



SPECIAL JOINT STUDY SESSION
CLIMATE CHANGE ADVISORY COMMITTEE
UTILITY ADVISORY COMMITTEE
PUGET SOUND ENERGY
MONDAY, FEBRUARY 3, 2020
6:00 – 8:00 PM
CITY HALL
COUNCIL CHAMBER
280 MADISON AVENUE NORTH
BAINBRIDGE ISLAND, WA 98110

AGENDA

Purpose: The purpose of the study sessions is to discuss issues that are important for the Climate Change Advisory Committee (CCAC) to understand as they develop the Climate Action Plan (CAP) and for the Utilities Advisory Committee (UAC) as do their work.

- 6:00 – 6:10 Welcome/Introductions/Purpose (Mike Cox, CCAC Co-Chair)
- 6:10 – 6:20 Presentation – PSE's plan to achieve the WA State Clean Energy Transformation Act (CETA)'s targets and the role PSE sees for Bainbridge Island in that transformation (Jens Nedrud, Manager System Planning, Electric System Planning)
- 6:20 – 6:35 Discussion (All)
- 6:35 – 6:45 Presentation – Expected load growth on BI, key assumptions, and contributing factors (Jens Nedrud, Manager System Planning, Electric System Planning)
- 6:45 – 7:00 Discussion (All)
- 7:00 – 7:10 Presentation – Options for energy conservation and demand response on BI & community outreach (Mark Lenssen, Supervisor Energy Management Engineering)
- 7:10 – 7:25 Discussion (All)
- 7:25 – 7:35 Updates (Heather Mulligan, Manager Customer Energy Renewable Programs and Therese Miranda-Blackney, Manager New Products & Services)
- PSE's green power and solar choice programs' revenue streams and state rules
 - Renewable energy project development like community solar (also relates to PSE's recent RFI)
- 7:35 – 7:45 Discussion (All)
- 7:45 – 7:55 Public Comments
- 7:55 – 8:00 Wrap-up and Next Steps

Partnering on the Clean Energy Transformation Act



Jens Nedrud
Manager of System Planning
February 3, 2020

Clean Energy Transformation Act (CETA)

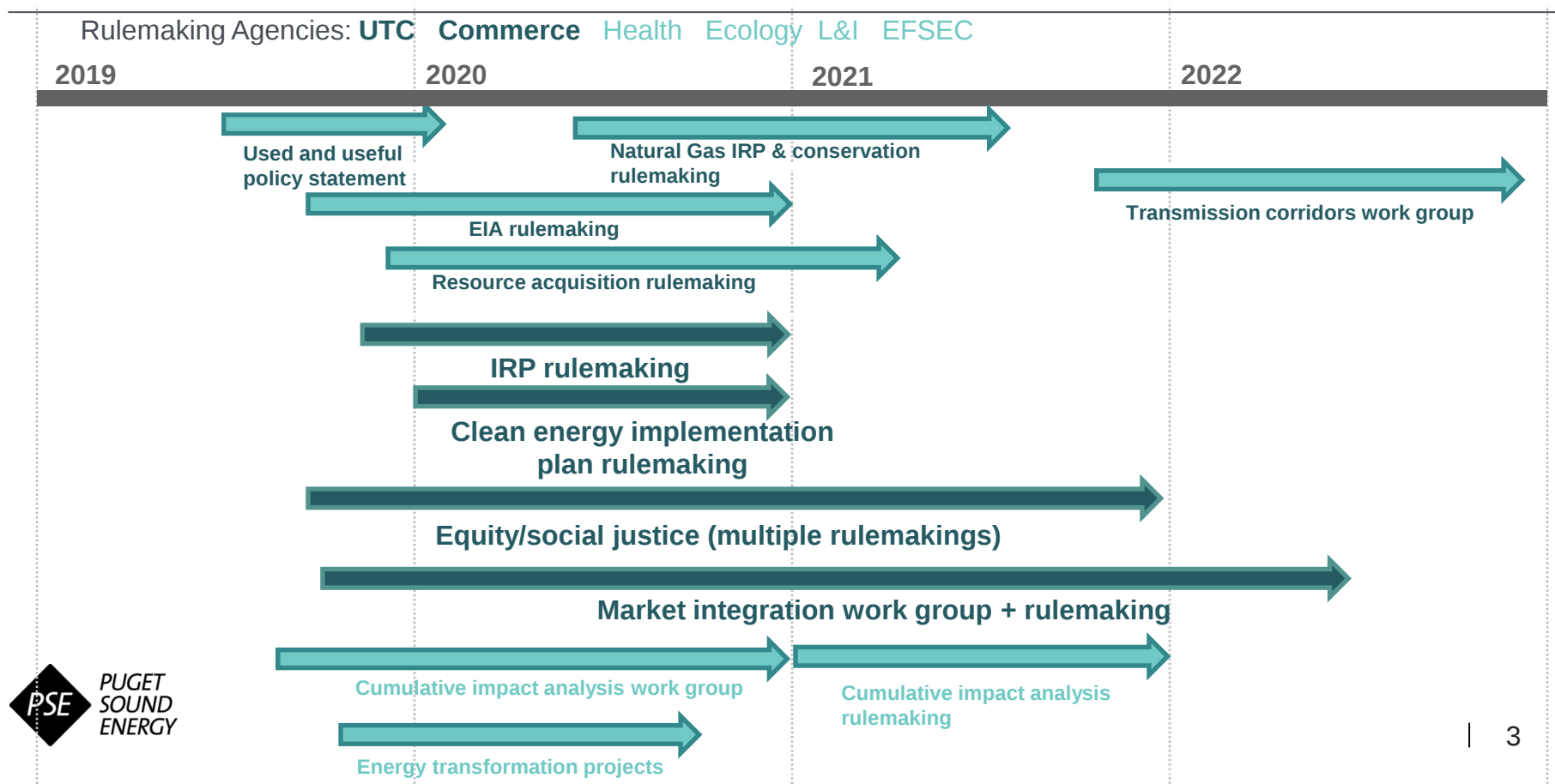
Commits WA to carbon neutral (and 80% renewable) electricity supply by 2030 and 100% clean electricity by 2045

- PSE worked with state leaders on landmark energy policy
- Policy includes other key priorities:
 - Affordability: Customer rate protection at 2% per year
 - Reliability: Planning and evaluation to maintain reliability
- Balancing these priorities remains our top priority as we work with the state agencies and other parties to develop implementation regulation

