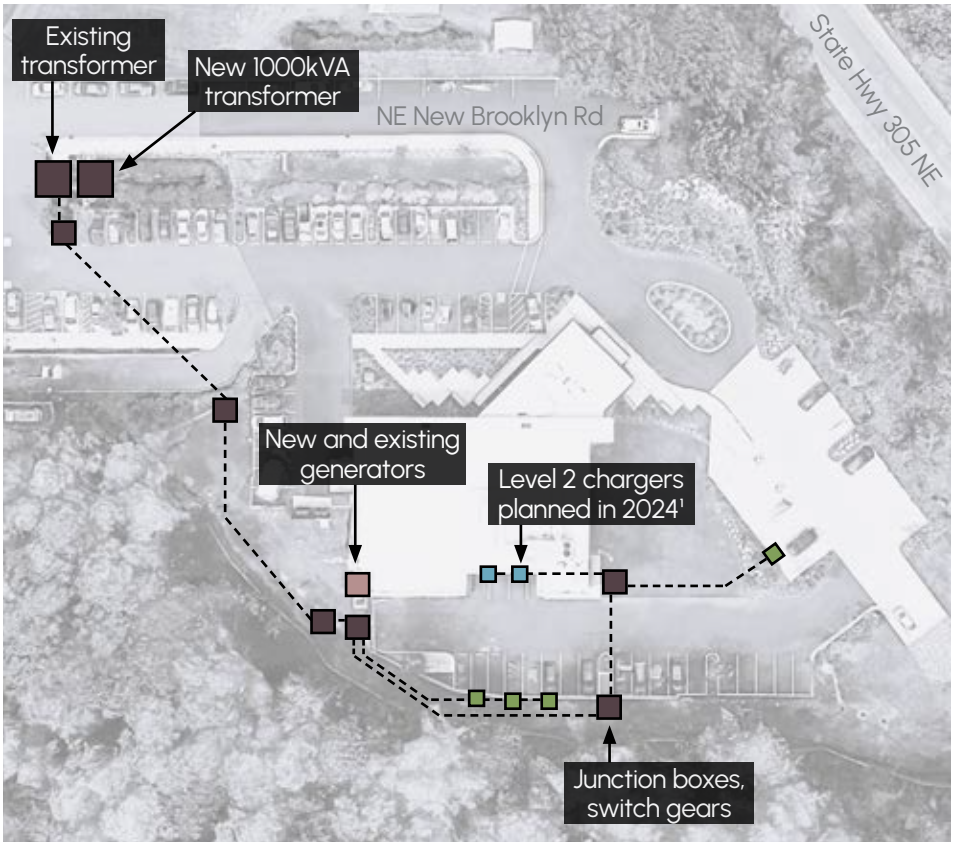


Figure 16. Proposed Justice Center electrical equipment and infrastructure layout

1 *Level 2 chargers planned for installation in 2024 are excluded from this plan's cost estimates.*

COST TO ELECTRIFY

The total rough-order-of-magnitude cost to electrify 100% of eligible City of Bainbridge fleet and to provide recommended charging infrastructure is $19.4 million in 2023 dollars; see Figure 17. This includes fleet acquisition, equipment, and infrastructure costs.

- **Fleet acquisition** accounts for the largest portion of total fleet electrification costs, at $14.6 million. This estimated total may change due to final purchase price and upfit costs. See page 8 for more information.
- **Equipment** investments account for the smallest portion of the overall project cost, at $1.8 million. Equipment costs include Level 2 chargers, DC fast chargers, and generators to provide backup power.
- **Infrastructure** investments account for the second-largest share of the total costs, at $3 million. This cost includes design, trenching and excavation, cable and conduit installation, site restoration, and equipment distribution.

Total project costs are not escalated to year of purchase, and exclude utility fees for added transformer capacity as this will need to be coordinated with the local utility, Puget Sound Energy[1].

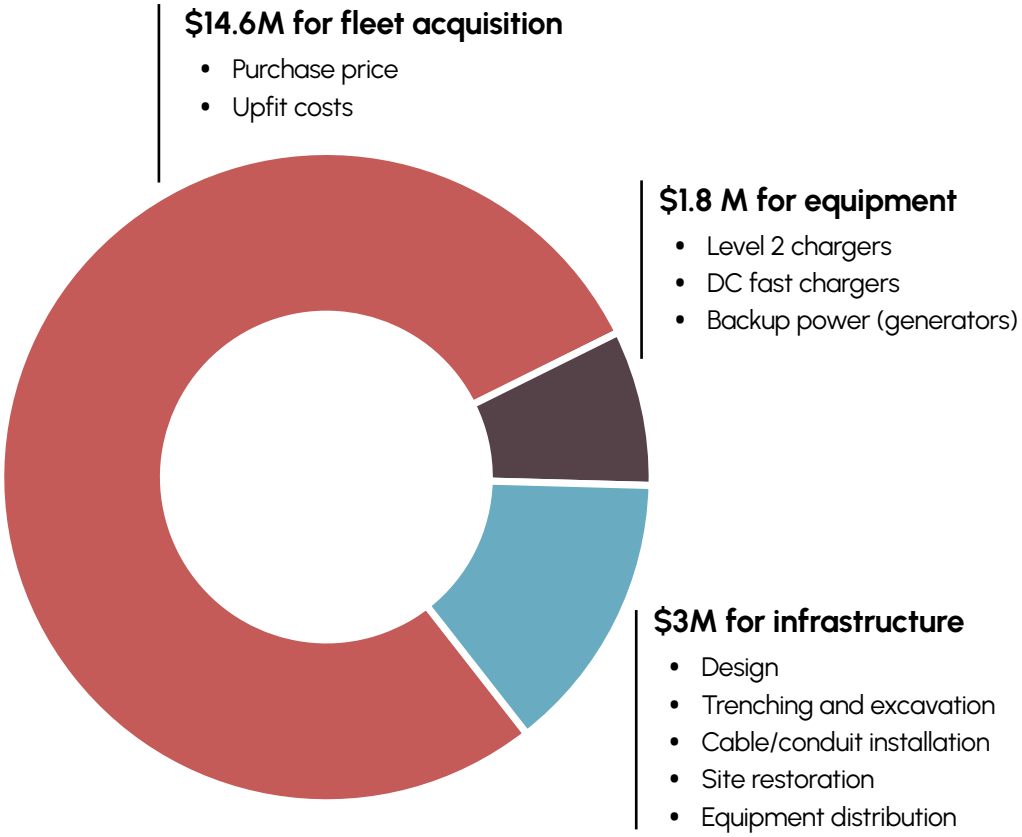


Figure 17. Total ROM project costs in 2023 dollars

1 *As discussed on page 7 and page 8, due to the uncertainties in pricing of electric vehicles, costs are not escalated and shown in 2023 dollars to reflect current market conditions and best available information.*

PHASING STRATEGIES

To meet the City's GHG emissions reduction and CAP goals, four electrification strategies were explored. Strategies were evaluated relative to the performance considerations listed at right and described below. All costs are shown in 2023 dollars and are not escalated to year of purchase.

Electrification strategy investments are compared to the City's five-year average annual spending on fleet purchase and upfitting expenses of $625,000 per year.

City vehicles typically follow a 10-25 year replacement cycle that varies based on vehicle condition and budget. Depending upon the timeline of each electrification strategy, some vehicles could be replaced ahead of schedule, resulting in lost fleet asset value. Percentage of vehicles replaced ahead of schedule is considered in the strategy analysis detailed below.

STRATEGY PERFORMANCE CONSIDERATIONS

- Total costs through 2030
- 75% electrification year
- 100% electrification year
- Percentage of vehicles replaced before typical schedule

STRATEGY 1: CAP GOAL

Strategy 1 pursues aggressive investment in order to meet CAP goals by transitioning 72% of eligible City fleet to electric by 2025. This strategy assumes the remaining 3% of eligible fleet and vehicles without EV equivalents continue to use R-99 fuel.

Strategy 1 requires a $10 million investment in electrical infrastructure and EVs in 2024-2025, a significant jump from the currently approved 2024 budget of $180,000 for vehicle acquisition. After 2025, typical spending will resume and the City's eligible fleet will be 100% electric by 2038. This strategy replaces 52% of eligible fleet ahead of schedule.

CAP Goal 4.1.B:

"By 2025, transition the City of Bainbridge Island's fleet to 75% electric vehicles and the remainder to biofuels."

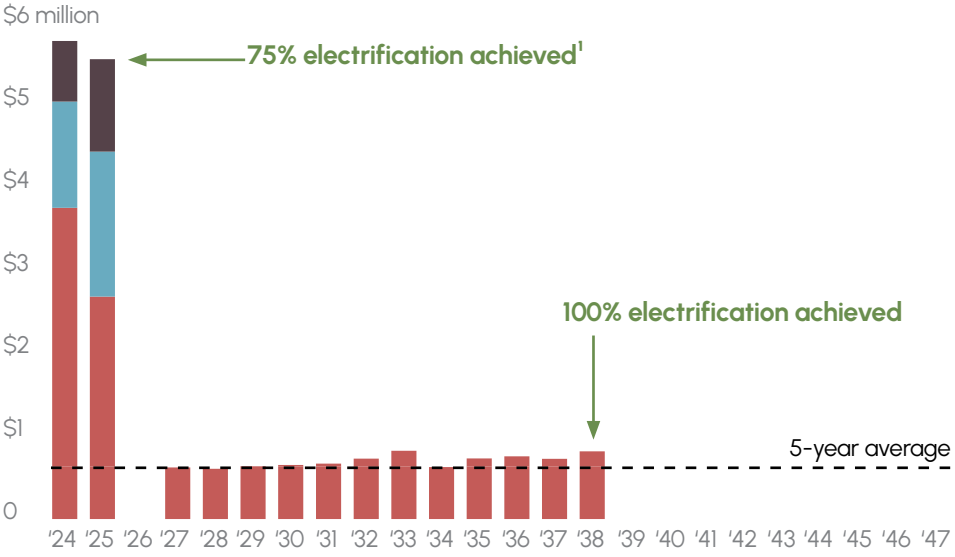


Figure 18. Strategy 1 electrification investment schedule

FAST FACTS

75% electrification by **2025**[1]

100% electrification by **2038**

52% of fleet replaced ahead of schedule

1 *Strategy 1: CAP Goal assumes 72% of eligible fleet are electrified by 2025; the remaining 3% will use biofuels.*
2 *Includes EV chargers and backup power.*

STRATEGY 2: TYPICAL SPENDING

By maintaining five-year average spending levels of $625,00 per year, Strategy 2 reaches 75% electrification in 2038 and 100% electrification in 2047, well behind the City's CAP goals. Strategy 2 completes planning and design in 2024, invests in infrastructure from 2025 to 2029, and maintains average vehicle spending from 2030 onward. This strategy does not replace any vehicles ahead of schedule.

FAST FACTS

75% electrification by **2038**

100% electrification by **2047**

No fleet replaced ahead of schedule

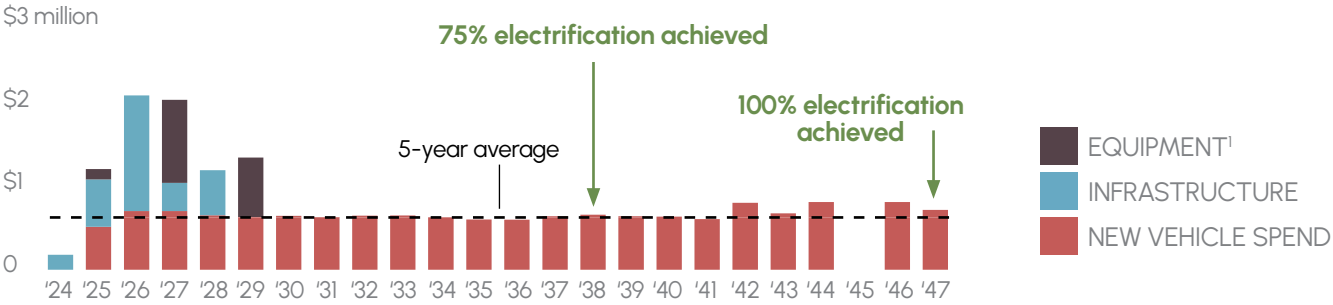


Figure 20. Strategy 2 electrification investment schedule

STRATEGY 3: INCREASED SPENDING

Strategy 3 doubles five-year average spending levels to total $1.2 million per year, reaching 75% electrification in 2035 and 100% electrification in 2040. This strategy completes planning and design in 2024 and invests in infrastructure from 2025-2027. EVs and equipment investments are spread between 2028 to 2040, selectively investing in City Hall and take-home EVs while delaying purchase of some fast chargers. This strategy replaces 6% of eligible fleet ahead of schedule.

FAST FACTS

75% electrification by **2035**

100% electrification by **2040**

6% of fleet replaced ahead of schedule

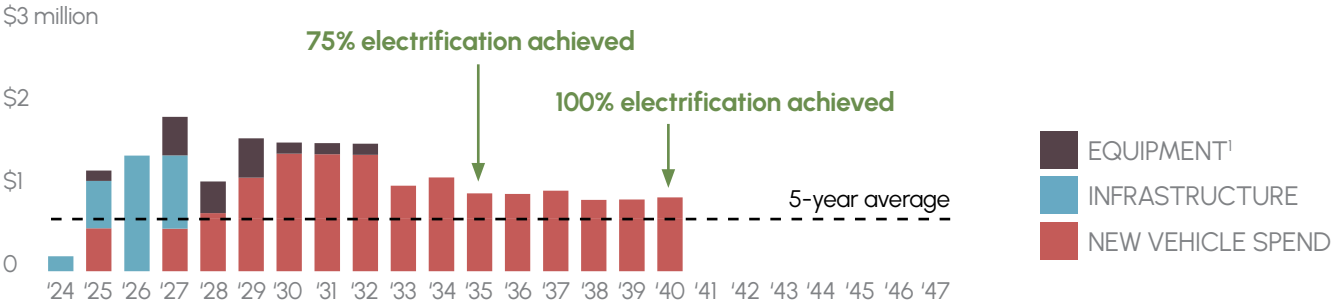


Figure 19. Strategy 3 electrification investment schedule

1 *Includes EV chargers and backup power.*

STRATEGY 4: INVEST FOR CLIMATE

Strategy 4 uses similar 2024-2027 infrastructure investments as Strategy 3, but transitions 75% of eligible fleet to electric by 2031 by investing more heavily in EVs between 2028 and 2031. This strategy reaches 100% electrification in 2037, and replaces 24% of eligible fleet ahead of the typical schedule.

