

# CLIMATE ACTION COMMITTEE

OCTOBER 2020 • FINAL REPORT

## COMMITTEE MEMBERS

**Tim Ellis, Chair**

**Debbie King, Vice Chair**

**Mari Atkinson**

**Eliza Kirk**

**Nicholas Ness**

**Ann Swadener**

**Allison Woodbury**

**Council President Richard Emery**

**Councilmember Riaz Khan**

*The Committee thanks former Council President Christine Cook for her 2019 contributions*



## LETTER FROM MAYOR GREGERSON

To begin, we acknowledge that we are gathered on Indigenous Lands, the traditional territory of the Coast Salish People, specifically the Tulalip Tribes, successors in interest to the Snohomish, Snoqualmie, Skykomish, and other allied bands signatory to the 1855 Treaty to Point Elliott.

I am proud of the work of our Climate Action Committee, and grateful to the City Council for authorizing this initiative. This issue is a crisis that deserves focus, and the Committee members have given it their all.

The Climate Action Committee's purpose was to consider recommended clean energy goals, encourage residents to be part of the solution, encourage City staff, businesses, and residents to conserve current resources, work with the Council and City administration to implement ideas, and effectively address the future impacts of climate change.

The goals of this work aligned with many in our City's Comprehensive Plan: sustainability (through innovation and optimism), promoting a high quality of life (by protecting the natural environment), and creating a healthy community (by encouraging mobility through trails, biking, and recreation programs). Their work will inspire us to expand these efforts and take concrete actions.

This committee has worked for nearly a year and a half to develop recommendations for the City to help us reach net zero, or 100% renewable electricity. This final report provides a narrative with key data to help support the recommendations. I am extremely hopeful, and this plan is a great start to being able to create a lasting impact for our environment.

Thank you for your careful consideration of these recommendations, and a special thanks to the Climate Action Committee for the dedication and commitment to this work. They have dedicated long hours and energy to this effort. I commend them for their wise insights, educated perspectives, and dedication. I look forward to taking action to protect our environment.

Thank You,

A handwritten signature in black ink, appearing to read "Jennifer Gregerson". The signature is fluid and cursive, with the first name being the most prominent.

Jennifer Gregerson, Mayor of Mukilteo

## ACKNOWLEDGEMENTS

This report involved the effort of a volunteer Mukilteo Climate Action Committee, formed by Resolution Resolution 2019-02, passed May 6, 2019, and meeting since July 2019. A heartfelt thank you to all those who assisted in this process.

Mayor Jennifer Gregerson  
Tim Ellis Chair  
Debbie King, Vice Chair  
Mari Atkinson  
Eliza Kirk  
Nicholas Ness  
Ann Swadener  
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Council President Richard Emery  
Councilmember Riaz Khan  
Staff Support: Lindsey Arrington

*The Committee thanks former City Councilmember Christine Cook and former city staffer Nancy Passovoy for their contributions.*

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# CLIMATE CHANGE AND MUKILTEO IMPACTS

## INTRODUCTION

Cities release more than 70% of energy-related CO<sub>2</sub> emissions worldwide, leaving an enormous carbon footprint, especially in coastal regions, which host 90% of the world's urban areas and are at high risk for climate change devastation.<sup>1</sup>

Two-thirds of the world's population will reside in urban areas by 2050,<sup>2</sup> putting additional stress on coastal communities due to unprecedented sea-level rise, coastal storms, and food shortages. Because coastal cities are at the highest risk of suffering the bulk of climate change impacts, they present the opportunity to identify and measure emission levels, develop strategies for emissions reduction, and set measurable reduction goals.<sup>3</sup>

Mayors, city councils, and community leaders are in a strong position to take the lead in combatting climate change because they understand local needs and resource constraints. They can put measures in place to track the performance of city services, guide change, and set appropriate regulations regarding land use, transportation, infrastructure, and building codes.