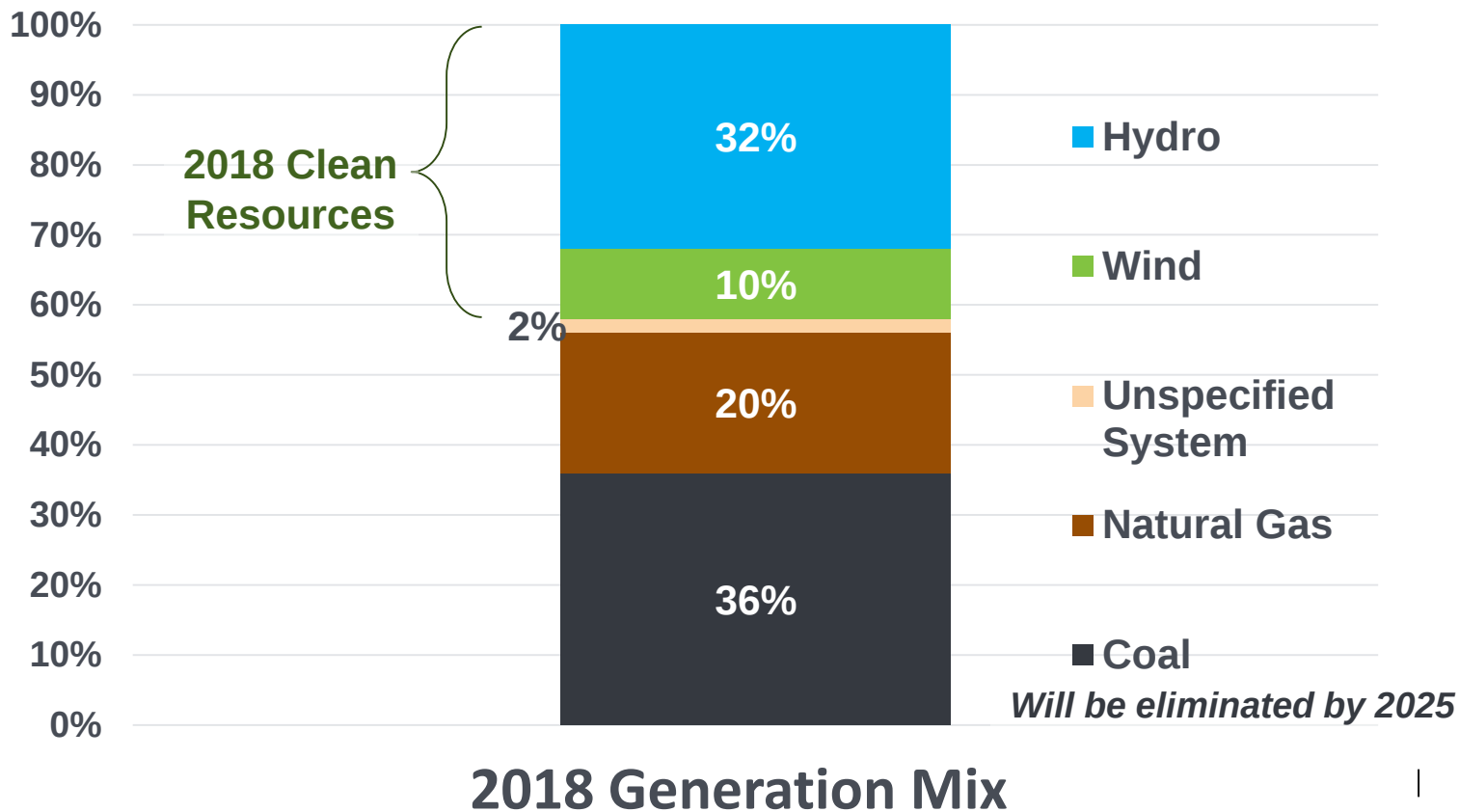
CETA timeline

- **2025:** Elimination of coal-fire resources from electric power supply
- **2030:** Carbon neutral energy supply
 - 80% non-emitting and renewable resources
 - 20% can be met with alternative compliance
- **2045:** 100 percent non-emitting electricity supply

Significant rulemaking will shape meeting CETA goals



PSE has a significant renewable energy need to meet clean energy targets PSE's energy supply mix was 42% clean in 2018



PSE plans to pursue a balanced energy supply portfolio

Procure clean resources

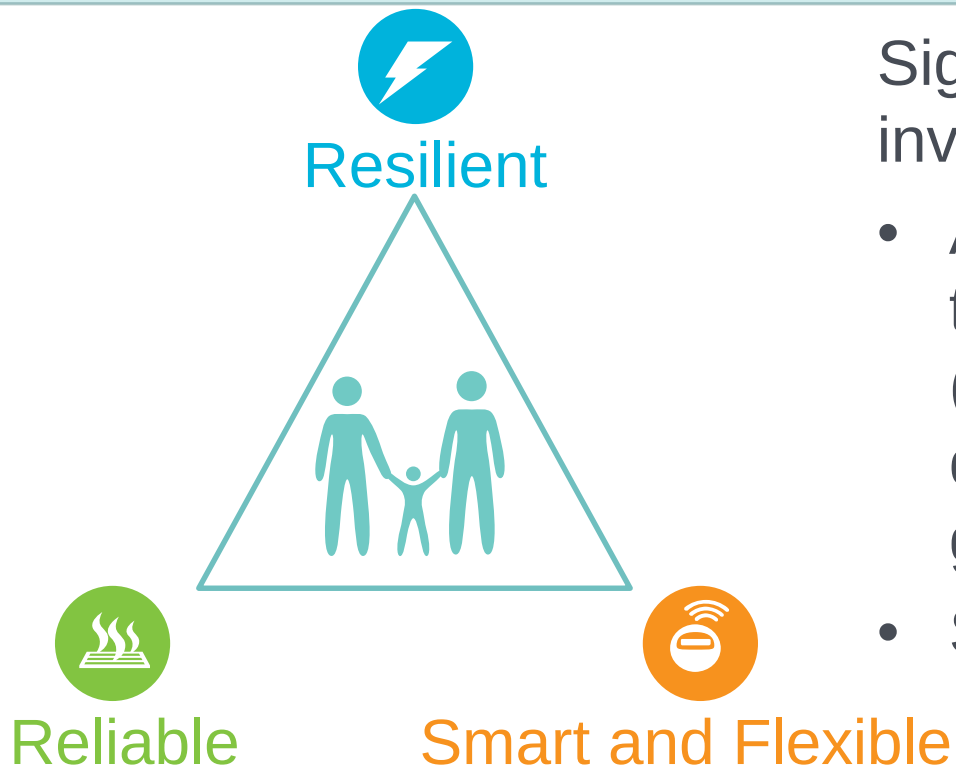
**Expand markets to provide
access to regional
resources and manage
oversupply**

**Optimize existing
transmission and acquire
or build new transmission**

**Proactively procure energy
efficiency, distributed
energy resources, and
customer programs**

Distributed resources and customer programs can help

Planned Grid Modernization supports DER Potential



Significant grid modernization investment required

- Add smart/flexible capabilities to PSE's delivery system (transmission and distribution) with AMI, ADMS, grid infrastructure
- Supports clean energy goals

Engaging and partnering with our customers and communities is essential to a successful clean energy transition



Energy efficiency



**Voluntary
renewables**



**Demand response
and load shifting**



Distributed solar



**Distributed
batteries**



Electric vehicles

Partnering with Bainbridge Island

- Need your support of PSE's reliability and grid modernization projects
- Work together on ways to get further faster on clean energy and carbon reduction efforts



Source: Energy.gov

Stay tuned for updates



pse.com/together

pse.com/irp



Planning for Bainbridge Island growth



Jens Nedrud
Manager of System Planning

Overview

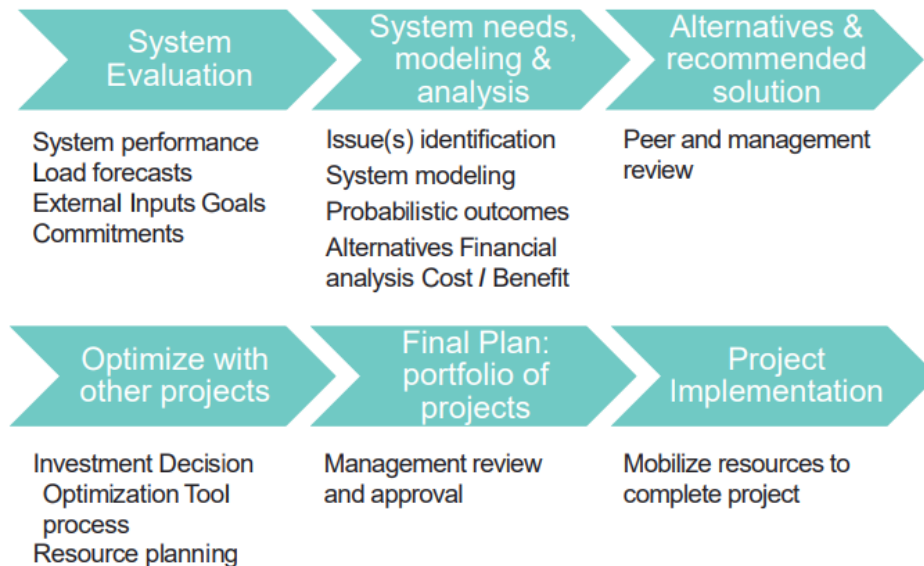
- Delivery System Planning overview
- Expected load growth on Bainbridge Island
- What we're doing

Delivery system plan – why

- Meet customers' energy and capacity requirements – safe, reliable, 24/7
- Comply with:
 - State RCW on PSE's obligation to serve
 - NERC and WECC reliability standards
- Expand system in cost effective manner
- Failure to reliably serve load can mean outages and significant economic loss and public safety risks to customers

Delivery system planning – how

How we determine grid needs and capacity



Study frequency: Annual TPL studies
examine needs over 10-year time horizon

Traditional drivers of DSP

Traditional drivers/criteria

- Customer request
- Growth
- Reliability
- Compliance
- NERC & WECC rules
- Aging Infrastructure
- Integration of resources

Electric delivery system performance criteria are defined by:

Safety and compliance

The temperature at which the system is expected to perform

The nature of service and level of reliability that each type of customer is contracted for

The minimum voltage that must be maintained in the system

The maximum voltage acceptable in the system

The interconnectivity with other utility systems and resulting requirements, including compliance with NERC planning standards