FAST FACTS

75% electrification by **2031**

100% electrification by **2037**

24% of fleet replaced ahead of schedule

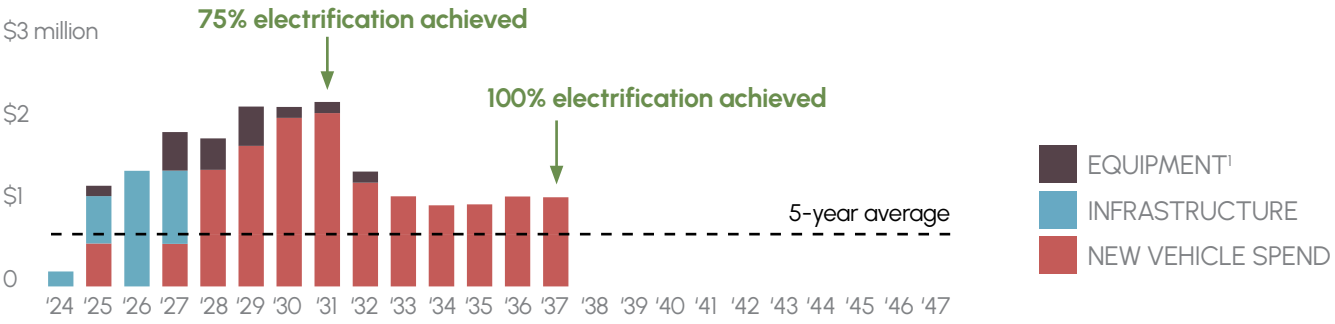


Figure 21. Strategy 4 electrification investment schedule

1 *Includes EV chargers and backup power.*

STRATEGY COMPARISON

The team analyzed benefits and drawbacks to each strategy's investment plan.

- Strategy 1 aggressively invests to meet CAP goals. It requires significant up front investment and vehicle replacement, though some specialized EVs may not be available by 2025. It is the least feasible option due to escalated spending in the 2024-2026 budget cycle and may be impacted by staff and contractor capacity.
- Strategy 2 is the most feasible strategy as it continues average spending, but is the slowest strategy to reach electrification goals. This strategy does not require replacing vehicles ahead of schedule.
- Strategy 3 reaches CAP goals sooner than Strategy 2 by doubling average annual spending. It has the second-lowest percentage of vehicles replaced early.
- Strategy 4 gets closer to meeting CAP goal timelines than Strategies 2 and 3, but requires a higher rate of premature vehicle replacement.

While they do not meet the CAP goal of 75% electrification by 2025, Strategies 2-4 spread investment over three budget cycles. Strategies 3 and 4 present an ambitious investment strategy that best aligns with industry evolution by delaying acquisition of heavy-duty EVs until they are more widely available, and focuses funds on infrastructure to ensure the success of EVs upon their arrival.

	Strategy 1	Strategy 2	Strategy 3	Strategy 4
75% electrified by	2025	2038	2035	2031
100% electrified by	2039	2047	2040	2037
% replaced early	52%	-	6%	24%

Figure 22. Electrification target and premature vehicle replacement comparison

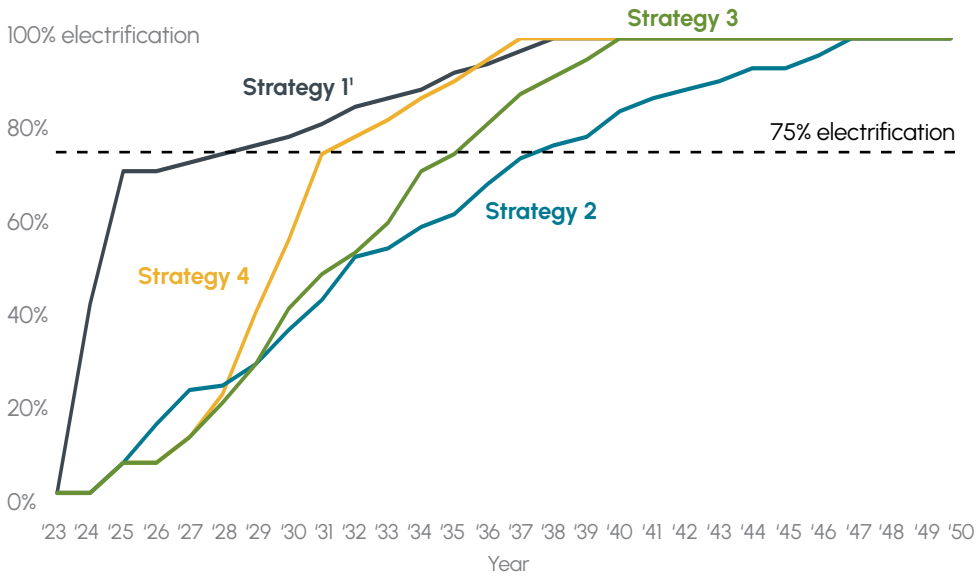


Figure 23. Strategy comparison[1]

1 *Strategy 1: CAP Goal assumes 72% of eligible fleet are electrified by 2025; the remaining 3% will use biofuels.*

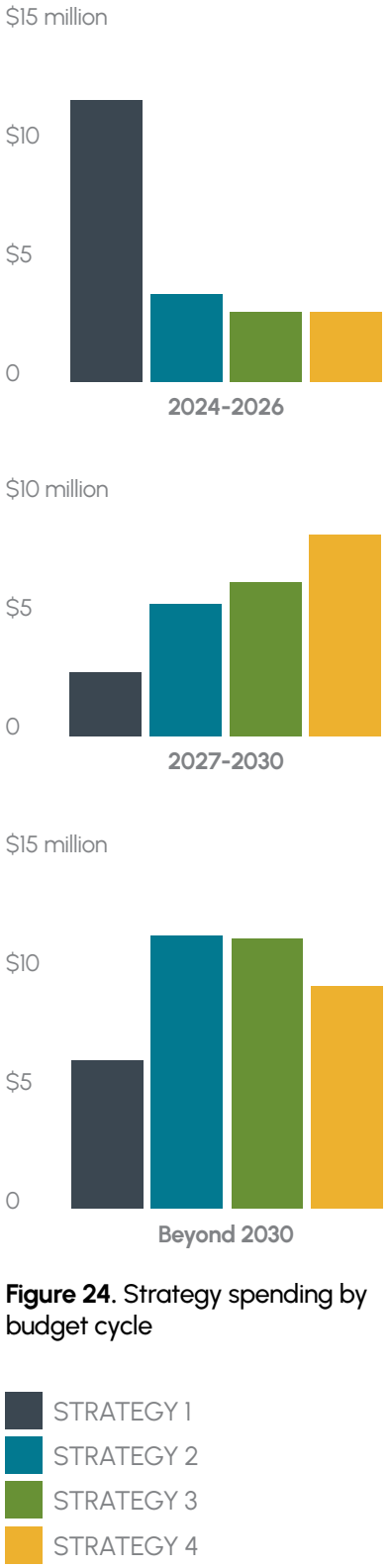


Figure 24. Strategy spending by budget cycle

OTHER CONSIDERATIONS

Two strategies were evaluated to reduce project costs outlined on page 14. This include fleet right-sizing and lowering annual vehicle payments through leasing.

FLEET RIGHT-SIZING

Fleet right-sizing, or evaluation of fleet size and composition to maintain an optimal fleet inventory:

- Saves vehicle acquisition and annual maintenance costs,
- Lowers fuel and energy use,
- Reduces greenhouse gas emissions, and
- Allows purchase of fleet to meet operational needs that are currently not being met.

Additionally, City should review vehicle assignment policy based on employee's job role, frequency of field duties, ability to telecommute, and annual miles traveled. For example, a technician who primarily performs field duties may require a personal take-home vehicle, but an employee who telecommutes more than 50% of the time and/or drives less than 5,000 miles per year may be better suited using a shared pool vehicle. Although, there may be some cost savings due to converting assigned take-home vehicles to pool vehicles, it can, however, increase capital costs to support fueling or charging at City facilities.

To further right-size its fleet and expand employee options, the City should consider alternative transportation, such as e-bikes to support employee in-person meetings near City facilities that do not require a vehicle.

Recommend the City evaluate potential cost savings and operational impacts as a follow-on effort.

LEASING

Leasing vehicles for municipal use has the potential to reduce upfront purchase costs while meeting operational needs by reducing annual payments when compared against one-time purchase expenses. Additionally, it allows the City to trial EV models to test operational suitability, use newer models sooner, customize lease term options, allows replacing fleet sooner to lower maintenance costs, reduces administrative expenses during disposal or surplus, and minimizes investment in a depreciating asset.

ENTERPRISE LEASE ASSUMPTIONS

Lease option evaluated by this study is based on open-end equity lease information provided to City staff by Enterprise Fleet Management (Enterprise) in January-February, 2024.

It assumes:

- City makes principal and interest payments on 12-72-month terms with no mileage limits
- Tax credits, if applicable, will reduce lease payments
- Cost of upfitting and downfitting can be included in monthly lease payments, or billed as a one-time expense
- Maintenance can be performed by City staff with local vendor support, when needed
- City returns vehicle after end of term; any equity proceeds will be returned to the City

Per Enterprise, limited SUV and light-duty pickup truck electric vehicles are available for lease, as of February 2024. This include four models - Nissan Leaf, Chevrolet Blazer EV, Hyundai Kona Electric, and Ford F-150 Lightning. Other model types are not available today, but maybe available in the future and could be reviewed by staff during procurement. **29 of the 109 eligible vehicles can be replaced with an electric vehicle using this lease approach**.

	Purchase	5-yr Lease	15-year Lease
SUV			
Volkswagen ID.4	$39K	Not available for lease	
Chevrolet Blazer	$50K	$56K, or $11.2K/yr	$168K
Sedan, or compact SUV			
Nissan Leaf	$32K	$30K, or $5.9K/yr	$89K
Hyundai Kona EV	$34K	$35K, or $7K/yr	$105K
Pickup truck			
Ford F-150 Lightning	$56K	$54K, or $10.8K/yr	$162K

Figure 25. Purchase versus 5-year and 15-year lease costs comparison[1]

1 *Typical replacement cycle for sedans, SUVs, and pickup trucks is 15 years*

STRATEGIES

To evaluate potential cost-reduction through leasing, two leasing strategies were explored. Strategies were evaluated relative to the total costs through and after 2030 and compared against the recommended strategy 3 described on page 16 and page 22. All three strategies assume 75% electrification is achieved in 2035, 100% electrification in 2040, completes planning and design in 2024 and invests in infrastructure from 2025-2027.

Assumes 15-year replacement cycle for SUVs and light-duty pickups to align with lease term options. Costs include upfitting expenses, but exclude maintenance costs, salvage value, fueling or electricity costs, and any tax credit benefits. All costs are shown in 2023 dollars and are not escalated to year of purchase.

Electrification strategy investments are compared to Strategy 3.

STRATEGY 3A

Strategy 3A pursues lease for 15 years via three consecutive 60-month lease terms for electric SUVs and light-duty pickup trucks available for lease from Enterprise. For all other model types, considers only purchase option.

STRATEGY 3B

Strategy 3A pursues lease for 5 years via one 60-month lease terms for electric SUVs and light-duty pickup trucks available for lease from Enterprise, then purchases from 2030 onwards. For all other model types, considers only purchase option.

STRATEGY COMPARISON

The team analyzed benefits and drawbacks to each strategy's investment plan; see Figure 26 for details.

- Baseline strategy that consider purchase-only option requires significant upfront investment, but costs $19.4 million through 2040, which is $1.3-$3.1 million less when compared against leasing options.
- Cost benefit of lower annual payments is impacted by limited electric model types that are available for lease from Enterprise in 2024.
- Strategy 3B lowers annual payments over purchase-only strategy, allows City to invest in charging infrastructure and adopt electric vehicles for available models through 2030 and returns to purchase-only option after 2030, and saves $1.8million over strategy 3A through 2040.

While leasing does not reduce overall City investment, it does, however, lower short-term annual fleet acquisition expenses and repurposes budget for installing charging infrastructure at City facilities.

Leasing options are expected to evolve in the upcoming years and City staff should consider monitoring other funding sources, such as General Motors's Envolve program for municipal leasing program for access to other model like the Chevrolet Blazer EV Police Pursuit Vehicle which is expected to launch in late 2024 as part of this program.

	3	3A	3B
2024-2026	$2.7M	$2.5M	$2.5M
2027-2030	$6M	$5.5M	$6.4M
After 2030	$10.6M	$14.4M	$11.8M
Total	**$19.4M**	**$22.5M**	**$20.7M**

Figure 26. Purchase versus lease cost comparison

SUMMARY AND BENEFITS

Strategy 3 is the recommended direction as it balances investments over three budget cycles while helping the City reach its electrification goals sooner than with typical spending; see Figure 27.

IMPLEMENTATION STRATEGY

The recommended implementation strategy divides investment into three phases, mirroring the City's current and upcoming budget cycles.