Climate change mitigation refers to actions that reduce and stabilize GHG emissions. The Mukilteo Climate Action Committee recommends actions that will reduce Mukilteo Greenhouse Gas (GHG) emissions to achieve a net-zero by 2040—net-zero being the balance between GHG emissions produced and emissions removed from the atmosphere. The committee identified four categories as having the most potential for attaining net-zero status:

**Transportation, Sequester CO<sub>2</sub>, Hearts and Minds, and Buildings.**



TRANSPORTATION



SEQUESTER CO<sub>2</sub>



HEARTS AND MINDS



BUILDINGS

## COMMITTEE GOALS

According to Resolution 2019-02, the Climate Action Committee's goals are to:

- *Identify the benefits and costs of adopting policies and programs that promote the long-term goal of greenhouse gas emission reduction while maximizing economic and social benefits of such action.*
- *Provide input and independent analysis regarding the City's interest in making a clean energy commitment, as well as identifying a goal for renewable energy usage.*
- *Develop an action plan, including options, methods and financial resources needed and an associated timeline and milestones to achieve the renewable energy goals.*

<sup>1</sup> Why Cities," C40 Cities, accessed September 26, 2020, [https://www.c40.org/why\\_cities](https://www.c40.org/why_cities)

<sup>2</sup> "2018 Revision of World Urbanization Prospects," United Nations—Department of Economic and Social Affairs, May 16, 2018, <https://www.un.org/development/desa/publications/2018-revision-of-world-urbanization-prospects.html>

<sup>3</sup> "Global Protocol for Community-Scale Greenhouse Gas Emission Inventories," NLC National League of Cities, March 08, 2017, <https://www.nlc.org/resource/global-protocol-for-community-scale-greenhouse-gas-emission-inventories>

## CURRENT IMPACTS

According to the Northwest Chapter of Fourth National Climate Assessment, the warming climate is impacting the Pacific Northwest's natural resource economy, cultural heritage, built infrastructure, recreation, and the health and welfare of Northwest residents.<sup>4</sup>

For decades, the burning of fossil fuels has been releasing excess greenhouse gases into the atmosphere, including CO<sub>2</sub> and methane, blanketing the earth in a cumulative layer of heat. Ninety-three percent of this heat is absorbed into the ocean, resulting in expanding water vapor and precipitation, more acidic waters, sea-level rise, and shifts in the marine ecosystem. Toxic algal or algae blooms and oxygen-depleted dead zones threaten our salmon and shellfish industries, especially Dungeness crab and krill, organisms vital to the marine food chain. Warming rivers and streams and the decreasing snowpack interfere with salmon spawning sites, leading to a loss of habitat and an inability to migrate.

Sea-level rise from melting glaciers and snowpack puts high-population coastal areas at risk from flooding, landslides, increased storm surges, and infrastructure damage. In 2003, a storm surge caused \$3.5 million damage to Ivar's Restaurant, closing it for 471 days. A similar surge caused damage to Ivar's in 2012.<sup>5</sup>

Figure 1 estimates that sea-level rise plus a major flood event could flood the entire Mukilteo waterfront in 2100.<sup>6</sup>

Economic impacts such as the closing of fisheries due to algal blooms, losses in outdoor recreational revenue, depletion of the salmon and shellfish industry, and infrastructure

4 Fourth National Climate Assessment, Ch.24 Northwest, Volume II: Impacts, Risks, and Adaptation in the United States. <https://nca2018.globalchange.gov/chapter/24/>

5 Komo News, "Geyser in the middle of the restaurant' shuts down Ivar's," 26 January 2012, <https://komonews.com/archive/geyser-in-the-middle-of-the-restaurant-shuts-down-ivars>

6 "Land Projected to be below 100-year flood level in 2100." Sea level rise and coastal flood risk maps—Climate Central, accessed September 28, 2020, <https://coastal.climatecentral.org/>

damage from sea-level rise, increase risk of income loss, and food insecurity, particularly for low-income and minority coastal populations. In 2015, a harmful algal bloom extended from Alaska to California, closing shellfish fisheries for a prolonged period of time due to the high-level of neurotoxins in the water. An Advancing Earth and Space Science study links this algal bloom to warming, low-nutrient ocean waters.<sup>7</sup>