Bainbridge Island growth (2018-2027)

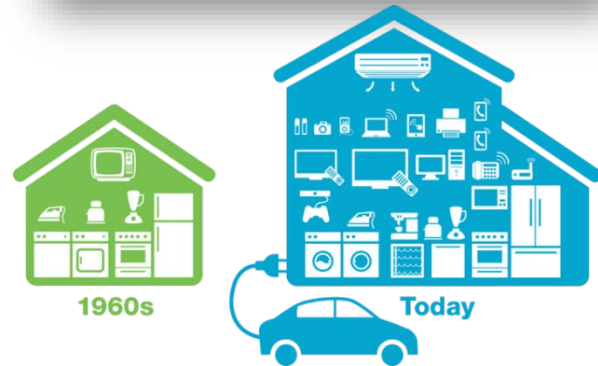
Expected **peak** load growth

- 1.8% per year with conservation
- Winter peaking, primarily from heat loading

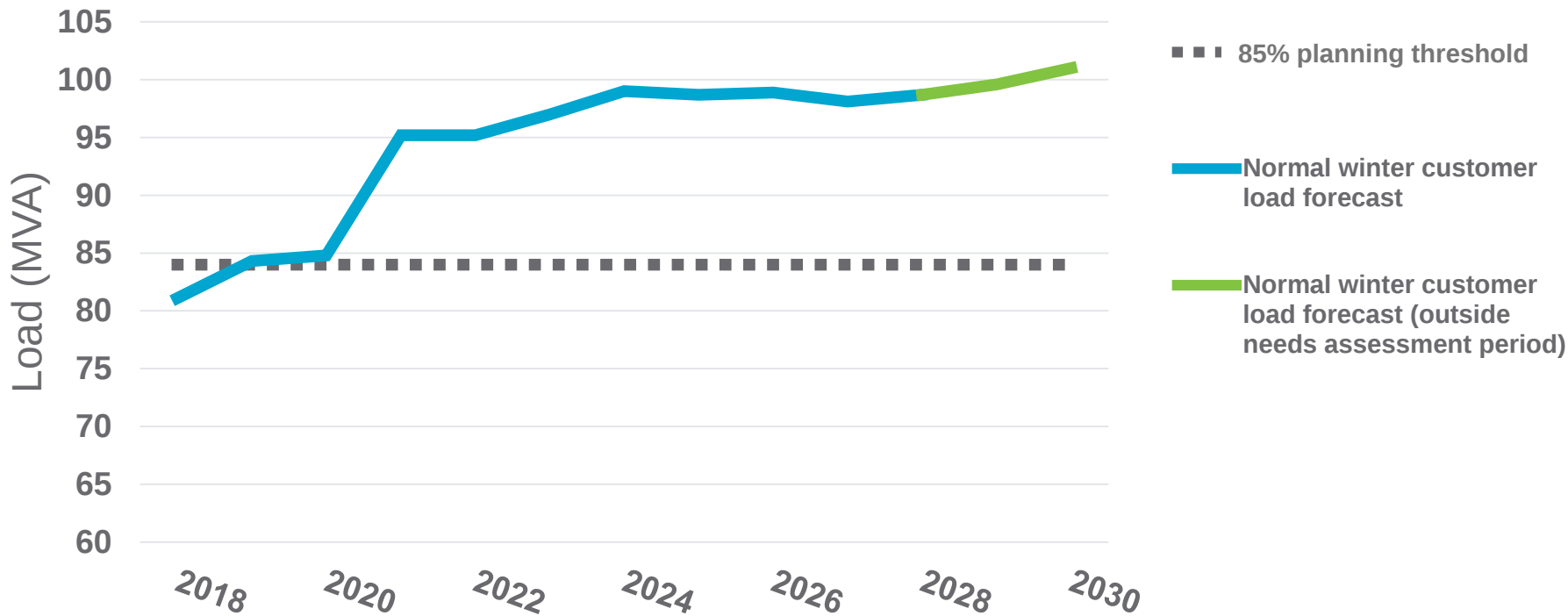


Drivers include:

- Local growth
- Transportation electrification
(e.g., ferry, cars)



Bainbridge Island Substation Loading and Capacity



Reliability and grid modernization



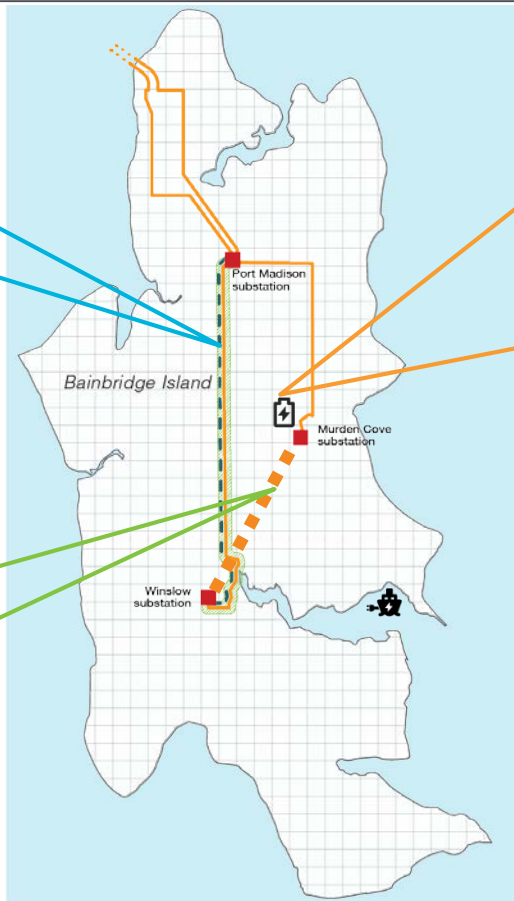
Resiliency

Rebuild aging Winslow Tap line



Reliability

Build “missing link” transmission line



Example 115 kV transmission line observation and demand response tools

ery adds
system flexibility



Working together for a better energy future



Stay informed and involved:



Learn more and subscribe to email updates:
pse.com/bainbridge

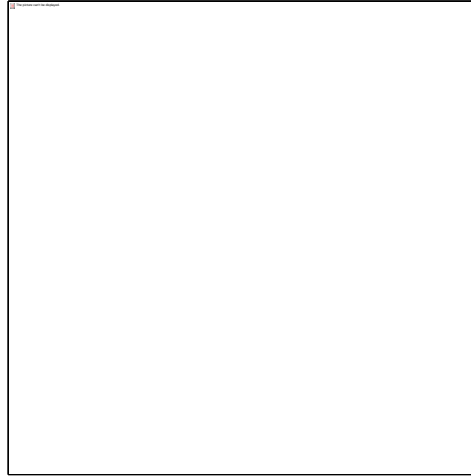


Email us at **info@psebainbridge.com**



Leave a message at **1-888-878-8632**

Questions



Targeted Conservation and Demand Response Tools

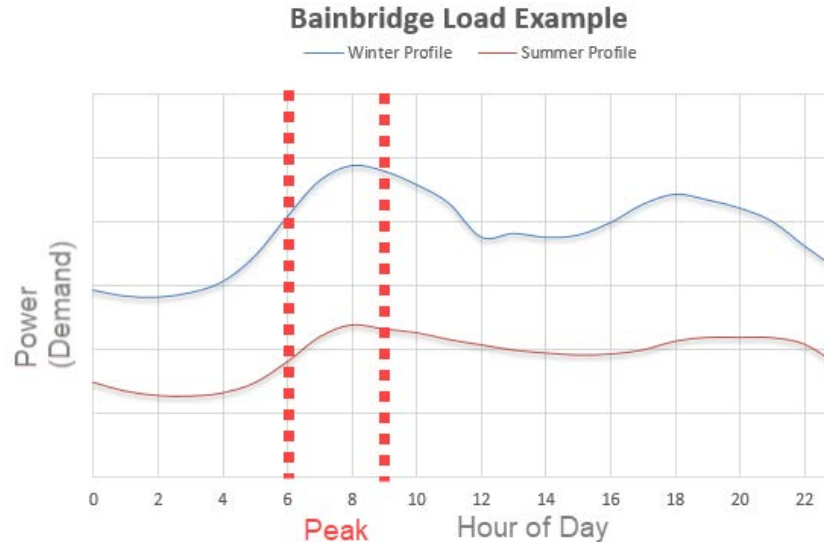


Mark Lenssen

Supervisor, Energy Management Engineering

At a crossroads: solving the Island's capacity needs

- Local growth & ferry electrification driving substation capacity need
- Capacity need is during winter peaks