IMMEDIATE - $2.8M IN 2024-26
Complete infrastructure planning and design. Begin electrical infrastructure and equipment investments at City Hall and the Justice Center.

NEAR-TERM - $6M IN 2027-30
Complete infrastructure investments at the Justice Center and Public Works. Continue investing in charging equipment. Invest in high priority EVs, primarily take-home vehicles and fleet located at City Hall.

LONG-TERM - $10.6M AFTER 2030
Invest in fast charging capabilities. Continue investing in EVs through 2040, when 100% electrification is reached for eligible fleet.

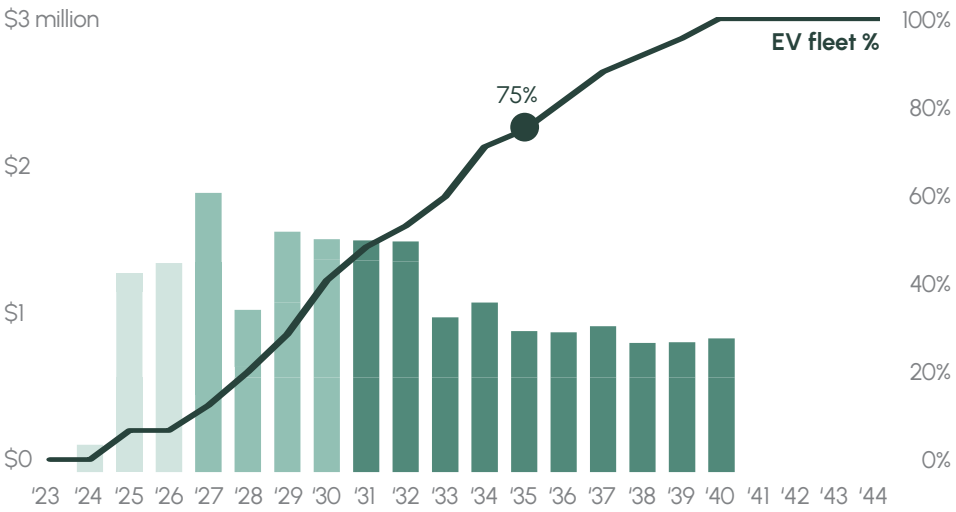


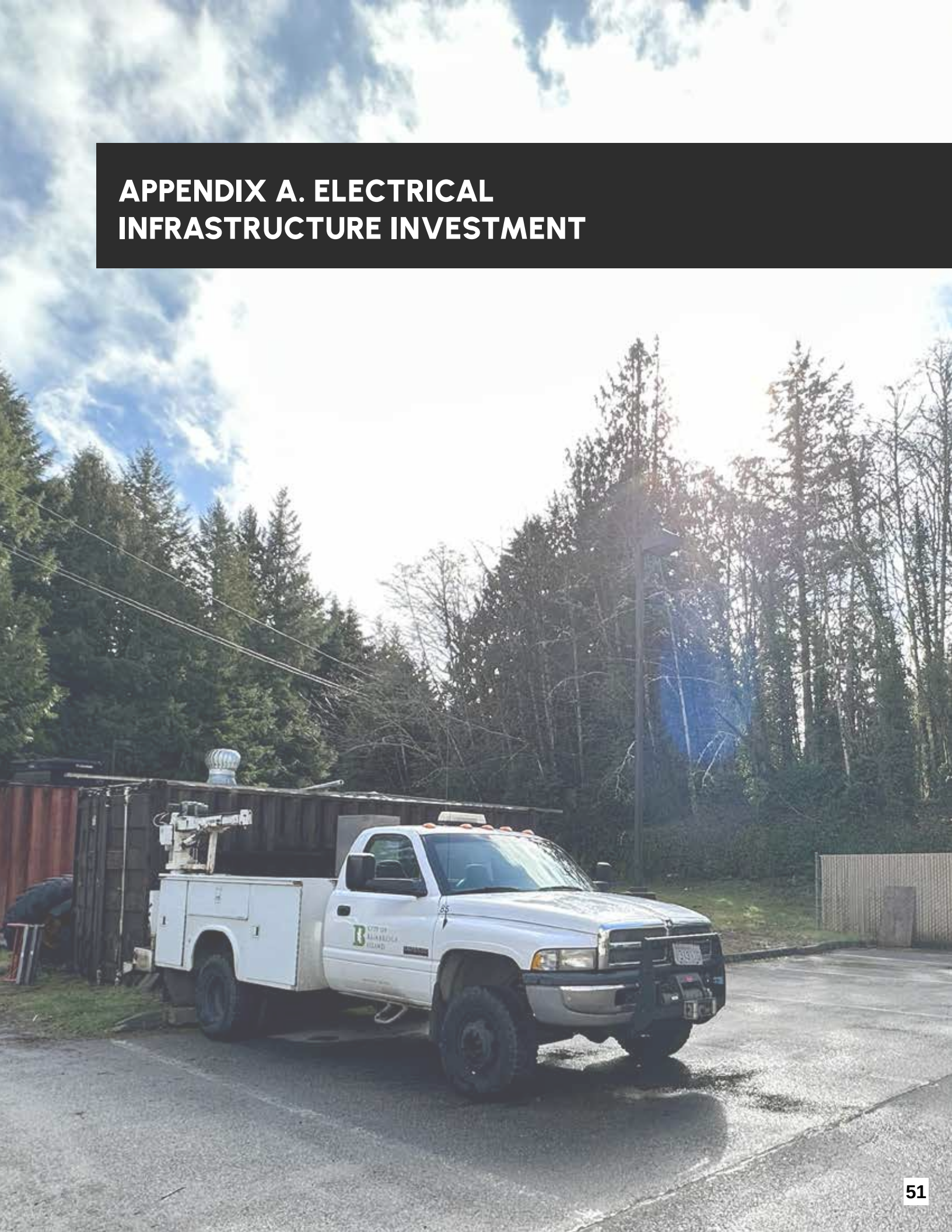
Figure 27. Investment strategy by budget cycle

RECOMMENDED STRATEGY BENEFITS

Implementing the study recommendations offers the following benefits:

- Meets CAP goals and ensures sites are ready to support EV charging.
- Achieves 75% electric fleet by 2035 and 100% by 2040, three and seven years sooner than would be reached with typical spending levels.
- Invests reasonable annual average of $1.2 million.
- Tracks with Washington's Clean Energy Transformation Act (CETA) goals to provide GHG-free electricity by 2045.

APPENDIX A. ELECTRICAL INFRASTRUCTURE INVESTMENT



INTRODUCTION

Art Anderson Associates prepared supporting documents for the City of Bainbridge Island's City Hall, Public Works, and Justice Center facilities to inform the fleet electrification strategy.

The following documents are included for each of the City's three primary facilities:

- Technical memorandum
- Electrical schematic drawings
- Cost estimates

The following background documents are also included, beginning on page A-21:

- Cost assumptions
- Level 2 charger specifications
- Level 3 charger specifications
- Diesel generator specifications

CHAPTER ORGANIZATION

CITY HALL

ART ANDERSON MAKERS architecture · planning · urban design

Technical Memorandum

Date:	04/05/2023	**Project No:**	FAMAK002
To:	City of Bainbridge Island	**Project Name:**	COBI Fleet Electrification Strategy
From:	Art Anderson | Makers		
Subject:	Bainbridge Island City Hall – EV Charging Stations		

Project Background

The City of Bainbridge Island has a goal to start a significant transition away from Internal Combustion Engine (ICE) vehicles to Electric Vehicles (EV) in their city owned fleet in the coming years. The transition will set attainable and actionable goals for 2025, 2030, and 2035 and will include light, medium, and heavy-duty vehicles. The City's goal is to electrify all vehicles with a viable EV alternative and for those that without to adopt alternative fuels to meet the City's needs while reducing greenhouse gas emissions.

City Hall Fleet

The first site focusing on the transition is at City Hall, which has a fleet of 16 light duty vehicles. Charging these vehicles to have them ready for daily use will require the installation of nine Level II EV Charging stations that each have two charging cables capable of full charging capacity. The chargers will occupy space in the back parking lot of City Hall and will not be available for public use or employee personal vehicle charging unless otherwise noted.

Charging Station Selection

This report is based on a desired charging time for a Ford Mustang Mach-E with a 91kWh battery pack from 20% to 80% of less than six hours, which enables the vehicles to be used and recharged overnight. This model of Mach-E can make it roughly 341 miles with the AWD option at 100% charge. This report used the Blink Series 7 charging station as an example of a Level II to estimate power needs and costs. Charging times and site power requirements will vary depending on selected chargers and vehicles.

Each of the Blink Series 7 stations will require (2) dedicated 100A 3-pole circuit breakers, each feeding one of the charging ports. This will enable two vehicles to charge simultaneously at the 16.64kW rate, utilizing a 3Φ 208V power supply. It is understood that the noted charging rate of 16.64kW is the maximum available charging rate for a particular charging station. The actual rate of charge will depend on the on-board charging management system for the vehicle. Typically, the maximum charging rate is only seen between 20%-80% of charge.

Utility Service and New Infrastructure

There is an existing Puget Sound Energy owned transformer on site providing 208Y120 volt service to the property, rated at 45kVA. This will not be sufficient to feed the new charging station infrastructure and will need to be upgraded as a part of the overall project. Based on the 16.64kW charging rate we anticipate needing to remove the existing transformer and install a 300kVA transformer in the same place. This cost can be difficult to estimate as material and labor costs are not commercially available at the utility rate, but $60,000 would be a reasonable assumption for the full transformer replacement. This is based on not needing to replace the concrete vault that the existing transformer is sitting on or needing to refeed the primary cabling.

The new charging station service will stand alone from the rest of the City Hall infrastructure from its own dedicated switchboard. The switchboard will need to be rated at 1800A to serve all charging stations, with room for a minimum of twenty, 100A 3-pole breakers. Puget Sound Energy will require a standalone CT enclosure and meter to serve this new equipment.

Emergency Power

For the emergency power there will need to either be a standalone emergency generator installed, a mobile generator rated for the same capacity, or the existing generator may be upgraded to handle the added load. Upgrading the existing is not recommended due to the location of the current unit and redundancy. Due to space constraints where these vehicles will be charged, it is recommended that a 300kVA permanent generator option be utilized. This can be connected to an integrated Automatic Transfer Switch (ATS) that will control whether the new charging station infrastructure is powered by the generator or the utility power.

While it would be ideal to be able to utilize a "green" energy source, such as solar or a battery storage unit, the current state of those technologies do not lend themselves to this application. Solar panels will not be able to generate enough power to charge the vehicles an appreciable amount, both due to efficiency and the local climate. Battery storage backup capacity would be overly large and expensive, and at most could get all vehicles one round of charging before being depleted. A battery storage unit large enough to charge all these vehicles just one time, would cost somewhere along the lines of $0.8-$1.2 million not including the cost of installation. For comparison, a generator capable of charging these stations can be purchased for $70k, not including installation (see attached cost estimate).

Design, Equipment, and Construction Costs

The estimated cost of developing this site and installing charges is $765,000. This can be broken down into roughly $680,000 for the labor and materials to install the charging infrastructure, $25,000 for the engineering design, and $60,000 for the utility design and upgrade costs. Please see attached generator quote and construction cost estimate for further detail.

Glossary	Assumptions
ATS: Automatic Transfer Switch	Construction will be done during regular hours
CT: Current Transformer	CDF backfill will be used for driven surface restoration
EV: Electric Vehicle	Work to begin in 2023 and to be completed in 2024
ICE: Internal Combustion Engine	A vactor truck will be required for much of the excavation
kVA: Kilo-Volt Amperes	Use tax is included in the construction cost estimation
kW: Kilo-Watt	Employee parking lot will be empty and accessible during construction
kWh: Kilo-Watt Hour(s)	Engineering Design, and utility costs/coordination, are excluded from the construction cost estimation