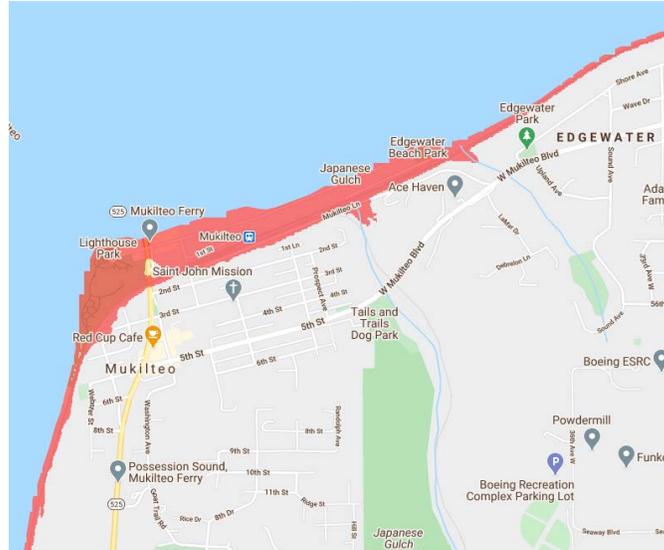


Figure 1: Land projected to be below 100-year flood level in 2100

Escalating temperatures, pollution, and smoke from wildfires pose an increasing threat to both physical and mental health, including an increased risk of heart attacks, cancer, respiratory disease, and heat-related deaths. In 2020, wildfires raged through California, Oregon, and Eastern Washington, scorching nearly 4.8 million acres and killing 35.<sup>8</sup> A smothering, dense smoke layer settled up and down the west coast, obscuring the Seattle skyline and catapulting the air quality index to dangerous levels.

7 Ryan M. McCabe, Barbara M. Hickey et al, "An unprecedented coastwide toxic algal bloom linked to anomalous ocean conditions," Advancing Earth and Space Science, 20 Sep 2016, <https://agupubs.onlinelibrary.wiley.com/doi/full/10.1002/2016GL070023>

8 "As wildfire smoke becomes a part of life on the West Coast, so do its health risks," The Washington Post, September 17, 2020, <https://www.washingtonpost.com/nation/2020/09/16/smoke-air-west/>

# GREENHOUSE GASES

Greenhouse gases (GHGs) include carbon dioxide, methane, chlorofluorocarbons (CFCs), and nitrous oxide.

**Methane (CH<sub>4</sub>)** is emitted during the production and transport of coal, natural gas, and oil, as well as from livestock, other agricultural practices, and the decay of organic waste in municipal solid waste landfills. While methane is one of the most potent GHG in trapping heat, it only stays in the atmosphere for a short time and accounts for only about 10% of GHG emissions. Yet, because of its potency, methane has the power to raise sea-levels for centuries.<sup>9</sup>

**Carbon dioxide (CO<sub>2</sub>)** accounts for 81% of all GHGs released through human activities.<sup>10</sup> The burning of fossil fuels (coal, natural gas, and oil) releases CO<sub>2</sub> into the atmosphere. And while natural sources (solid waste, trees, and other biological material) also emit CO<sub>2</sub>, human-related emissions are responsible for the harmful increase released into the atmosphere since the industrial revolution. CO<sub>2</sub> can stay in the atmosphere for 200 years or more. *Figure 2* displays how CO<sub>2</sub> levels rose sharply around 1950 after several ice ages.<sup>11</sup>

Urban forests and plants absorb, or sequester, CO<sub>2</sub> when absorbed by plants as part of the biological carbon cycle, removing it from the atmosphere.

**Nitrous oxide (N<sub>2</sub>O)** is emitted during agricultural and industrial activities, combustion of fossil fuels and solid

waste, and during the treatment of wastewater.

**Fluorinated GHGs**—hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride, and nitrogen trifluoride—are synthetic, powerful greenhouse gases emitted from a variety of industrial processes. These gases are emitted in lesser quantities, though because

they are potent GHGs, they are often referred to as High Global Warming Potential (High GWP) gases. Fluorinated gases are sometimes substituted for stratospheric ozone-depleting substances (chlorofluorocarbons (CFCs), hydrochlorofluorocarbons, halons).<sup>12</sup>

The Clean Energy Transformation Act (CETA) requires the transition to 100% non-GHG-emitting electricity resources by 2045 according to the following schedule:<sup>13</sup>

- Eliminate coal-fired electricity resources by December 2025.
- Attain GHG neutrality by January 2030.
- Transition to 100% non-GHG-emitting by January 2045.