At a crossroads: solving the Island's capacity needs

PSE and national experts considered:



Traditional wires: new substation to increase capacity



Non-wires: tools to reduce demand / temporarily add capacity



PSE selected hybrid approach to address capacity need

If successful, they postpone need for new substation for 10 years

Tools: Conservation and demand response

Specific tools in our toolbox

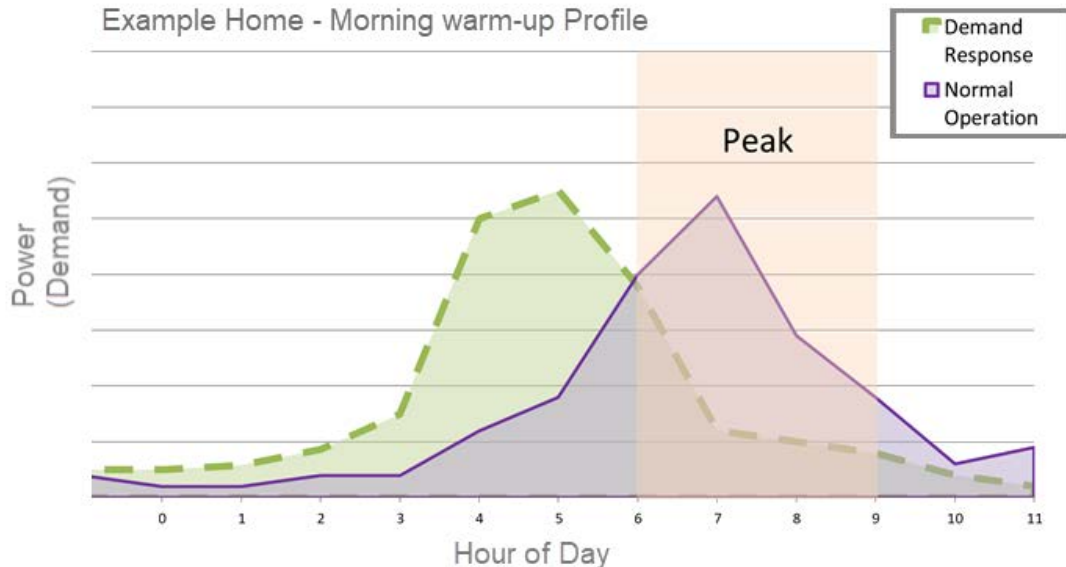


Conservation lowers energy use year-round



Demand response reduces demand specifically during

Example Home - Morning warm-up Profile



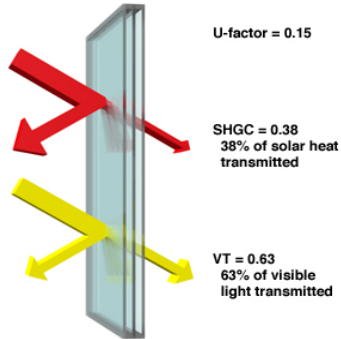
Our programs will support you to...



Conserve by lowering energy use year-round



Source: Energy.gov



Source: efficientwindows.org



Sources: hotwater.com, rheem.com, sandenwaterheater.com



Reduce demand during peak periods with **Demand Response**



Source: Energy.gov

Hitting the road: what's next

Request for Proposals for program implementers:

- Contractor network
- Bulk pricing benefits (equipment)
- Demand response software/hardware provider using the following potential areas:
 - ✓ Heating systems (via smart thermostats)
 - ✓ Water heaters
 - ✓ Behavior



Programs to launch: mid-2020 based on RFP responses, demand response may take a bit longer (IT and software take longer to deploy)

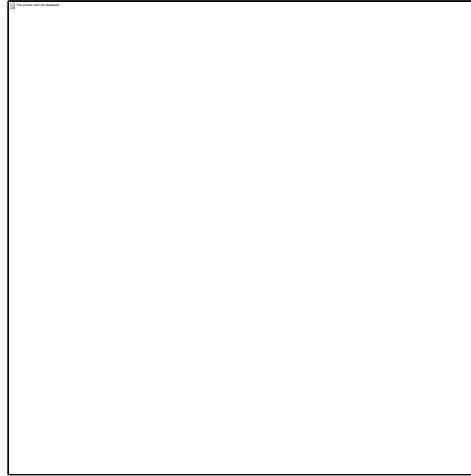
What you can do now



Visit pse.com/rebates to:

- Sign up for a Home Energy Assessment if you haven't had one
- Learn about current rebates and offerings
- Call an Energy Advisor to tips and ideas: 1-800-562-1482

Questions



Voluntary Renewables



Heather Mulligan

Manager Customer Energy Renewable Programs

Providing Customers with Renewable Energy Options



Retail Renewable Energy



GREEN POWER

SCH 135, 136

- PNW REC purchases
- 60,000 customers
- Residential, commercial, municipal



SOLAR CHOICE

SCH 135

- Solar RECs WA and ID
- 7,900 customers
- Residential and small commercial



BULK REC PURCHASES

- Excess PSE wind RECs
- 10,000,000 kWh
- 1-2 Large business Participants



GREEN DIRECT

SCH 139

- Long-term partnership with PSE for dedicated energy resources
- Launched 2017
- Large commercial, municipal
- 287 MW of Wind and Solar

Customer Generation



NET METERING

SCH 150, 152

- Up to 100 kW
- Full retail compensation
- ~9,300 customers; 78 MW
- Residential, commercial, municipal, community solar



SMALL POWER PRODUCERS

SCH 91, 152

- 100 kW – 5 MW
- 15 year pricing based on avoided cost
- Small developers

Green Power Program

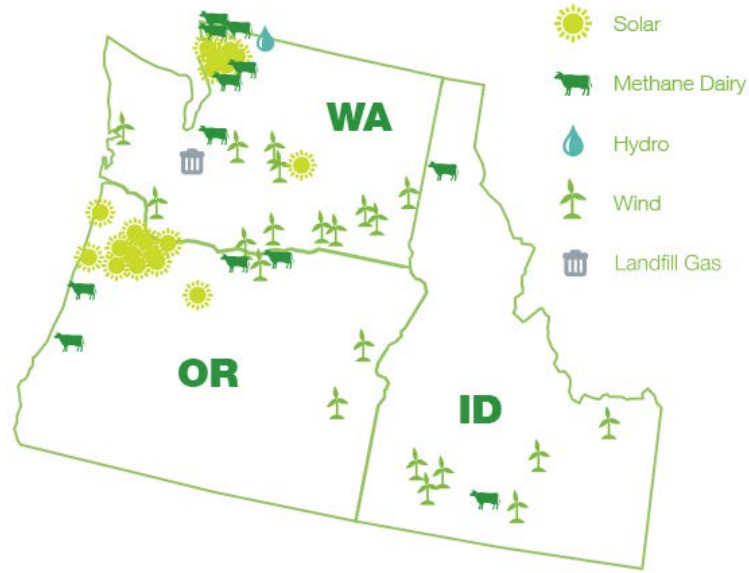
- + Allows customers to match a portion or all of their electricity with renewable energy.
- + Open to residential and commercial customers.
- + Costs an additional 1 cent per kWh.
- + Supports independent, renewable energy producers.
- + Focused primarily in the pacific northwest.



Maas Brothers, Farm Power LLC.

Green Power Supply

- + Wind – 50%
- + Solar – 34%
- + Livestock methane – 8%
- + Landfill Gas – 2%
- + Low Impact Hydro – 5%
- + Geothermal – 1%



+ **Washington State Definition:** Electricity generated from sources that replenish themselves naturally with little, if any, pollution or negative environmental impacts.