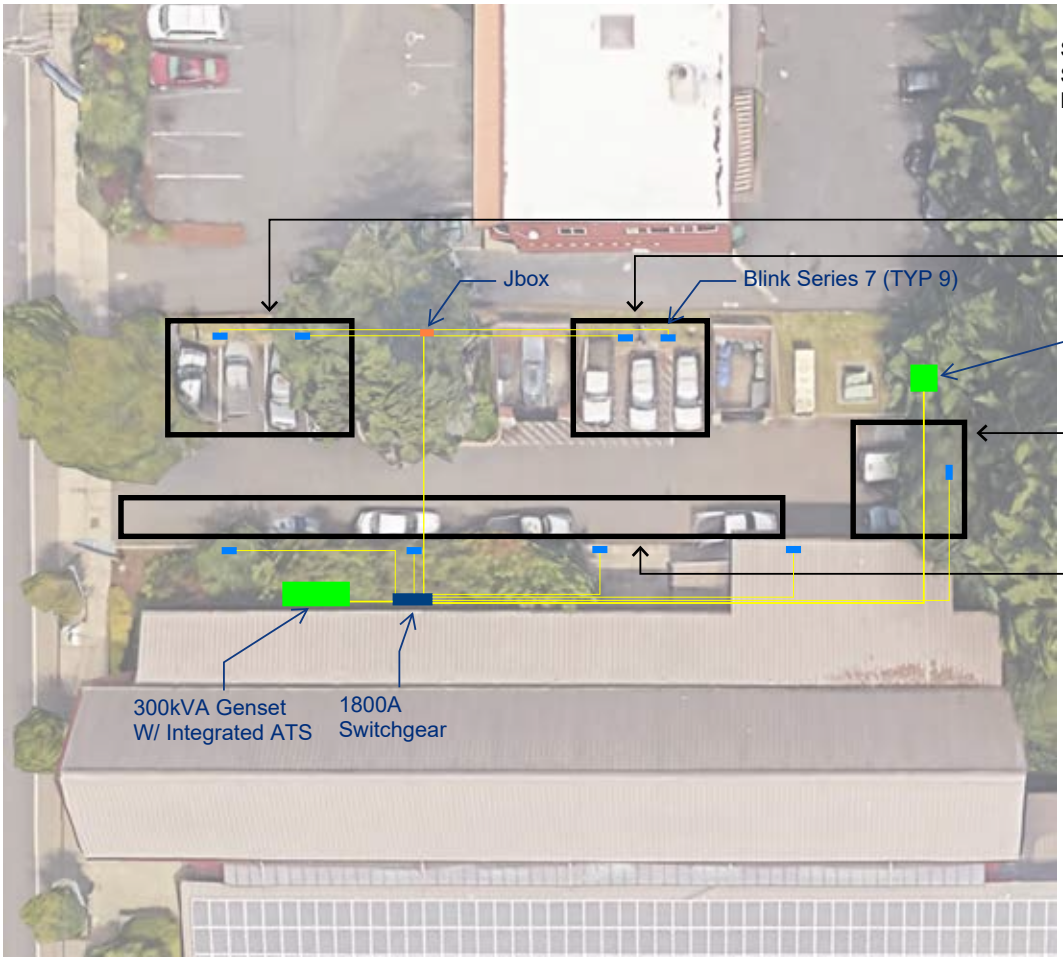
ELECTRICAL CONSTRUCTION CONSULTING

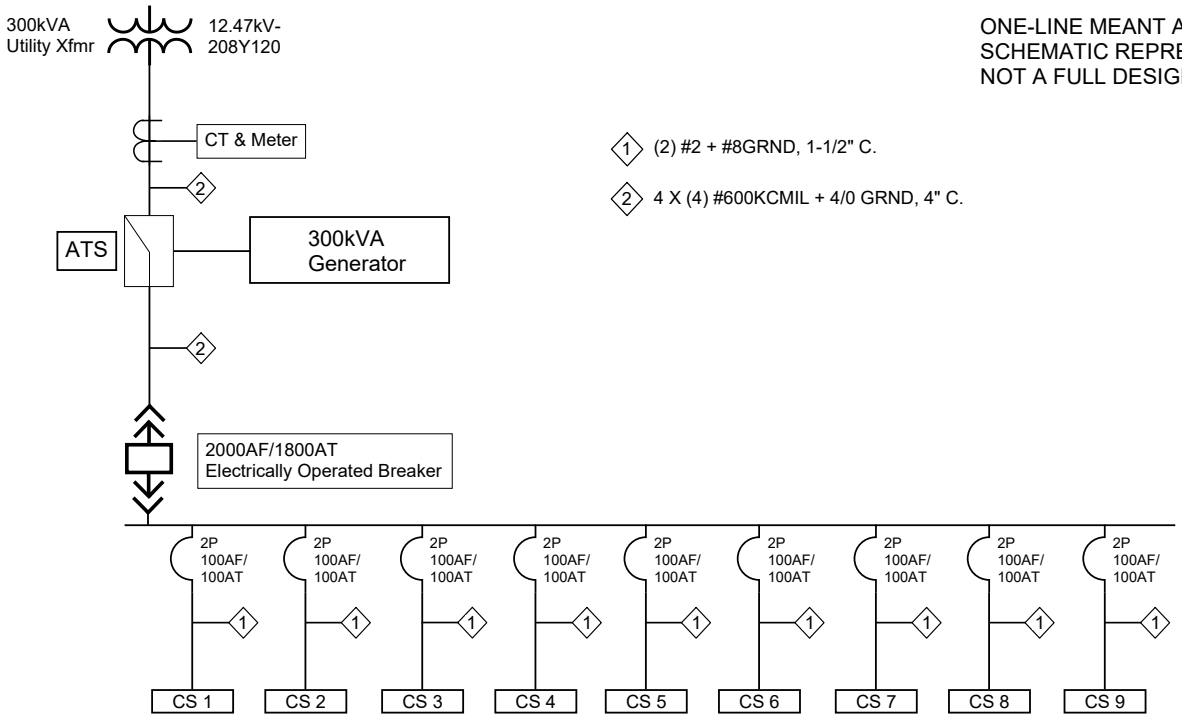
City Hall EV - Budget

Description	Calculated %	Calculated $	Adj. %	Adj. $	Modified $	Modified %	% of Final Price	Alarm	Code	Notes
Database Material		129,121.77			129,121.77		19.009			
Material Adjustment	5.000	6,456.09			6,456.09	5.000	0.950		Mat'l Escalation	
Material Tax	10.100	13,693.36			13,693.36	10.100	2.016		USE Tax	
Material Total		***149,271.22***			***149,271.22***		***21.976***			
Field Labor		101,945.94			101,945.94		15.008			
Shop Labor										
Incidental Labor										
Labor Factoring										
Labor Escalation		4,590.18			4,590.18		0.676			
Indirect Labor		11,894.81			11,894.81		1.751			
Labor Tax										
Labor Total		***118,430.93***			***118,430.93***		***17.435***			
Equipment		15,656.41			15,656.41		2.305			
General Expenses		25,869.78			25,869.78		3.809			
Subcontracts		16,500.00			16,500.00		2.429	On		
Quotes		207,481.60	10.100	20,955.64	228,437.24		33.630	On	USE Tax	
Prime Cost		***533,209.94***	***3.930***	***20,955.64***	***554,165.58***		***81.584***			
Material Overhead										
Labor Overhead										
Equipment Overhead										
General Expense Overhead										
Subcontract Overhead										
Quotes Overhead										
Adjustment Overhead	6.000	31,992.60	3.930	1,257.33	33,249.93	6.000	4.895			
Total Overhead	6.000	31,992.60	3.930	1,257.33	33,249.93	6.000	4.895			
Net Cost		565,202.54			587,415.51		86.479			
Material Markup										
Labor Markup										
Equipment Markup										
General Expense Markup										
Subcontract Markup										
Quotes Markup										
Adjustment Markup	15.000	79,981.49	3.930	3,143.35	83,124.84	15.000	12.238			
Total Markup	15.000	79,981.49	3.930	3,143.35	83,124.84	15.000	12.238			
Job Expense										
Financing										
Bonding	1.300	8,387.39	3.930	329.63	8,717.02	1.300	1.283			
Final Adj										
Selling Price		653,571.42	3.930	25,685.95	679,257.37		100.000			
Global Tax										
Final Price		653,571.42			**$ 679,257.37**			Alarm		

Exhibit A

City Hall





PUBLIC WORKS CAMPUS

ART ANDERSON MAKERS architecture · planning · urban design

Technical Memorandum

Date:	10/09/2023	**Project No:**	FAMAK002
To:	City of Bainbridge Island	**Project Name:**	COBI Fleet Electrification Strategy
From:	Art Anderson | Makers		
Subject:	Bainbridge Island Public Works – EV Charging Stations		

Project Background

The City of Bainbridge Island has a goal to start a significant transition away from Internal Combustion Engine (ICE) vehicles to Electric Vehicles (EV) in their city owned fleet in the coming years. The transition will set attainable and actionable goals for 2025, 2030, and 2035 and will include light, medium, and heavy-duty vehicles. The City's goal is to electrify all vehicles with a viable EV alternative and for those without to adopt alternative fuels to meet the City's needs while reducing greenhouse gas emissions.

Public Works Fleet

The second site focusing on the transition is the Public Works Complex. Public Works vehicles need to be ready for daily use and will charge overnight.

The client has requested that 36 vehicles be charged in the lower lot. Daily use will require the installation of (18) Level II EV Charging stations that each have two charging cables capable of full service. The chargers will occupy space in the east and south locations of the lower parking lot of the Public Works Complex and will not be available for public use or employee personal vehicle charging.

The upper parking lot will contain (7) level II chargers and (3) level III chargers. One of the level II chargers will be for employee/public use.

Charging Station Selection

This report is based on an NB120 charger with two charging ports. The level III charging stations selected are NB120 to standardize the brand for maintenance.

Utility Service and New Infrastructure

There is an existing Puget Sound Energy owned transformer on site providing 277/480 volt service to the property, supplying a 600 amp switchboard. This will not be sufficient to feed the new charging station infrastructure. A 150 KW generator set is also installed at the site.

The electric vehicle charging stations are a new technology and subsequently the electrical codes are not fully developed. Electrical services are sized according to the equipment connected to its circuits and the demand factors for the equipment.

Demand factor is defined as the ratio of the sum of the maximum demand divided by the total load. It will always be one or less than one. While researching demand factors for charging stations we were unable to locate any specific demand factors assigned to them. This may change in the future as more is learned about the charger's electrical consumption. Article 625.42 of the National Electric Code (NFPA 70) requires that the service and feeders be sized in accordance with the product ratings for EV chargers. For now, all equipment is fully rated based on the input KVA shown in the NB cut sheets. During the design process it may be determined that smaller electrical transformers and switchboards can be utilized.

The new charging station service will stand alone from the rest of the Public Works Complex infrastructure with its own dedicated switchboard. The estimated KVA obtained from summing the KVA requirements of each charger is 1400 KVA. PSE will likely install a 1500 KVA transformer.

The Upper Lot Main Switchboard will need to be rated at 3000A to serve all charging stations, with room for a minimum of (10) 3-pole breakers. Puget Sound Energy will require a standalone CT enclosure and meter to serve this new equipment.

The Lower Lot Switchboard will be rated at 2000 amps and will require space for (9) three pole circuit breakers. The lower lot will also have a panelboard located at the covered storage building and it will be rated at 800 amps and will require space for (10) three pole circuit breakers. The loads on the new switchboard and panelboard are lower than the ratings but electrical equipment is manufactured for set values and the closest value to the actual loads has been chosen.

Emergency Power

For the emergency power there will need to either be a standalone emergency generator installed, a mobile generator rated for the same capacity, or the existing generator may be able to be upgraded to handle the added load. The cost estimate includes providing a manual transfer switch and receptacle for installation of a temporary generator when the need arises. Our thinking is that most outages will be less than 8 hours and a portion of the vehicles will have sufficient charge so a temporary emergency source would be the most practical solution.

While it would be ideal to be able to utilize a "green" energy source, such as solar or a battery storage unit, the current state of those technologies do not lend themselves to this application. Solar panels will not be able to generate enough power to charge the vehicles an appreciable amount, both due to efficiency and the local climate. Battery storage backup capacity would be overly large and expensive, and at most could get all vehicles one round of charging before being depleted.

Construction Costs

The construction costs are provided by Electrical Construction Consulting and are detailed in the the attached cost report. A total of $959,300 is projected for the upper lot and $1,734,400 for the lower lot. This does not include the utility cost to install the new 1500 KVA transformer. The EV charger cost is broken out separately in case the client wishes to purchase them separately for installation by a contractor.

E2 ELECTRICAL CONSTRUCTION CONSULTING

Bainbridge Island - O&M Upper Lot - Budget - 10-6-2023

Description	Calculated %	Calculated $	Adj. %	Adj. $	Modified $	Modified %	% of Final Price
Database Material		121,703.32			121,703.32		12.687
Material Adjustment	5	6,085.17			6,085.17	5	0.634
Material Tax	10.1	12,906.64			12,906.64	10.1	1.345
Material Total		***140,695.13***			***140,695.13***		***14.666***
Field Labor		145,034.23			145,034.23		15.119
Shop Labor							
Incidental Labor							
Labor Factoring							
Labor Escalation		6,526.02			6,526.02		0.68
Indirect Labor		22,108.87			22,108.87		2.305
Labor Tax							
Labor Total		***173,669.12***			***173,669.12***		***18.104***
Equipment		28,919.21			28,919.21		3.015
General Expenses		35,309.74			35,309.74		3.681
Subcontracts		16,000.00			16,000.00		1.668
Quotes		359,780.00	10.1	36,337.78	396,117.78		41.292
Prime Cost		***754,373.20***	***4.82***	***36,337.78***	***790,710.98***		***82.426***
Material Overhead							
Labor Overhead							
Equipment Overhead							
General Expense Overhead							
Subcontract Overhead							
Quotes Overhead							
Adjustment Overhead	10	75,437.32	4.817	3,633.78	79,071.10	10	8.243
Total Overhead	10	75,437.32	4.817	3,633.78	79,071.10	10	8.243
Net Cost		*829,810.52*			*869,782.08*		*90.668*
Material Markup							
Labor Markup							
Equipment Markup							
General Expense Markup							
Subcontract Markup							
Quotes Markup							
Adjustment Markup	10	75,437.32	18.66	14,072.88	89,510.20	11.32	9.331
Total Markup	10	75,437.32	18.66	14,072.88	89,510.20	11.32	9.331
Job Expense							
Financing							
Bonding							
Final Adj					7.72	0.001	0.001
Selling Price		905,247.84	5.971	54,052.16	959,300.00		100
Global Tax							
Final Price					**$ 959,300.00**		

Phase 1 || Base Bid - UG Infrastructure	172,400.00			
Phase 1 || Civil Work - Trench/Excavation	47,300.00			
Phase 1 || Asphalt - Demo	6,900.00			
Phase 1 || Asphalt - Restoration	13,600.00	$	240,200.00	Phase 1 Total
Phase 2 || Base Bid - Cable/Equipment Install	157,300.00			
Phase 2 || Electrical Distribution Equip. Procurement	238,600.00			
Phase 2 || Level 2 EV Charger Procurement (14)	56,100.00			
Phase 2 || DCFC EV Charger Procurement (4)	267,100.00	$	719,100.00	Phase 2 Total
Subtotal	***$ 959,300.00***			
Alt1 : Utility Fee Budget???	TBD			