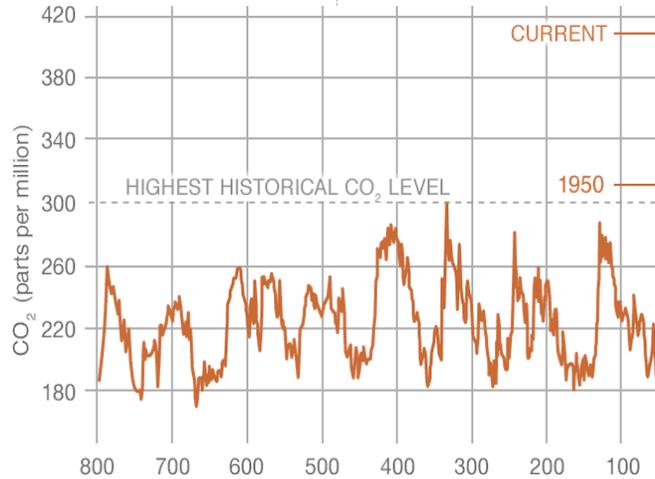


Figure 2: CO<sub>2</sub> levels during the last three glacial cycles, as constructed from ice cores. (NOAA)

9 Robinson Meyer, "Short-Lived' Methane Could Raise Sea Levels for Another 800 Years," *The Atlantic*, January 10, 2017, <https://www.theatlantic.com/science/archive/2017/01/short-lived-methane-sea-levels-for-800-years-solomon/512588/>

10 "Overview of Greenhouse Gases," Greenhouse Gas Emissions, EPA, accessed October 13, 2020, <https://www.epa.gov/ghgemissions/overview-greenhouse-gases>

11 "Carbon Dioxide Concentration," NASA Global Climate Change, August 2020, <https://climate.nasa.gov/vital-signs/carbon-dioxide/>

12 "Overview of Greenhouse Gases," Greenhouse Gas Emissions, EPA, accessed October 13, 2020, <https://www.epa.gov/ghgemissions/overview-greenhouse-gases>

13 "Chapter 19.405 RCW: Washington Clean Energy Transformation Act," May 7, 2019, <https://app.leg.wa.gov/RCW/default.aspx?cite=19.405&full=true#19.405.030>

## PROCESS

Following the submission of the Interim Report of the Mukilteo Climate Action Committee on December 9, 2019, the Committee was able to have two in-person meetings before COVID-19 control practices required that all meetings must be virtual.

Despite the COVID-19 restrictions, the Committee continued its full-team monthly-meeting pace, along with the addition of three-to-four member sub-team meetings to dig into more detail of what we wanted to include in this report.

In addition to a full outline of recommended climate actions, this report includes the following (click the title to access these sections of the report):

- **[Prioritization Matrix](#)**—identifies actions with the highest benefit vs. cost ratio.
- **[Getting Started Plan](#)**—for the Council to use when considering the 2021 budget.
- **[GHG Emissions Dashboard](#)**—for the City to track progress against the goal of net-zero GHG emissions by 2045 or sooner.
- **[Cost Analysis](#)**—specified actions amount to an estimated 0.5 FTE staff member—this matrix indicates that we could make good progress on these actions.

# MITIGATION STRATEGIES

## TRANSPORTATION



The world caught a glimpse of what a cleaner world would look like when GHG emissions dropped 17% during the early days of the coronavirus pandemic, due in part to a significant decrease in vehicular and air travel.<sup>14</sup>

Electric Vehicles (EVs) and charging stations garner the most attention when it comes to reducing GHG emissions. Yet the City can also support residents who wish to transition from single-vehicle transport by increasing access to public transportation and ride-sharing, bicycling and walking, and telecommuting.