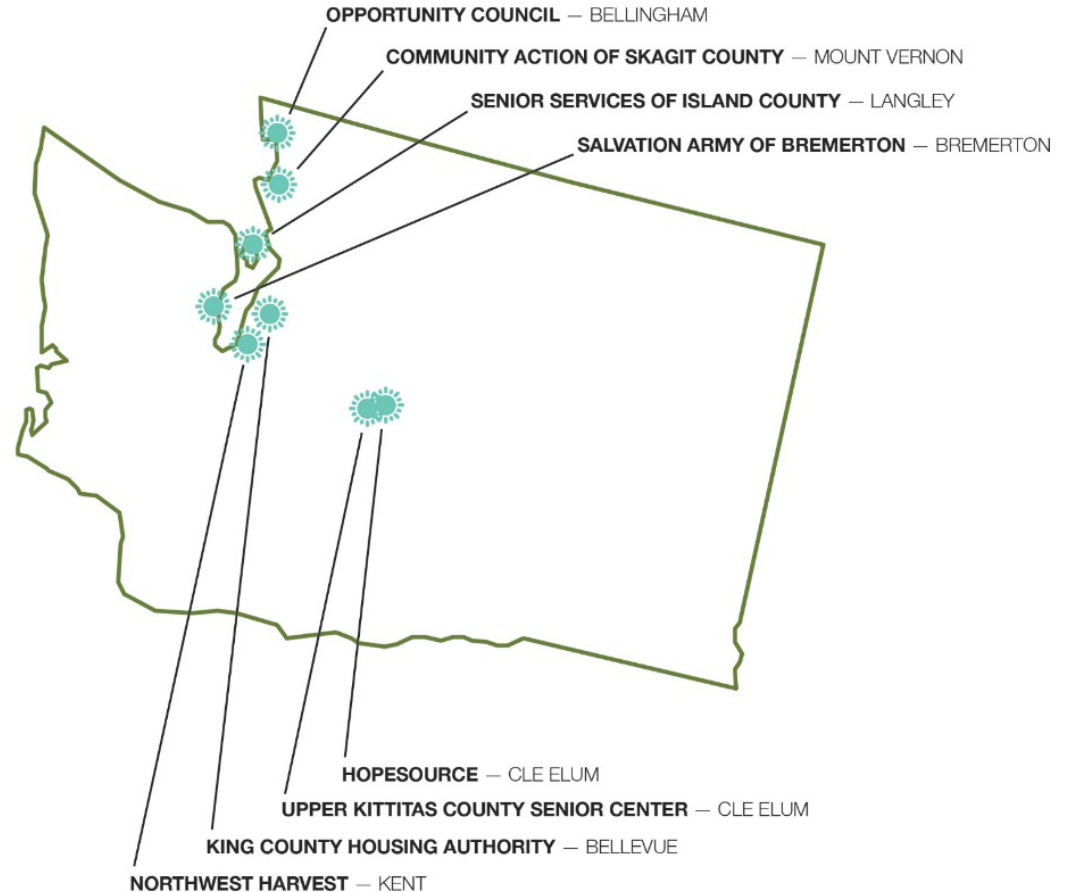
Solar Choice

- + Allows customers to match a portion of their electricity with solar energy.
- + Open to residential and commercial customers.
- + Costs an additional \$5 per 150kWh.

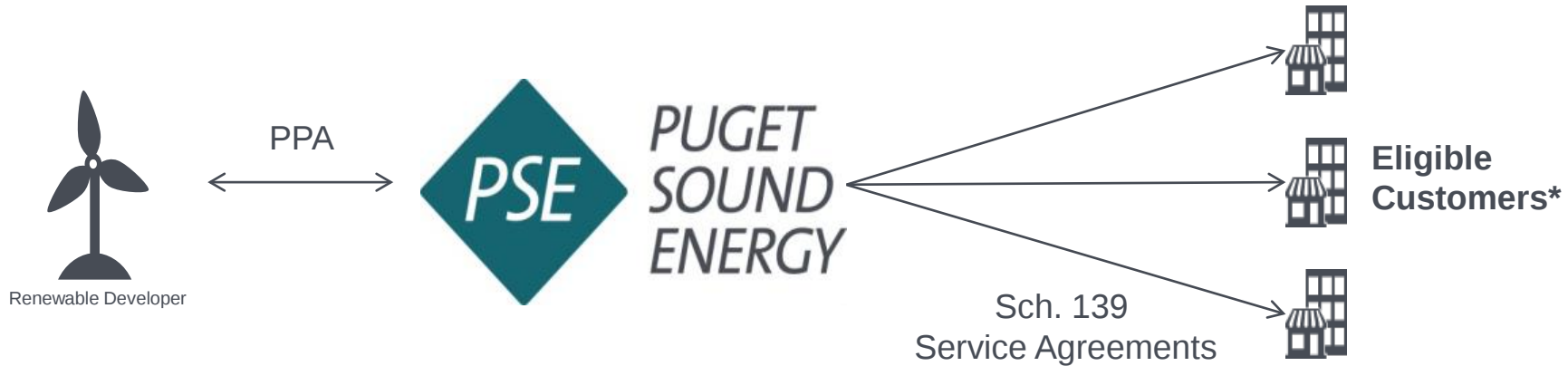


Solar Grants for Low-Income Housing and Community Services

+ Awarded \$815K in 2018 & 2019 for 8 agencies and 10 sites



Green Direct



*** Eligible Customers are commercial customers with aggregate load of 10M kWh, annually; or municipal, county, state or federal institutions.**

Green Direct Participants

Phase 1 Participants



Phase 2 Participants



"PSE's Green Direct project is entirely consistent with our **climate goals** to take bold steps that will cut our climate footprint and **benefit generations to come.**"

—Dow Constantine, King County Executive

"PSE's Green Direct tariff directly benefits Washington, is a **pioneering model** for utilities nationwide, and supports REI's success in continuing to operate 100 percent on renewable electricity."

—Vik Sahney, REI Divisional Vice President of Sustainability

"Signing on to use renewable energy through the Green Direct program is an all-around WIN for T-Mobile."

—Mike Sievert, President and COO of T-Mobile



PUGET SOUND ENERGY

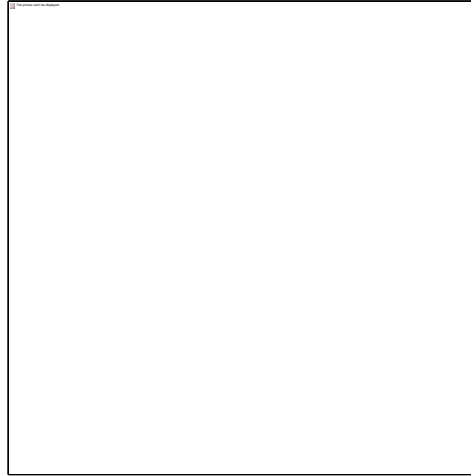


Washington State Department of Labor & Industries



Amazon | Issaquah School District | Walmart

Questions



Community Solar Product Overview



Therese Mirana-Blackney
Manager New Products and Services

Community Solar in Washington

- Under current Washington law, PSE already facilitates the administration of third-party-led Community Solar projects that take two pathways:
 - o A PSE customer acts as site host, interconnecting solar behind the meter
 - o A Community Solar Project Developer interconnects solar in front of the meter on the PSE distribution system
- This presentation focuses on the opportunity to develop a PSE-led Community Solar program, where PSE is the program administrator and operator

Renewable products portfolio goals



Provide **clean energy options** for customers



Support **carbon reduction and clean electricity strategy** by adding voluntary and portfolio renewable resources



Improve **customer experience** by meeting customer needs now and in the future



Enable **low-income customers to share in the benefits** of renewables



Partner with **communities** in PSE's territory

Community Solar overview



Challenge

PSE customers want to support solar development, but many face barriers to rooftop solar – including lack of home ownership, high up-front cost, and rooftop suitability. There is a gap in offerings for these customers to support new, local projects and allow them to receive in the benefits.

Solution

Community Solar allows customers to share in the costs and benefits of new solar capacity in PSE's territory. Customers pay a monthly subscription to cover the costs of a local solar array. They see financial benefits in the form of avoided energy credits (and state incentives where applicable).