E2 ELECTRICAL CONSTRUCTION CONSULTING

Bainbridge Island - O&M Lower Lot - Budget

Description	Calculated %	Calculated $	Adj. %	Adj. $	Modified $	Modified %	% of Final Price
Database Material		293,103.52			293,103.52		16.899
Material Adjustment	5	14,655.18			14,655.18	5	0.845
Material Tax	10.1	31,083.63			31,083.63	10.1	1.792
Material Total		***338,842.33***			***338,842.33***		***19.537***
Field Labor		295,482.96			295,482.96		17.037
Shop Labor							
Incidental Labor							
Labor Factoring							
Labor Escalation		13,295.67			13,295.67		0.767
Indirect Labor		45,043.09			45,043.09		2.597
Labor Tax							
Labor Total		***353,821.72***			***353,821.72***		***20.4***
Equipment		58,918.05			58,918.05		3.397
General Expenses		46,989.35			46,989.35		2.709
Subcontracts		16,000.00			16,000.00		0.923
Quotes		572,815.00	10.1	57,854.32	630,669.32		36.362
Prime Cost		***1,387,386.45***	***4.17***	***57,854.32***	***1,445,240.77***		***83.328***
Material Overhead							
Labor Overhead							
Equipment Overhead							
General Expense Overhead							
Subcontract Overhead							
Quotes Overhead							
Adjustment Overhead	10	138,738.65	4.17	5,785.43	144,524.08	10	8.333
Total Overhead	10	138,738.65	4.17	5,785.43	144,524.08	10	8.333
Net Cost		*1,526,125.10*			*1,589,764.85*		*91.661*
Material Markup							
Labor Markup							
Equipment Markup							
General Expense Markup							
Subcontract Markup							
Quotes Markup							
Adjustment Markup	10	138,738.65	4.17	5,785.43	144,524.08	10	8.333
Total Markup	10	138,738.65	4.17	5,785.43	144,524.08	10	8.333
Job Expense							
Financing							
Bonding							
Final Adj					111.07	0.006	0.006
Selling Price		1,664,863.75	4.177	69,536.25	1,734,400.00		100
Global Tax							
Final Price					**$ 1,734,400.00**		

Phase 1 || Base Bid - UG Infrastructure	401,500.00			
Phase 1 || Civil Work - Trench/Excavation	68,100.00			
Phase 1 || Asphalt - Demo	32,400.00			
Phase 1 || Asphalt - Restoration	55,000.00	$	557,000.00	Phase 1 Total
Phase 2 || Base Bid - Cable/Equipment Install	420,500.00			
Phase 2 || Electrical Distribution Equip. Procurement	117,300.00			
Phase 2 || Level 2 EV Charger Procurement (14)	111,000.00			
Phase 2 || DCFC EV Charger Procurement (4)	528,500.00	$	1,177,300.00	Phase 2 Total
Subtotal	***$ 1,734,300.00***			
Alt1 : Utility Fee Budget???	TBD			

Public Works Campus

Lower Lot - Take-off:

1- 2000A 480V SWGR N3R
1- 400A 480V Dist. Panel N3R
3- 444 Vault

14- Level 2 Chargers
4 - DCFC
20- Bollards

300' - TGBF
420' - TGBF CDF - X-ing
420' - RGR Asphalt

Upper Lot - Take-off:

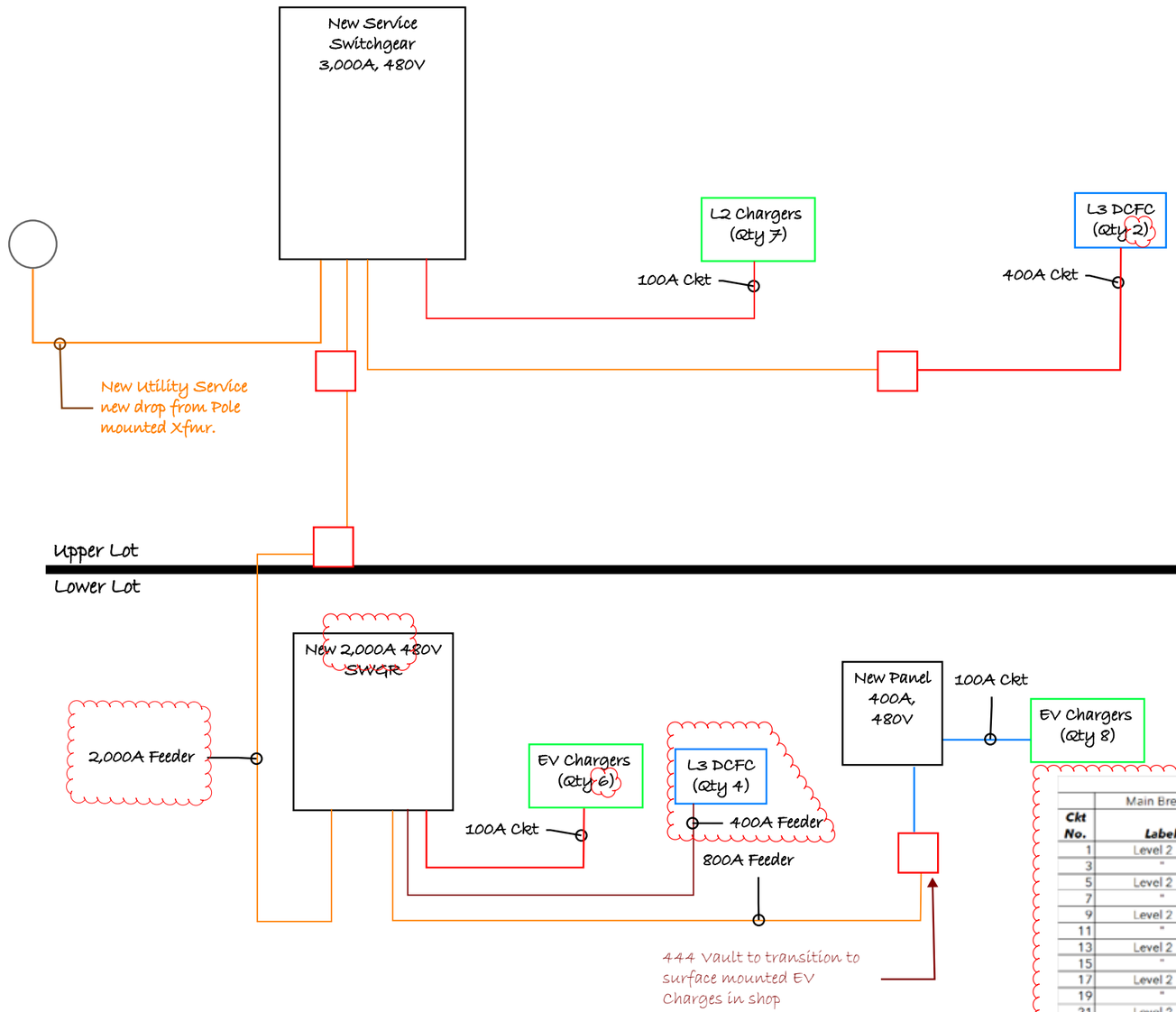
1- Utility XFMR Vault
1- 3000A 480V SWGR N3R

1- 444 Vault

2- Level 3 Chargers
7- Level 2 Chargers
20- Bollards

370' - TGBF
100' - TGBF CDF - X-ing
100' - RGR Asphalt

City of Bainbridge - OGM Facility : One-Line



SWGR - Upper Lot

	Main Breaker Size	3000A	480V		
Ckt No.	Label	Bkr Amps	Bkr Amps	Label	Ckt No.
1	Lower Lot SWGR	2000/3P	400/2P	Level 3 -1	2
3	"	-	-	"	4
5	"	-	400/2P	Level 3 -2	6
7	Level 2 - 1	100/2P	-	"	8
9	"	-	Spare		10
11	Level 2 - 2	100/2P	Spare		12
13	"	-	Spare		14
15	Level 2 - 3	100/2P	Spare		16
17	"	-	Spare		18
19	Level 2 - 4	100/2P	Spare		20
21	"	-	Spare		22
23	Level 2 - 5	100/2P	Spare		24
25	"	-	Spare		26
27	Level 2 - 6	100/2P	Spare		28
29	"	-	Spare		30
31	Level 2 - 7	100/2P	Spare		32
33	"	-	Spare		34
35		Spare	Spare		36
37		Spare	Spare		38
39		Spare	Spare		40
41		Spare	Spare		42

SWGR - Lower Lot

	Main Breaker Size	2000A	480V		
Ckt No.	Label	Bkr Amps	Bkr Amps	Label	Ckt No.
1	Level 2 - 1	100/2P	400/3P	400A Distribution Panel	2
3	"	-	-	"	4
5	Level 2 - 2	100/2P	-	"	6
7	"	-	400/2P	Level 3 -1	8
9	Level 2 - 3	100/2P	-	"	10
11	"	-	400/2P	Level 3 -2	12
13	Level 2 - 4	100/2P	-	"	14
15	"	-	400/2P	Level 3 -3	16
17	Level 2 - 5	100/2P	-	"	18
19	"	-	400/2P	Level 3 -4	20
21	Level 2 - 6	100/2P	-	"	22
23	"	-	Spare		24
25		Spare	Spare		26
27		Spare	Spare		28
29		Spare	Spare		30
31		Spare	Spare		32
33		Spare	Spare		34
35		Spare	Spare		36
37		Spare	Spare		38
39		Spare	Spare		40
41		Spare	Spare		42

Distribution Panel - Lower Lot

	Main Breaker Size	400A	480V		
Ckt No.	Label	Bkr Amps	Bkr Amps	Label	Ckt No.
1	Level 2 - 7	100/2P	100/2P	Level 2 - 11	2
3	"	-	-	"	4
5	Level 2 - 8	100/2P	100/2P	Level 2 - 12	6
7	"	-	-	"	8
9	Level 2 - 9	100/2P	100/2P	Level 2 - 13	10
11	"	-	-	"	12
13	Level 2 - 10	100/2P	100/2P	Level 2 - 14	14
15	"	-	-	"	16
17		Spare	Spare		18
19		Spare	Spare		20
21		Spare	Spare		22
23		Spare	Spare		24
25		Spare	Spare		26
27		Spare	Spare		28
29		Spare	Spare		30
31		Spare	Spare		32
33		Spare	Spare		34
35		Spare	Spare		36
37		Spare	Spare		38
39		Spare	Spare		40
41		Spare	Spare		42

City of Bainbridge - OSM Facility : Feeders

Upper Lot : Feeders

Drwg #	From	To	Length of Run	# of Elbows	# of Runs	Size of Conduit	# Wires - Size/Type	Notes	Amps
	Service Point	Utility XFMR	30	2	2	4"	by Utility	Add Riser	
	Utility XFMR	SWGR 3000A	40	2	6	4"	4#500, #500G	Connection to XFMR by Utility	3,000
	SWGR 3000A	Level 3 - 1	210	3	2	3"	4#3/0, #2G	(2- Segments)	400
	SWGR 3000A	Level 3 - 2	190	3	2	3"	4#3/0, #2G	(2- Segments)	400
	SWGR 3000A	Level 2 - 1	80	3	1	2"	4#3, #8G		100
	SWGR 3000A	Level 2 - 2	30	3	1	2"	4#3, #8G		100
	SWGR 3000A	Level 2 - 3	50	3	1	2"	4#3, #8G		100
	SWGR 3000A	Level 2 - 4	80	3	1	2"	4#3, #8G		100
	SWGR 3000A	Level 2 - 5	100	3	1	2"	4#3, #8G		100
	SWGR 3000A	Level 2 - 6	120	3	1	2"	4#2, #8G		100
	SWGR 3000A	Level 2 - 7	140	3	1	2"	4#2, #8G		100

Lower Lot : Feeders

Drwg #	From	To	Length of Run	# of Elbows	# of Runs	Size of Conduit	# Wires - Size/Type	Notes	Amps
	SWGR 3000A	3000A DP Vault 1	30	1	6	4"	6 - Sets : 4#400, #4/0G, 2-Spares	2- Spares for Future Capacity	2,000
	3000A DP Vault 1	3000A DP Vault 2	150	0	6	4"	6 - Sets : 4#400, #4/0G, 2-Spares	X-ing, 2- Spares for Future Capacity	2,000
	3000A DP Vault 2	2000A SWGR	140	3	6	4"	6 - Sets : 4#400, #4/0G, 2-Spares	2- Spares for Future Capacity	2,000
	3000A SWGR	DCFC - 1	20	2	2	3"	4#3/0, #2G		400
	3000A SWGR	DCFC - 2	40	2	2	3"	4#3/0, #2G		400
	3000A SWGR	233-LA HH	40	1	2	3"	4#3/0, #2G		400
	233-LA HH	DCFC - 3	10	1	2	3"	4#3/0, #2G		400
	3000A SWGR	233-LA HH	60	1	2	3"	4#3/0, #2G		400
	233-LA HH	DCFC - 4	10	1	2	3"	4#3/0, #2G		400
	3000A SWGR	233-LA HH	60	1	2	3"	4#4, #8G, 1-Spare	1 Spare for Future Capacity	80
	233-LA HH	Level 2 - 1	40	1	1	2"	4#4, #8G		80
	3000A SWGR	Level 2 - 2	100	3	1	2"	4#4, #8G		80
	3000A SWGR	Level 2 - 3	120	3	1	2"	4#4, #8G		80
	3000A SWGR	Level 2 - 4	140	3	1	2"	4#4, #8G		80
	3000A SWGR	Level 2 - 5	160	3	1	2"	4#2, #8G		115
	3000A SWGR	Level 2 - 6	180	3	1	2"	4#2, #8G		115
	2000A SWGR	800A DP Vault	170	3	4	3"	4#3/0, #3G	X-ing	800
	800A DP Vault	800A Dist. Panel	60	1	4	3"	4#3/0, #3G	Transition from U/G to Column for Dist Panel.	800
	800A Dist. Panel	Level 2 - 5	280	2	1	2"	4#4, #8G	A/G Routed in Shop Area	80
	800A Dist. Panel	Level 2 - 6	280	2	1	2"	4#4, #8G	"	80
	800A Dist. Panel	Level 2 - 7	260	2	1	2"	4#4, #8G	"	80
	800A Dist. Panel	Level 2 - 8	260	2	1	2"	4#4, #8G	"	80
	800A Dist. Panel	Level 2 - 9	240	2	1	2"	4#4, #8G	"	80
	800A Dist. Panel	Level 2 - 10	240	2	1	2"	4#4, #8G	"	80
	800A Dist. Panel	Level 2 - 11	220	2	1	2"	4#4, #8G	"	80
	800A Dist. Panel	Level 2 - 12	220	2	1	2"	4#4, #8G	"	80
	800A Dist. Panel	Level 2 - 13	190	2	1	2"	4#4, #8G	"	80
	800A Dist. Panel	Level 2 - 14	190	2	1	2"	4#4, #8G	"	80

JUSTICE CENTER

ART ANDERSON MAKERS
architecture • planning • urban design

Technical Memorandum

Date:	10/09/2023	**Project No:**	FAMAK002
To:	City of Bainbridge Island	**Project Name:**	COBI Fleet Electrification Strategy
From:	Art Anderson | Makers		
Subject:	Bainbridge Island Police Station – EV Charging Stations		

Project Background

The City of Bainbridge Island has a goal to transition away from Internal Combustion Engine (ICE) vehicles to Electric Vehicles (EV) for their city owned fleet in the coming years. The transition will set attainable and actionable goals for 2025, 2030, and 2035 and will include light, medium, and heavy duty vehicles. This site is projected to have three light-duty vehicles on site and thirty take-home light-duty vehicles for administrative and patrol needs. The City's goal is to electrify all vehicles with a viable EV alternative and for those without to adopt alternative fuels to meet the City's needs while reducing greenhouse gas emissions.