The purchase of the Mukilteo Police Department's first all-electric police cruiser, a Tesla Model 3, in early 2020 sets a precedent for other city departments to replace aged gas- and diesel-powered vehicles with all-electric purchases. The City should also expedite the permitting process for installing residential charging stations and address barriers to installing chargers at garage-free homes and on rental properties.

The City should take advantage of online and print media and host community events to educate Mukilteo residents of the health benefits of moving to EVs and human-powered transportation. A city-wide transition to electric vehicles would reduce CO<sub>2</sub> pollution, risk of oil spills and oil dependency, and health risks, including cancer and respiratory issues. Bicycling and walking can reap the benefits of reduced heart disease, obesity, and diabetes, and improved mental health.

### Transition to Electric Vehicles (EVs) by 2040

#### Electric vehicles

- Introduce a policy to replace the city's fleet vehicles with electric options at the time of retirement, including police cruisers, fire engines, and work vehicles (trucks and vans).

- Support the continuing transition of Community Transit and Everett Transit fleets to electric vehicles.
- Work with local auto dealers to promote EV sales within the community.
- Encourage the Mukilteo School District to transition to electric school buses.

#### EV chargers plan

- Address options for increasing public access to EV charging stations:
  - Expedite the permitting process for installing residential charging stations.
  - Map optimal locations for chargers in commercial areas.
  - Address barriers to charging for garage-free homes and rental properties.
  - Consider integrating charging infrastructure into streetlights.
- Consider smart cable technology.
- Assess the potential to partner with third-party EV charging station providers to lower program and construction costs.

#### EV power storage

- Install battery storage by 2040 for EV chargers to provide vehicle-to-grid electricity from the grid.<sup>15</sup>

### Decrease GHG Emissions from Fossil-Fuel-Powered Vehicles

#### No-idle zones

- Adopt a policy to limit vehicle idling; post signs at businesses and holding areas (e.g. school and ferry areas).
- Collaborate with regional partners to limit vehicle idling.
- Advocate for state and federal legislation to advance GHG reductions.

<sup>14</sup> Le Quéré et al, Temporary reduction in daily global CO<sub>2</sub> emissions during the COVID-19 forced confinement, *Nature Climate Change*, 10, 647–653 (May 19, 2020), <https://doi.org/10.1038/s41558-020-0797-x>

<sup>15</sup> "Energy Storage for Transportation & Electric Vehicles (EVs): ESA," Energy Storage Association, <https://energystorage.org/why-energy-storage/applications/transportation-storage/>, accessed September 26, 2020

- Create a no-idle-zone toolkit for municipalities.

### Shared vehicles

- Investigate regional congestion pricing, i.e. revenue created for projects and services to serve a variety of transportation modes/options.
- Explore parking management strategies:
  - Align cost of commuting by car vs transit options for sustainability goals.
  - Implement dynamic pricing.
  - Build vehicle-on-demand parking spaces.
- Promote carpooling/van-pooling and telecommuting for city employees.
- Establish car-sharing programs such as Zipcar and Car2Go.

### Flexible work policies

- Educate and encourage local employers to reduce commute trips.
- Explore the options and benefits of compressed work weeks.
- Encourage businesses and organizations to continue promoting telecommuting beyond the coronavirus pandemic. Adopt a telecommuting policy for city employees.
- Allow for schedule adjustments and flex time.
- Share these program's case studies from the City's implementation of similar programs with local employers.
- Encourage home-based business opportunities.
- Update city land-use rules for home-based businesses.
- Install "smart" water meters to transmit water usage electronically.
- Shift to every-other-week garbage collection and weekly organic collection.

## Enhanced support to human-powered transportation

### Increased routes between commuting nodes

- Routes within Mukilteo

- Require developers to provide pedestrian connections between neighborhoods, schools, businesses, and work sites.
- Fill gaps in pedestrian and cycling routes between areas with high visitation volumes (e.g. Lighthouse Park, Mukilteo Speedway, Boeing, etc).
- Routes between Mukilteo and surrounding areas
- Examine pedestrian and bike routes in Mukilteo that could be connected to other inter-urban trails, sidewalks, or bike lanes.
  - Encourage transit agencies to install bike racks on transit vehicles to encourage partial bike commutes for those that work outside city limits.