Target customers

- 1) Customer who face barriers to rooftop solar, yet want to support solar development in WA
- 2) Low-income customers who have been unable to share in the benefits of the clean energy transition



Key benefits

Customer choice - Provide clean products options for customers, meet demand for a program that support new, local solar

Community benefit – Provide a financial and administrative pathway for communities to see solar developed locally

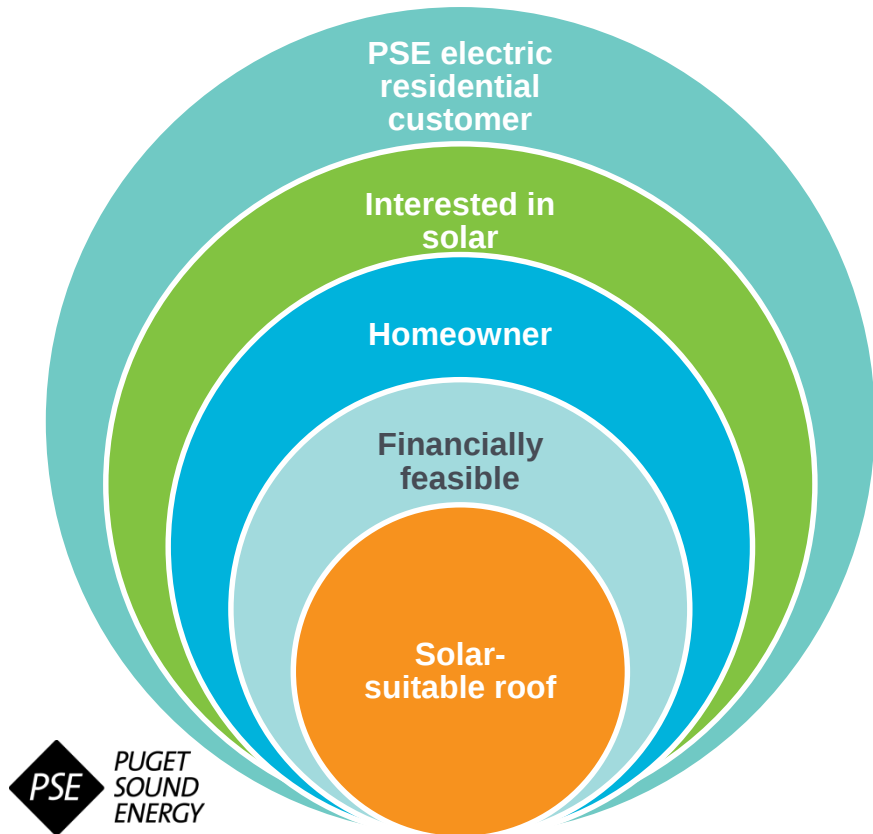
Equity – Allow low-income customers to share in solar benefits

Carbon reduction – Provide clean energy to PSE customers

Preliminary product design

- New, local solar capacity in PSE's electric service territory
- Subscription model (rather than up-front payment model)
- Customer can purchase multiple blocks
- Customers sign year-long commitment
- 8-year program length
- Portion of discounted subscriptions dedicated for low-income customers
- Available to commercial and residential customers

Low-income option



- Community Solar expands access to solar beyond customers who are able to invest in rooftop solar by removing barriers:
 - up-front cost
 - roof suitability
 - home ownership
- Subscription fee could still be a barrier for low-income customers.
- Reducing the subscription fee to provide bill savings for low-income customers requires an additional source of funding.
- This will expand bill savings benefits to customers with a high energy burden.

Community solar resources

Launching a community solar program is best supported through a proactive approach to bringing distributed resources online.



Community-located sites –

Release RFI for municipal or tribal rooftops/land, bundle and release RFP for development

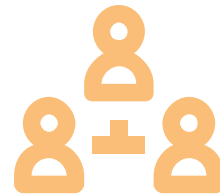
* RFI sites could have PPA or be PSE-owned



Larger distributed sites –

Leverage project(s) in development in Kittitas County (5MW)

* Larger sites could be Schedule 91 (PURPA small generators) or PSE-owned



Community Solar projects online

Community-located projects

PSE has taken a proactive approach to finding optimal solar sites in communities across its service territory, with a goal of having communities help identify potential sites.



Release an RFI to public entities in PSE's service territory to find community-located solar sites

Oct 2019

Early 2020



Select a package of solar sites for development, work closely with communities to build a path to development

Mid 2020

Late 2020

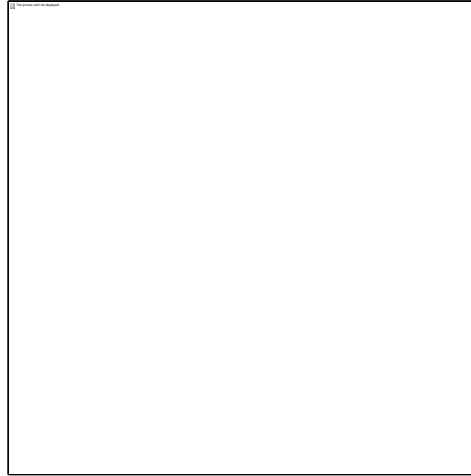


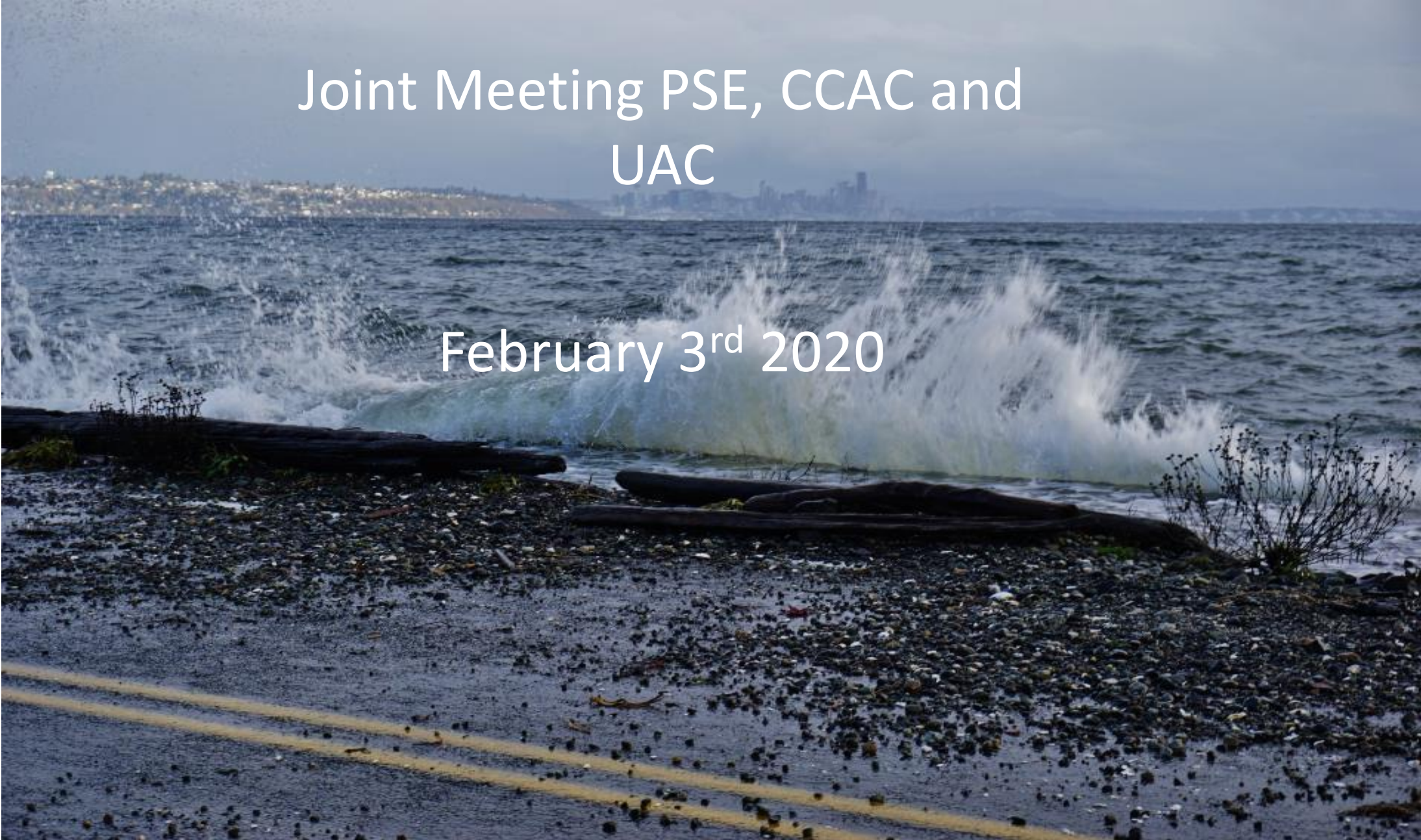
Evaluate RFI sites received for system cost / benefit, community value, solar viability, and more



When the community-sited projects come online, use the energy to feed the Community Solar product

Questions





Joint Meeting PSE, CCAC and UAC

February 3rd 2020

Climate Change Advisory Committee (CCAC)