Charging Station Selection

This report is based on an NB 120 charger with the capability to charge two vehicles simultaneously. This is a level three charging station.

Utility Service and New Infrastructure

There is an existing Puget Sound Energy 500 KVA transformer on site providing 208Y120 volt service to the Police Court, supplying a switchboard rated at 1200 amps. This service will not be sufficient to feed the new charging station infrastructure. This analysis proposes adding a second service to supply the charging stations.

The electric vehicle charging stations are a new technology and subsequently the electrical codes are not fully developed. Electrical services are sized according to the equipment connected to its circuits and the demand factors for the equipment.

Demand factor is defined as the ratio of the sum of the maximum demand divided by the total load. It will always be one or less than one. While researching demand factors for charging stations we were unable to locate any specific demand factors assigned to them. Article 625.42 of the National Electric Code (NFPA 70) requires that the service and feeders be sized in accordance with the product ratings for EV chargers. This may change in the future as more is learned about the charger's electrical consumption. For now all equipment is fully rated based on the input KVA shown in the NB cut sheets. During the design process it may be determined that smaller electrical transformers and switchboards can be utilized.

Because these chargers provide very high charging currents a large electrical service is required for the four chargers. Each charger draws 126 KVA per terminal according to the manufacturer. This will require a 1000 KVA transformer as each charger has two stations each requiring a 400 amp circuit at 480 volts, three phase.

The new charging station service will stand alone from the rest of the Police Court infrastructure with its own dedicated switchboard as detailed above. The switchboard will need to be rated at 1600A to serve all charging stations, with room for a minimum of (4) 400A 3-pole breakers. Puget Sound Energy will require a standalone CT enclosure and meter to serve this new equipment.

The new transformer will be located near the existing transformer. A new service circuit shown in red on the diagram will be extended to the southeast corner of the Police Station to a new outdoor switchboard. From there four circuits are extended to the charging stations. A previous project installed four one-inch conduits for future charging stations to be installed and connected to the existing electrical system. These conduits are too small for use with the level three chargers.

Three of the charging stations are in the south parking lot and one will be in the east parking lot. The circuit routing to the east parking lot charger will utilize boring to install the conduit under the south parking lot asphalt to minimize disruption to the lot. This is detailed on the site plan.

Emergency Power

For the emergency power there will need to either be a standalone emergency generator installed, or a mobile generator rated for the same capacity. Upgrading the existing is unlikely to be suggested, due to the location of the current unit and its size (150KW). The cost estimate includes providing a manual transfer switch and receptacle for installation of a temporary generator when the need arises. Our thinking is that most outages will be less than 8 hours and a portion of the vehicles will have sufficient charge so a temporary emergency source would be the most practical solution.

While it would be ideal to be able to utilize a “green” energy source, such as solar or a battery storage unit, the current state of those technologies do not lend themselves to this application. Solar panels will not be able to generate enough power to charge the vehicles an appreciable amount, both due to efficiency and the local climate. Battery storage backup capacity would be overly large and expensive, and at most could get all vehicles one round of charging before being depleted.

Construction Costs

The construction costs are provided by Electrical Construction Consulting. They are detailed as part of page three of the attached cost report. A total of $1,170,900 is projected for this project. This does not include the utility cost to install the new 1000 KVA transformer. The EV charger cost is broken out separately in case the client wishes to purchase them separately for installation by a contractor.

ELECTRICAL CONSTRUCTION CONSULTING

Bainbridge Island - Police Station - Budget

Description	Calculated %	Calculated $	Adj. %	Adj. $	Modified $	Modified %	% of Final Price
Database Material		140,218.13			140,218.13		11.975
Material Adjustment	5	7,010.91			7,010.91	5	0.599
Material Tax	10.1	14,870.13			14,870.13	10.1	1.27
Material Total		162,099.17			162,099.17		13.844
Field Labor		151,584.69			151,584.69		12.946
Shop Labor							
Incidental Labor							
Labor Factoring							
Labor Escalation		6,820.77			6,820.77		0.583
Indirect Labor		23,107.42			23,107.42		1.973
Labor Tax							
Labor Total		181,512.88			181,512.88		15.502
Equipment		30,225.35			30,225.35		2.581
General Expenses		36,275.12			36,275.12		3.098
Subcontracts		57,000.00			57,000.00		4.868
Quotes		462,000.00	10.1	46,662.00	508,662.00		43.442
Prime Cost		*929,112.52*	*5.02*	*46,662.00*	*975,774.52*		*83.335*
Material Overhead							
Labor Overhead							
Equipment Overhead							
General Expense Overhead							
Subcontract Overhead							
Quotes Overhead							
Adjustment Overhead	10	92,911.25	5.022	4,666.20	97,577.45	10	8.334
Total Overhead	10	92,911.25	5.022	4,666.20	97,577.45	10	8.334
Net Cost		*1,022,023.77*			*1,073,351.97*		*91.669*
Material Markup							
Labor Markup							
Equipment Markup							
General Expense Markup							
Subcontract Markup							
Quotes Markup							
Adjustment Markup	10	92,911.25	4.991	4,636.78	97,548.03	9.997	8.331
Total Markup	10	92,911.25	4.991	4,636.78	97,548.03	9.997	8.331
Job Expense							
Financing							
Bonding							
Final Adj					0		
Selling Price		1,114,935.02	5.02	55,964.98	1,170,900.00		100
Global Tax							
Final Price					**$ 1,170,900.00**		

|| Base Bid		452,800.00
|| Electrical Distribution Equip. Procurement		81,900.00
|| EV Charger Procurement		528,500.00
|| Civil Work - Trench/Excavation		39,000.00
|| Directional Bore		49,200.00
|| Concete - Removal		4,800.00
|| Concrete - Restoration		14,700.00
	Subtotal	***$ 1,170,900.00***
Alt1 : Utility Fee Budget???		TBD

Justice Center

1 SITE PLAN - POWER

SCALE: 1" = 20'-0"

Lower Lot - Take-off:

1- 1600A 480V SWGR N3R

4- 444 Vault

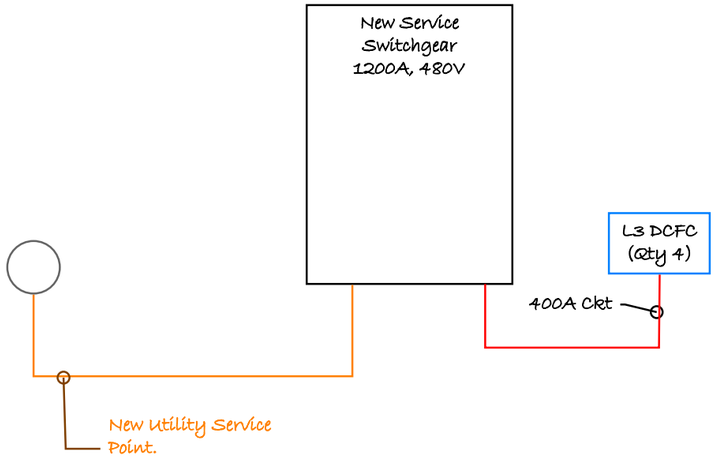
4- Level 3 Chargers
12- Bollards

410' - TGBF

150' - (6) 4" Bores
50' - (2) 3" Bores

40 SF - RGR Sidewalk

City of Bainbridge - Police : One-Line



Switchgear - Police Station - 480V					
	Main Breaker Size	1600A	480V		
Ckt No.	**Label**	**Bkr Amps**	**Bkr Amps**	**Label**	**Ckt No.**
1	Level 3 -1	400/2P	Spare		2
3	"	-	Spare		4
5	Level 3 -2	400/2P	Spare		6
7	"	-	Spare		8
9	Level 3 -3	400/2P	Spare		10
11	"	-	Spare		12
13	Level 3 -4	400/2P	Spare		14
15	"	-	Spare		16
17		Spare	Spare		18
19		Spare	Spare		20
21		Spare	Spare		22
23		Spare	Spare		24
25		Spare	Spare		26
27		Spare	Spare		28
29		Spare	Spare		30
31		Spare	Spare		32
33		Spare	Spare		34
35		Spare	Spare		36
37		Spare	Spare		38
39		Spare	Spare		40
41		Spare	Spare		42

Police Station : Feeders

Drwg #	From	To	Length of Run	# of Elbows	# of Runs	Size of Conduit	# Wires - Size/Type	Notes	Amps
	Utility XFMR	Vault	30	2	6	4"	4#300, #4/0G	Connection to XFMR by Utility	
	Vault	Vault	120	2	6	4"	4#300, #4/0G	BORE	
	Vault	Vault	130	2	6	4"	4#300, #4/0G		
	Vault	1600A SWGR	10	2	6	4"	4#300, #4/0G		
	1600A SWGR	Level 3 - 1	80	2	2	3"	4#3/0, #2		
	1600A SWGR	Level 3 - 2	100	2	2	3"	4#3/0, #2		
	1600A SWGR	Level 3 - 3	120	2	2	3"	4#3/0, #2		
	1600A SWGR	Vault	150	2	2	3"	4#3/0, #2	BORE	
	Vault	Vault	60	2	2	3"	4#3/0, #2		
	Vault	Level 3 - 4	100	2	2	3"	4#3/0, #2		

ASSUMPTIONS

ELECTRICAL CONSTRUCTION CONSULTING

RFQ Bainbridge Island Fleet Electrification – Budget Breakdown

1. **Material Total**
    a. Material is the total cost of all conduits, wire, concrete, backfill, and disposal costs for the project.
        i. *Material Adjustment* includes the expected cost escalation based on when the project begins.
        ii. *Material Tax* is the expect Rule 171 USE tax if required for the project.
2. **Labor Total**
    a. Labor is the total cost of all labor to perform all work to complete the project based on current IBEW Labor Rates. (ie. electricians, laborers, operators, etc.)
        i. *Labor Escalation* includes expected labor cost increases based on current union contracts and the expected start date of this project.
        ii. *Indirect Labor* is expected non-working labor costs which include supervision, layout, and meetings to complete the project.
3. **Equipment**
    a. Equipment includes the expected total cost for equipment expected to be used by the contractor to perform the required work.
4. **General Expenses**
    a. General Expenses are the expected costs that include contractor's insurance, small tools, project management, and storage costs required for the completion of the project.
5. **Subcontracts**
    a. Subcontracts are made up of 3rd party testing for the equipment and Directional Boring for roadway.
6. **Quotes**
    a. Quotes are the total procurement cost estimated for the EV Chargers, Panels, and Transformer.
        i. *Quotes Adj $* includes Rule 171 USE Tax applicable on the quoted materials.

EV Assumptions:

- Level 3 DCFC budget of $100,000/ea.
- Level 2 DCFC budget of $6,000/ea.
- Design basis is based on Power Electronics NBw30 & NB120.