### Enhanced infrastructure and resources

- Bicycles
  - Invest in a bike-share program.
  - Increase the number of bike racks around the city, specifically at businesses, schools, and workplaces.
  - Add a municipal bike fleet for city employee use.
  - Provide incentives for businesses interested in investing in bikes for employees.
  - Create new bike paths, lanes, and trails where space is available by funding and implementing the Bike Transit Walk Plan.
  - Update current infrastructure by refurbishing cracked bike paths and repainting faded bike lanes.
- Pedestrian infrastructure
  - Refurbish existing sidewalks, paths, and crosswalks.
  - Create new sidewalks, paths, and crosswalks where they are needed by funding and implementing the Bike Transit Walk Plan.

### Community engagement

- Partner with the Mukilteo School District to expand educational programs that promote walking and biking.
- Post maps of pedestrian and cycling routes in schools and other areas.
- Support a program that would organize and lead walks around Mukilteo.

## Grow Public Transportation

### Buses/shuttle services

- Incentivize public transit use
  - Promote benefits such as pre-tax transit passes.
  - Offer rebates to employees who give up the use of their employer's parking facilities.
  - Offer free intercity bus service
  - Add shuttle service connecting commercial and mobility hubs.

### Car sharing/mobility options

- Establish a remote park-and-ride or ride-share program for the waterfront
- Work with third-party programs and businesses to increase the availability, accessibility, and convenience of other shared mobility options (e.g. bike share, scooter share, etc.)

### Funding and development

- Fund continued improvement of local commercial and transportation hubs.
- Coordinate with Community Transit, Sound Transit, and WSDOT to increase transit ridership.
  - Pursue funding opportunities for transit service.
  - Improve convenience to encourage increased ridership.
- Encourage transit-oriented development standards and projects in the city's activity centers (old town, uptown).

## Promote local goods and services to reduce long-distance transport

### Food

- Identify property that could be used for community and home gardens.
- Promote the growth of fruits and vegetables in community and home gardens.
- Promote local farmers' markets and co-ops.
- Promote decreasing the amount of meat residents consume.
- Encourage those with private gardens to donate to local food banks.

## Goods/materials recycling

- Support neighborhood events such as garage sales and community recycling.
- Collaborate with second-hand stores to promote textile collection and recycling.

## Reduce air travel

- Communicate the impact of commercial air carbon emissions vs other travel options.

## SEQUESTER CO<sub>2</sub>



Planting and fostering urban forests on a global scale is one of the cleanest, most effective ways to mitigate climate change—trees have the highest capacity to capture and store atmospheric CO<sub>2</sub> due to their size, extensive root systems, and longevity.

During photosynthesis, trees and plants capture and store CO<sub>2</sub> from the atmosphere, a process known as carbon sequestration or carbon absorption. While all trees contribute to carbon sequestration, some tree species are more efficient than others in storing carbon within their woody biomass. Douglas firs, the most dominant species in the Pacific Northwest, can sequester nearly 14 tons of carbon in its first 100 years.<sup>16</sup>

To achieve optimal urban forest sequestration in Mukilteo, the Committee recommends planting trees and plants in city parks and parking lots that are the most drought-resistant and have a high absorption rate. An Adopt-a-tree program would encourage businesses and residents to cover the purchase cost, and planting and maintaining of tree seeds or saplings.

Rain gardens, planted with grass and flowering perennials, soak in rainwater runoff, filter out pollutants, and provide food and shelter for wildlife.<sup>17</sup>

Green roofs—roofs covered in vegetation and cool roofs—roofs designed to reflect sunlight—decrease surface and air temperatures and reduce energy demand.<sup>18</sup>

### Enhance qualities of CO<sub>2</sub>-sequestering trees

#### Tree planting

- Plant 100 trees per year. Work with the Snohomish Conservation District, Save Our Streams, and other organizations to obtain education and resources for tree types, seeds, and beneficial locations.
- Focus on planting other trees throughout Mukilteo neighborhoods by providing residents with free seeds and saplings.