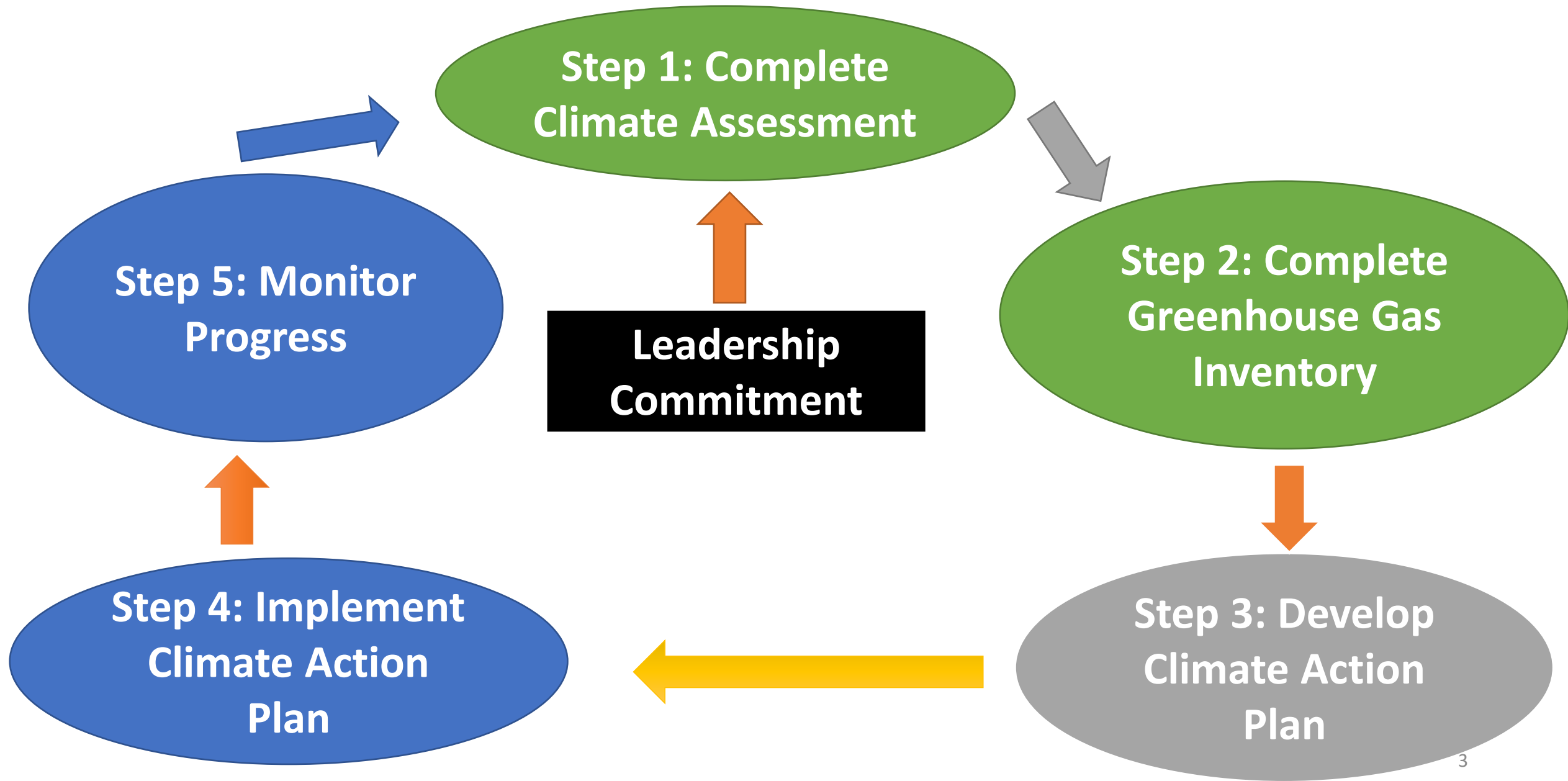
Established 2017 (9 members)

Advises City Council on actions to:

- Reduce greenhouse gas emissions
- Prepare residents, businesses and community for climate impacts
- Increase community awareness of climate impacts and individual actions

Tasked with developing Climate Action Plan

Climate Action Plan Development Process



Bainbridge Island Climate Impact Assessment



Lara J. Hansen, Ph.D., EcoAdapt
Stacey Justus Nordgren, M.A., Foresight Partners Consulting
Eric E. Mielbrecht, M.S., EcoAdapt

Bainbridge Island, WA ~ 2016
www.EcoAdapt.org

<https://www.bainbridgewa.gov/922/Climate-Change-Advisory-Committee>

Sea Level Rise on Bainbridge Island

A Preliminary Assessment

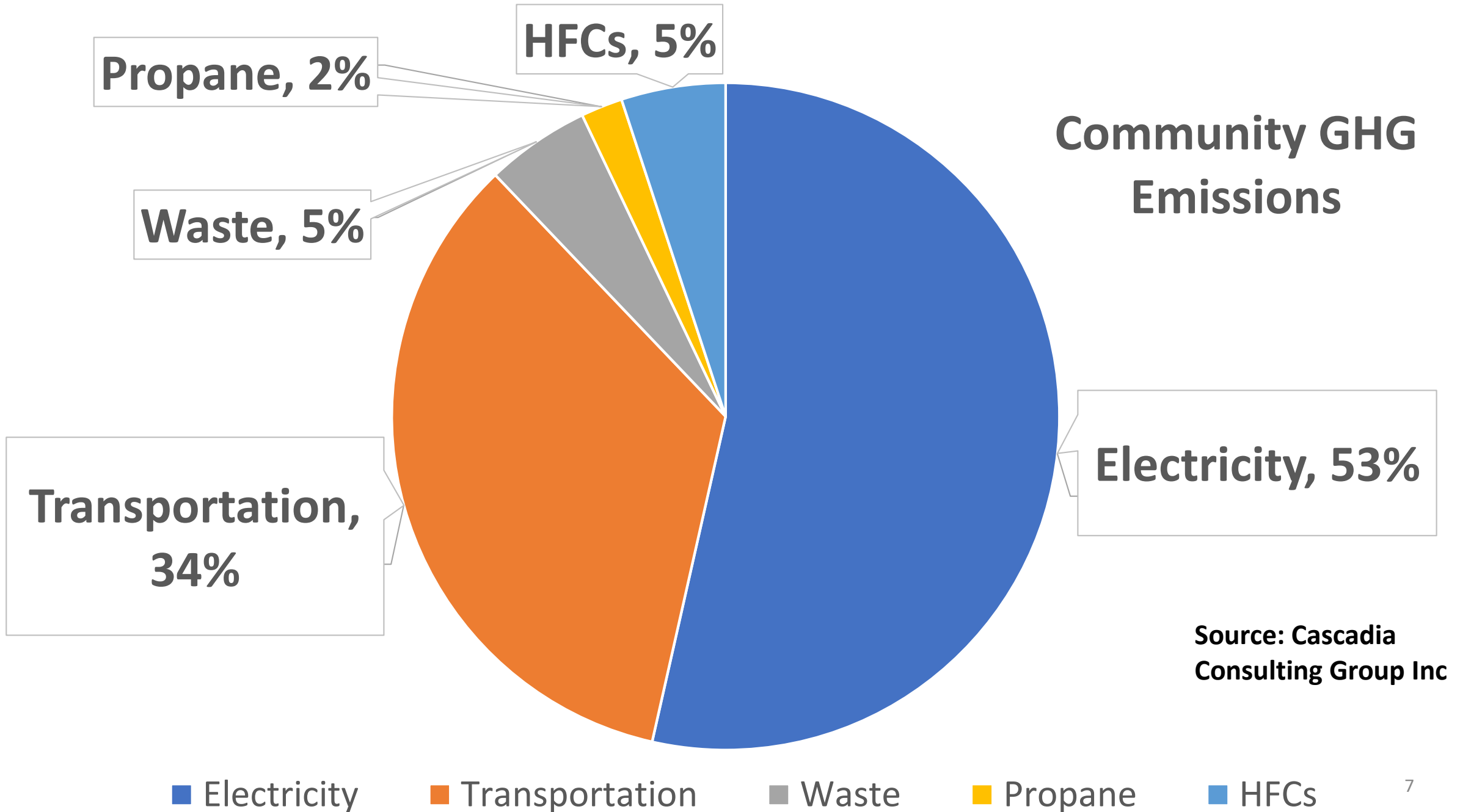
<https://www.bainbridgewa.gov/922/Climate-Change-Advisory-Committee>