Exhibit C

blink

Series 7 EV Charging Station

Configuration	
Number of Ports	Two
AC Current, Maximum (Per Port)	80A
Camera	Optional feature for future use
Electrical	
AC Power Output, Maximum (Per Port)	Level II: 19.2 kW (240VAC@80A) or 16.64 kW (208VAC@80A)
AC Power Input (Per Port)	Level II: 80A; Line 1, Line 2, and GND (no neutral)
Input Connector	Hardwired
Vehicle to Charger Connection (Per Port)	SAE J1772 EV Connector
Energy Metering Accuracy	+/- 1%
Standby Power (Per Port)	3.46 W Typical
Service Panel Breaker (Per Port)	Dual-pole common trip 100A breaker, dedicated circuit
ENERGY STAR	Compliant
California Type Evaluation Program (CTEP) Compliance	California Code of Regulations (CCR) National Institute Standards and Technology (NIST) Handbook 44 Section 3.40
Safety	
Safety, Ground Fault Circuit Interrupt	20mA CCID with auto retry (every 15 seconds)
Automatic Plug-Out Detection	Power terminated per SAE J1772 spec: SMS or email notification
Surge Protection	6kV @3,000A
Safety Compliance	UL 2231-1, 2231-2, UL 2594, and NEC Article 625
EMI Compliance	FCC Part 15 Class A
Network	
Data Communication	Cellular 4G LTE
Communication Protocol	OCPP Compliant
Firmware Management	Over-the-Air (OTA) update enabled

PD02-22XII-07

BlinkCharging.com • (888) 998.2546

blink®

Series 7 EV Charging Station

User Interaction	
LED Array	High visibility, multi-color visual status indication
Display	LCD Screen - 4 line, 20 characters per line
RFID Reader	ISO14443 Type A & B, MiFare, Felica; NFC, ISO15693
Environmental	
Enclosure	Aluminum, NEMA 3R outdoor rated
Operating Humidity	Up to 95% non-condensing
Operating Temperature	-30 degree C to +50 degree C ambient
Mechanical	
Dimensions	20.5" H x 7.4" W x 7.4" D
Approximate Weights	Device: 21 lbs., pedestal mount: 12.5 lbs., wall mount bracket: 11.5 lbs.
Installation	Indoor / Outdoor
Mounting Option	Integrated wall and pedestal mount
Cable Length	18 ft. standard, 25 ft. optional
Cable Organizer	Optional

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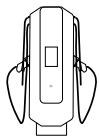
PD02-22XII-07

NB 120

V_02

Power scalability
Simultaneous DC charging
Extended full power voltage range
Smart fleet management
Built-in cable management

Standalone NB 120



REFERENCE		NB060SH NB060SU	NB090SH NB090SU	NB120SH NB120SU
DC OUTPUT	Maximum power [kW]	60	90	120
	Voltage range [V]	150 – 1000 [1]		
	Available connectors	CCS-1, CCS-2, CHAdeMO		
	Maximum continuous current CCS [A]	200	300	300
	Peak current CCS [A] [2]	200	300	400
	CCS nominal current [A]	Standard: 200. Optional: 250 (only for IEC) or 300		
	Maximum current CHAdeMO [A]	125		
	Maximum number of EVs charging simultaneously	2	2	2
AC OUTPUT (OPTIONAL, ONLY FOR IEC)	Power [kW]	22		
	Voltage range [V]	400 ± 10%		
	Maximum current [A]	32		
	Available connectors	AC Type 2 Socket		
AC INPUT FOR DC OUTPUT	Power [kVA]	63	95	126
	Voltage [V]	400 IEC / 480 UL (3ph + N + PE) ± 10%		
	Power factor	> 0.99		
	Frequency [Hz]	50 (IEC) / 60 (IEC & UL)		
	Efficiency	95%		
GENERAL	Interface	10" Touchscreen		
		E-stop pushbutton		
		Payment terminal (optional)		
	RFID reader	ISO14443 A/B, MIFARE, Calypso, ISO18092, ISO15693 and more		
	Protections	Insulation monitor		
		Overcurrent / shortcircuit (Circuit Breakers)		
		Overvoltage (Type 2) (optional)		
		RCD Type A (optional)		
		AC charge (optional): Circuit Breaker + RCD Type A + RCM		
	Others	Smart Fleet Management (optional)		
	Energy measurement	Internal DC energy measurement		
		DC meter for DC output (optional)		
		AC MID meter for AC output		
	Cable length [m/ft]	5 / 16.4 with cable management system. Optionally: 7.6 / 25		
	Enclosure / foot / glass color	White (RAL 9016) / Grey (RAL 7016) / Black		
	Customization [3]	Enclosure / Foot / Glass / Logo		
	Protection rating	NEMA 3R | IP54 | IK10 (IK08 for ventilation grilles)		
	Operating temperature range [°C/°F]	Standard: -25 to 50 / -13 to 122 Optional: -30 to 50 / -22 to 122		
	Relative humidity	From 4% to 95%		
	Maximum altitude above sea [m/ft]	Without derating: 2000 / 6561. Max: 3000 / 9842		
	Communications	Ethernet (10/100) + Wi-Fi		
		Cellular data: 4G, 3G, GSM		
	Charge protocols	ISO 15118, CHAdeMO 1.1 and DIN 70121		
	Communication protocols	OCPP 1.6J and API Rest [3]		
	Dimensions (WxDxH) [mm/ft]	670 x 750 x 1800 / 2.2 x 2.5 x 5.9		
	Regulation	IEC 61851-1, IEC 61851-23, IEC 61851-24, IEC 61851-21-2 UL 2202, NEC 625, FCC Part 15 Class A		

NOTES

[1] 150 - 500 Vdc for CHAdeMO. Maximum power from 300 Vdc.
[2] Consult with Power Electronics for more information about the connector overload capability.
[3] Consult with Power Electronics for further information.

POWER ELECTRONICS

GENERAL POWER™ THE GENERATOR COMPANY

QUOTE

Date	Mar 30, 2023 01:49 PM
To	Art Anderson Ryan Fish

Quote Number	20301640001309402 95
Sales Rep Name	Gabo Lopez (305) 204-8957

Thank you for choosing General Power, The Generator Company™

www.genpowerusa.com

Product Details	Price (Each)	Qty
GPG-C300-60T3 300 KW CUMMINS POWERED DIESEL GENERATOR SET, BRAND NEW	$ 66,900	1

QUALITY:
100% DESIGNED, ENGINEERED, ASSEMBLED AND TESTED IN ISO9001 AND CE CERTIFIED FACILITIES

POWER RATINGS:
300KW (375KVA) STANDBY, 275KW (344KVA) PRIME, 3PHASES, 0.8PF, 60HZ, XXXV

EMISSIONS COMPLIANCE:
U.S. EPA TIER 3 compliant engine for Stationary Emergency application as per current U.S. Environmental Protection Agency regulations

POWERED BY A HEAVY DUTY INDUSTRIAL ENGINE FOR MAXIMUM DURABILITY, EXCELLENT RELIABILITY AND WORLDWIDE SUPPORT:
-CUMMINS QSL9-G7, 1800RPM, Turbocharged, aftercooled
-Electronic isochronous governor
-Industrial-grade cooling system with fan guards and coolant drain extension with in-line valve

PREMIUM INDUSTRIAL-GRADE ALTERNATOR:
-LEROY SOMER TAL-A46-H, 12 Leads, brushless
-Full load rated with thermo-magnetic switch protection
-Skewed rotor and 2/3 pitch winding suppress triple harmonics and guarantee a superior voltage waveform
-Class H Insulation and Self-ventilated drip-proof design
-Electronic automatic voltage regulation

ADVANCED DIGITAL CONTROLLER:
-DEEP SEA ELECTRONICS DSE7420, Microprocessor based generator controller with dual-core main processor and extended memory. UL listed
-User-friendly, large, 4-line backlit LCD text display with support for up to 7 display languages
-Manual, Test and Auto Operation Mode with 2-wire remote start/stop capability
-250 event history log & 50+ fully configurable alarms
-Automatic shutdowns: Under/Over voltage; Over load; Over current; Under/Over frequency; Under/Over speed; High coolant temperature; Low oil pressure; Low coolant level

211-GAL SINGLE-WALLED INTEGRAL METALLIC FUEL TANK FOR DAILY AUTONOMY:
- 12-hours runtime autonomy @ 75% PRP, 10-hours runtime autonomy @ 100% PRP
- Electronic fuel level sender and visual gauge
- Programmable low-level, high-level alarms and shutdowns

VERSATILE CONFIGURATION IS FULLY PACKAGED AND READY FOR MOST STANDBY AND PRIME POWER APPLICATIONS:
-ABB Main line breaker, 3 pole, set mounted, wired and maximum output rated for complete protection
-Master cabinet with mechanically-compartmentalized housing for all control/power/breaker/connections components and vertical conduit access
-7ga, heavy duty mechanically-welded steel skid
-Heavy-duty AVM's isolate engine/radiator/generator from frame to reduce vibration and noise
-Electrolyte-charged battery with rack, cables and rubber-booted connections
-Oil drain extension with in-line valve

ENGINEERED TO THE HIGHEST STANDARDS AND FOR MAXIMUM PEACE OF MIND:
-QUALITY: Each unit prototype and individually factory load bank tested prior to shipping in ISO9001 Quality facilities
-INTERNATIONAL WARRANTY: up to 2 years or 2000 hours comprehensive international warranty coverage, T&C's apply
-PERFORMANCE: The generator accepts 100% rated load in one step as per NFPA110 and meets ISO8528-5 class G-2 for transient response
-DESIGNED TO INTERNATIONAL STANDARDS: ISO9001; ISO 8528, 3046, 7637; EN 61000-6-3, 61000-6-2, 55011; NEMA ICS 10, MG1, AB1; NEC 700, 701, 702; IEC 60034-1:2017
-NFPA COMPLIANT: NFPA 37 and NFPA Type 10 Level 1 capable (when equipped with the necessary accessories)

PHOTOS, TECHNICAL LITERATURE, STANDARD FEATURES AND ONLINE LIBRARY LINK:
Click here: https://bit.ly/422ozRe

Thank you for choosing General Power, The Generator Company™

www.genpowerusa.com

2

Product Details	Price (Each)	Qty
ENCLOSURE-AGG-STANDARD-STEEL ENCLOSURE-AGG-STANDARD-STEEL SUPER-SILENT, CORROSION-RESISTANT, STEEL ENCLOSURE FOR MAXIMUM LONGEVITY AND EXCELLENT SOUND ATTENUATION: -RESIDENTIAL SILENCER: Internally mounted in sound attenuated plenum with vertical discharge for superior sound reduction -CONSTRUCTION: 12GA, steel panels with stainless steel hardware for lifetime corrosion resistance -TYPE: IP56 / outdoor rated / Weather proof / silent design compliant to ISO12944 1000+ hour salt-spray test -FINISH: UV and fade-resistant, high temperature cured, RAL9003-white polyester powder paint -VERTICAL DISCHARGE PLENUM: Weather-resistant vertical air discharge outlet redirects cooling air up and above enclosure to reduce ambient noise -SOUND ATTENUATING MATERIAL: Up to 51mm (2in) Acoustic insulation with hydrocarbon sealing film for maximum sound absorption, flame resistance and moisture repellence	$ 0	1
BATTERY CHARGER KIT Complete Automatic Battery Charger Kit, Floater/Equalizer type with overload protection, factory installed	$ 325	1
HEATER KIT HOTSTART Complete Automatic Engine Jackets Coolant thermosyphon heater kit with built-in Thermostat, factory installed	$ 495	1
RACOR KIT RACOR ADVANCED FUEL FILTRATION KIT, Complete Water/Fuel separator and filtration Kit for eliminating 99% of impurities found in fuel, factory installed	$ 525	1
FILTER KIT 1000 HOURS FILTER KIT, Complete Filter Kit with Original Oil / Air / Fuel filter(s) for first (3) scheduled maintenance interval(s) as per warranty requirements	$ 785	1
KIT REMOTE MONITORING / CONTROL (DSE-GPRS) Real-time cloud based remote monitoring and control via DSEWebNet communications system using an ethernet connection OR GPRS (GSM/3G/4G). The free-to-download DSEWebNet software can be viewed using laptop, desktop, tablet and smart phone devices. -1X EA, DSE890MKII DEEP SEA Electronics Ethernet/3G/4G gateway module -1X EA, DSE020-1053 combined LTE/GPS antenna -1X EA, CANBUS communications harness between genset controller and gateway module -1X EA, 12VDC connection harness -Mounting, programming, and testing included -Final on-site connection and configuration required by end user. NOT included -Broadband modem NOT included -SIMcard/contract NOT included	$ 995	1
AVAILABILITY -LEAD TIME: 8 to 12 weeks, subject to previous sales. To be confirmed at time of order. -INCOTERMS: EXW our warehouse Miami, FL USA	$ 0	1
Grand Total	**$ 70,025**	

Terms & Conditions

GENERAL POWER LIMITED, INC'S SALES TERMS AND CONDITIONS
LEAD TIME: Quoted lead time for shipment preparation starts AFTER our payment receipt confirmation. All stock items are subject to previous sales.
SALES TAXES: State Sales Tax is NOT included. As applicable by law, due prior to shipping or waived with tax exemption/certificate. Please ask us
SUBMITTAL APPROVALS: Orders that require assembly and/or manufacturing of custom metal-fabrication products (bases, tanks, trailers, and/or enclosures), are subject to submittal drawings approval and will incur 2 additional weeks of lead time for the preparation of such. Orders will only be released and scheduled for production upon receipt of customer's signed approval of said drawings
INCOTERMS: EXW our designated location unless otherwise stated in our formal estimate
WARRANTY: International Warranty. Manufacturer's standard terms and conditions apply. Warranty coverage is ALWAYS Subject to an immediate warranty registration at time of commissioning or first use, No exceptions. Please request instructions
PRICES: U.S. Dollars
PAYMENT TERMS: 100% Prepaid to confirm order unless otherwise states in our formal estimate
PAYMENT: Wire transfer subject to our confirmation. Company checks, Cashier's checks and Personal checks are subject to funds clearance (7 days approx.)
WIRE TRANSFER FEES: All sender and intermediary banking and wire transfer fees and charges MUST be paid by the customer prior to shipping
PICK UP METHOD: At our designated location. Flatbed or a dock-height vehicle may be required for loading, please request written instructions from your sales representative
FREE-ZONE AND BONDED CARGO: Pick-up and Delivery of Customs-BONDED and/or FREE-ZONE cargo is subject to all U.S. Customs export procedures, protocols, shipping restrictions and export documentation. Please request instructions
DISCOUNTS: Prices quoted ALREADY reflect a 3% discount for Wire transfer, Check or Cash payment (Credit card payments are not eligible for this discount)
WAREHOUSING 'GRACE PERIOD': Commencing on the sales order 'Ready Date', All orders include standard a 10 days storage GRACE PERIOD at no charge.

Thank you for choosing General Power, The Generator Company™

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Additional storage will be billed separately
WAREHOUSING 'STORAGE PERIOD': Commencing on the original sales order 'Ready Date' (+) 11 calendar days, All orders will accrue storage charges at a rate of US$1.25 per cubic foot. Storage charges will be billed in advance at the beginning of each storage period, charges are NOT pro-ratable, and All Storage charges are due in full prior to shipment. No exceptions.
MAILING OF DOCUMENTS: Any and All requests to MAIL/SHIP/COURIER physical documents including but not limited to, Commercial Invoices, Packing lists, Bills of Lading, Certificates of insurance, Certificates of origin, Titles, Manuals, among others, will be quoted AND charged separately prior to mailing. No exceptions.
VALIDITY: 30 days unless otherwise stated in our formal estimate, subject to previous sales, typographical and technical corrections. We reserve all our rights
PROMOTIONS: All promotions, incentives and special discounts are subject to promotion duration, stock availability and other restrictions as applicable. We reserve all our rights
ORDERS: All orders are non-cancellable, non-returnable, non-exchangeable without General Power's previous written authorization. Cancellations or Returns are subject to 35% cancellation/return fee over invoice value plus freight charges. NO EXCEPTIONS
SPECIAL INSTRUCTIONS: General Power's Estimate/Proforma Invoice and Order Confirmation Form, constitute the entirety of this transaction. No additional requirements will be honored

CITY OF BAINBRIDGE ISLAND

City Council Study Session Agenda Bill

MEETING DATE: November 19, 2024 **ESTIMATED TIME:** 30 Minutes

AGENDA ITEM: (6:30 PM) Receive Briefing from Washington State Ferries on Terminal Electrification and Traffic Management from Washington State Department of Transportation Staff

SUMMARY: A representative from Washington State Ferries (WSF) will provide an update on the collaborative efforts related to traffic control at the intersection of State Route 305 and Winslow Way and on the electrification of the ferry fleet.

AGENDA CATEGORY: Discussion **PROPOSED BY:** Executive

RECOMMENDED MOTION: Information only.

COMMUNITY ENGAGEMENT AND OUTREACH:

FISCAL IMPACT:

Amount:	
Ongoing Cost:	
One-Time Cost:	
Included in Current Budget?	

BACKGROUND:

ATTACHMENTS:

Bainbridge Island Council Presentation on 11_19_2024 V1.pptx

FISCAL DETAILS:

Fund Name(s):

Coding:

CITY OF BAINBRIDGE ISLAND

City Council Study Session Agenda Bill

MEETING DATE: November 19, 2024 **ESTIMATED TIME:** 30 Minutes

AGENDA ITEM: (7:00 PM) Receive Briefing from Washington Department of Transportation (WSDOT) Olympic Region Relating to the SR 305 / High School Road Roundabout Project

SUMMARY: Steve Roark, WSDOT Olympic Region Administrator, will provide information on the proposed SR 305 / High School Road roundabout and safety improvement project.

AGENDA CATEGORY: Discussion **PROPOSED BY:** Executive

RECOMMENDED MOTION: Information only.

COMMUNITY ENGAGEMENT AND OUTREACH:

FISCAL IMPACT:

Amount:	
Ongoing Cost:	
One-Time Cost:	
Included in Current Budget?	

BACKGROUND:

ATTACHMENTS:

SR 305 High School Road 11-2024.pptx

Example of Non-Motorized Friendly Roundabout Design

FISCAL DETAILS:

Fund Name(s):

Coding:

SR 305, High School Road - Safety

Bainbridge Island City Council

November 19, 2024

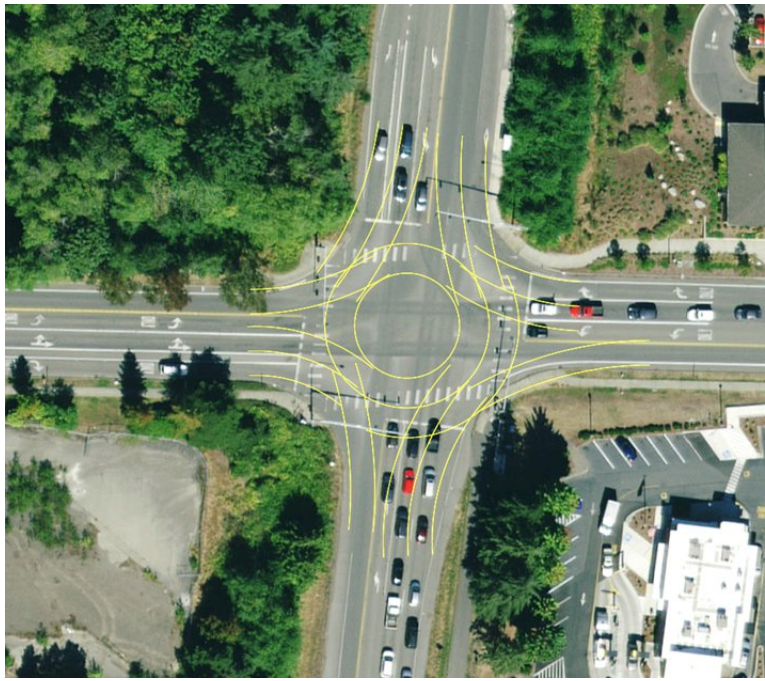
Steve Roark, Olympic Region Administrator

Roger Millar, Secretary of Transportation
Mike Gribner, Deputy Secretary of Transportation

High School Road – Safety Improvements

Overview of WSDOT Safety (I2) funding and prioritization:

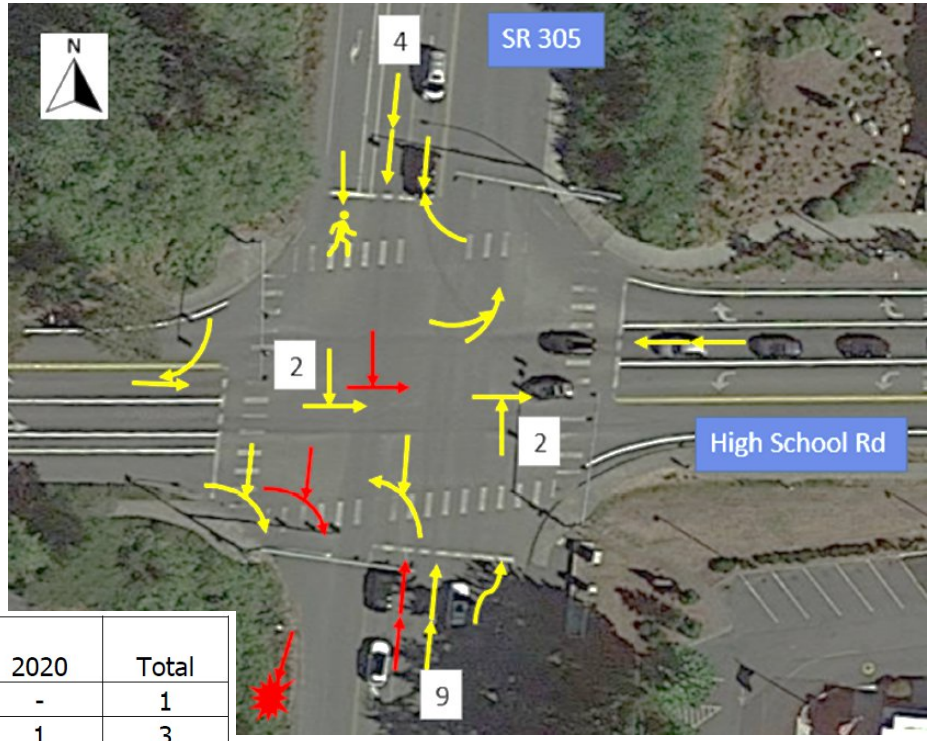
- Washington State has adopted Target Zero.
- Statewide screening process that identifies intersections with a higher crash frequency.
- Safety funding is allocated statewide, by priority, to specific locations based on the volume and severity of crashes.



High School Road – Safety Improvements

Overview of Crash Analysis Report:

- Two crashes involving pedestrians
- No bicycle-related crashes
- Primary contributing factors (subjective):
  - Following too close
  - Disregarding traffic signal
  - Inattention



Crash Frequency by Severity

Most Severe Injury Type	2015	2016	2017	2018	2019	2020	Total
Fatal Injury	-	1	-	-	-	-	1
Serious Injury	-	-	1	1	-	1	3
Evident Injury	-	-	-	1	1	-	2
Possible Injury	2	5	3	1	1	1	14
PDO	1	1	3	2	2	1	11
Total	3	7	7	5	4	3	29

High School Road – Safety Improvements

Modern Roundabout Considerations:

- Promote a continuous flow of traffic.
- Minimize and modify conflict points, reduce vehicle speeds, and prioritize pedestrian crossings.
- Reduce fatal and injury crashes 78% when replacing a traffic signal and reduce pedestrian collisions by 40%.

Mobility Examples:

- West Port Madison - a traffic signal would have 21x more delay than a roundabout.
- Adas Will - 4x less delay as a roundabout than as a stop-controlled intersection.
- Johnson Road - the WB back-up from the signal would be more than 14x (8x EB) greater than with a roundabout (1,300’ vs 90’).

High School Road – Safety Improvements

Next Steps:

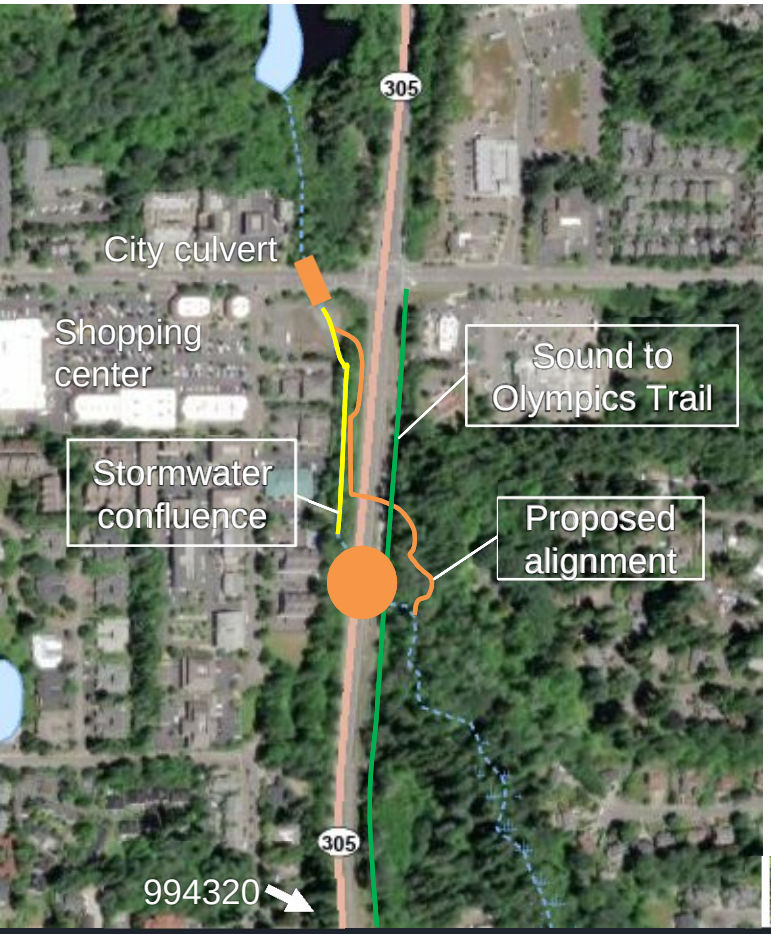
1. Pre-design phase starts in early-2025.
2. Preliminary Engineering early-2026.
3. Construction – spring/summer 2027.

High School Road – Safety Improvements

Discussion

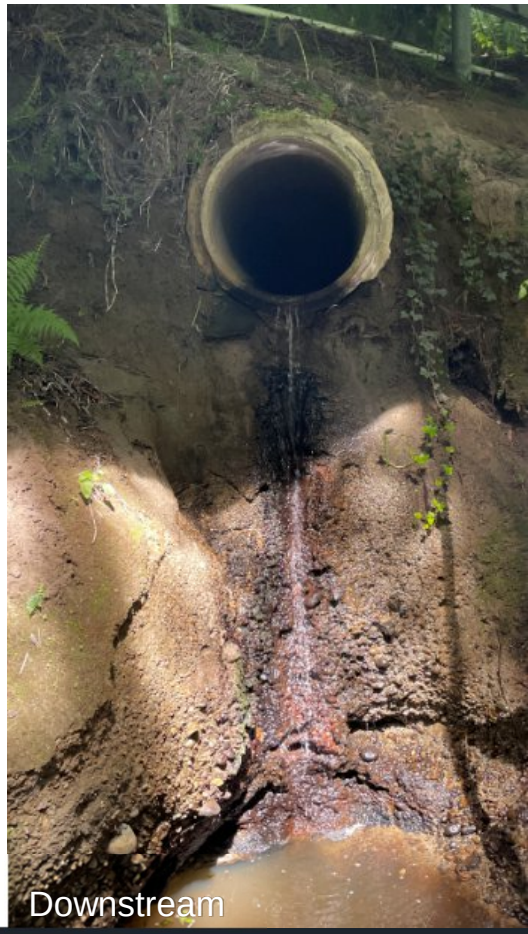
Steve Roark, Olympic Region Administrator
Steve.Roark@wsdot.wa.gov

Ravine Creek to Eagle Harbor



Considerations

- Upstream stormwater confluence 750ft long
- Support from Suquamish Tribe and City of Bainbridge Island to daylight stream along ROW




Level 2: coherent, well evaluated basis design