Prepared by
James Rufo-Hill





Community GHG Emissions



Three Community Workshops/Survey

City Hall



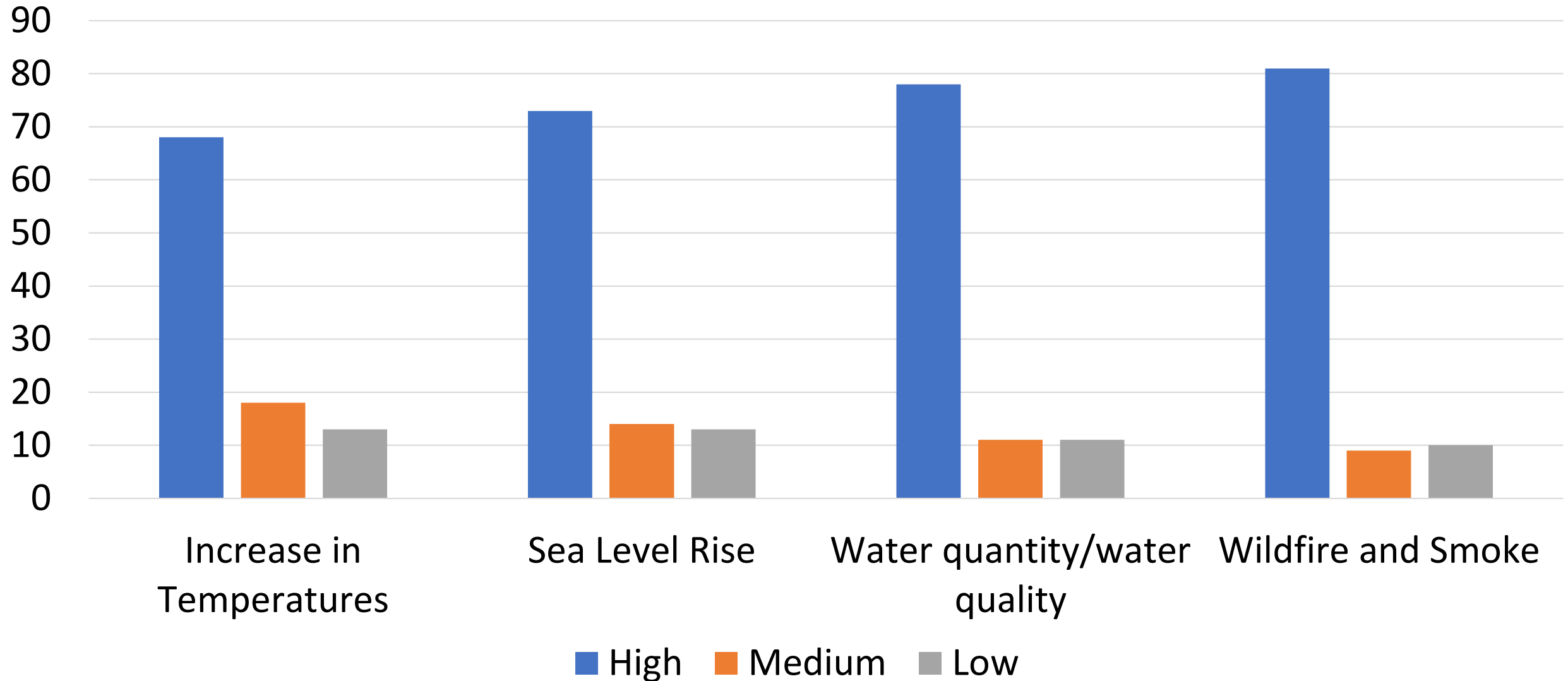
BHS



Library



Concern about all impacts, especially water & wildfires (450 Respondents)



Two Type of Actions

Mitigation

Reducing greenhouse gas emissions and atmospheric greenhouse gas concentrations

(Addressing the root cause to stop it from becoming worse)

Adaptation

Preparing for, responding to or recovering from the effects of increased greenhouse gas concentrations in the atmosphere

(Addressing current the effects and future effects based on past emissions)

Mitigation Goal

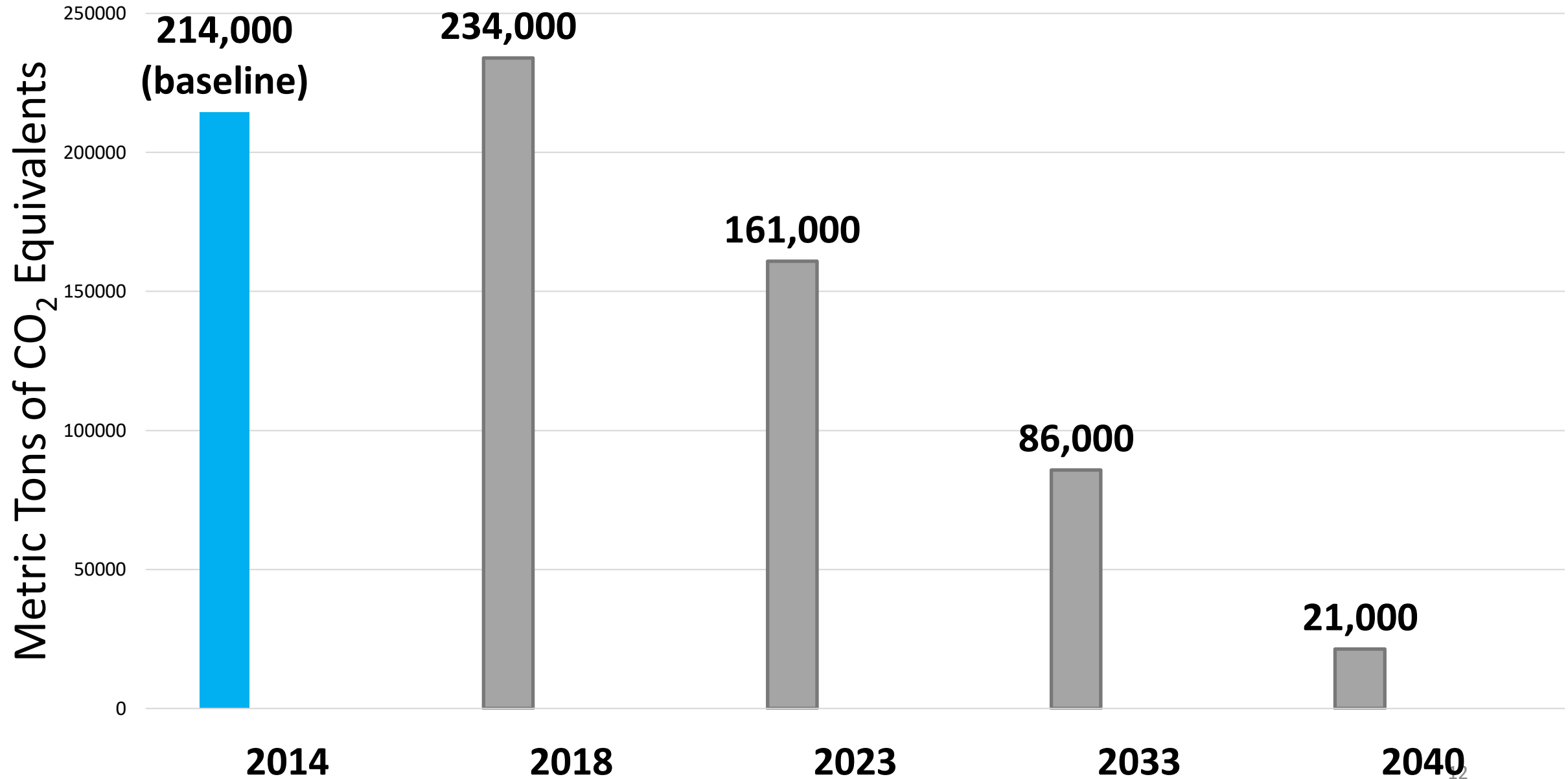
By 2040, reduce Bainbridge Island's GHG emissions by 90% compared to 2014 levels

Interim targets:

Reduce emissions by 25% by 2023 (compared to 2014)

Reduce emissions by 60% by 2033 (compared to 2014)

Reductions Needed to Meet Targets



Adaptation Goal

Bainbridge Island is climate savvy, and can withstand the impacts of climate change.

Community Engagement Goal

COBI inspires action across the community and partners with local/regional organizations to take meaningful climate change mitigation/adaptation actions.



Purpose of Meeting Tonight

Study session to discuss issues that are important for the Climate Change Advisory Committee (CCAC) to understand as they develop the Climate Action Plan (CAP) and for the Utilities Advisory Committee (UAC) as do their work.