<sup>16</sup> "Evergreen Carbon Capture: Planting Trees & Carbon Sequestration" Forterra, December 19, 2016, <https://forterra.org/subpage/ecc-carbon-science>

<sup>17</sup> "Soak Up the Rain: Rain Gardens," Environmental Protection Agency, July 09, 2020, <https://www.epa.gov/soakuptherain/soak-rain-rain-gardens>

<sup>18</sup> "Using Green Roofs to Reduce Heat Islands," Environmental Protection Agency, June 11, 2019, <https://www.epa.gov/heatislands/using-green-roofs-reduce-heat-islands>

- Implement an Adopt-a-Tree program that would encourage businesses and residents to cover the cost of purchase, planting, and maintenance of tree seeds or saplings.

#### Urban forests maintenance and expansion

- Assign City Public Work Crews to implement the proper planting/transplanting process of tree seeds and saplings and to maintain the City's urban forests with proper tree maintenance programs and protocols, including watering, pruning, and health checks.
- Tighten or create restrictions on tree removal by developers, or private businesses or residents.
- Purchase landmass that is currently occupied by trees/plants/forests as city land to protect from development.
- Require shade trees, drought-resistant plants, and rain gardens to be planted in public and private commercial parking lots.

### Expand carbon sequestration in city parks

#### Identify city parks where carbon sequestration could be increased

- Plant species of trees and plants in city parks that are the most carbon-absorbing.
- Advise urban land managers to avoid trees that require a lot of maintenance—the burning of fossil fuels to power equipment like trucks and chainsaws only erases the carbon absorption gains otherwise made.

#### Continue to plan and develop a system of parks, open spaces, and trails throughout Mukilteo

- Create at least one new park, rain garden, or protected wetland per year.
- Create more usable green space in Mukilteo's activity centers, such as Harbour Pointe shopping center, Rosehill Community Center, Mukilteo Lighthouse Park, ferry, and train station.
- Apply for protected land status for any unprotected green spaces.

### Establish green roofs throughout Mukilteo

- Install green roofs on all municipal buildings.
- Partner with Community Transit to plant green roofs on city bus stops.

# HEARTS AND MINDS



One of the most powerful yet least expensive ways to mitigate climate change is to inspire Mukilteo residents to become more aware of how they can personally take responsibility for reducing their carbon footprint. Providing education, resources, and enjoyable activities serve

as a strategic yet straightforward means to this end.

Before the City can implement the actions needed to change the hearts and minds of its residents, it must establish a process and designate a staff person to implement actions, track the progress, and providing accountability for achieving the goals of the CAP. (See Intra and Inter-Government Actions to Reduce GHGs and Metrics chart in this document.)

The Committee has specified educational activities and resources that the City can use to encourage and excite residents to learn ways to care for the planet. Recycling, composting, planting vegetables, and removing food waste are a few of the most self-sufficient and easy ways to get a head start on reducing a resident's carbon footprint. A number of these recommendations are listed in the **Getting Started** actions because they are a low-cost way to achieve sizable results within a short period of time.

## Resources and educational programs

### Resources

- Promote Mukilteo Climate Action Committee Plan and the City website.
- Submit articles on sustainability and net-zero emissions to the Mukilteo Beacon, Mukilteo Tribune and other local publications.
- Support community organizations and events such as volunteer cleanup crews. Encourage community ownership.
- Erect "Sea Level Circa 2100" sign at the Mukilteo waterfront.

### Educational programs

- Host open houses, public hearings, and presentations.
- Host booths at Lighthouse Festival and Farmers Market.

- Create an online presence on social media—Facebook, Twitter, Instagram, and setting up a YouTube channel.

### Business and residential programs

- Host community events and prioritize actions to encourage local change. Encourage community "ownership."
- Encourage the Reduce/Reuse/Refuse mindset.
  - Reduce - Simply reduce your purchasing by being mindful about you need and want.
  - Reuse - Decide to reuse or repair something before tossing and buying new. Sell or donate items. Use the library to learn how to repair items.
  - Refuse - Eliminate waste by saying no to single-use materials and look into reusable alternatives.
- Encourage residents to transition to EVs.
- Encourage composting and use of clotheslines
- Encourage residents to plant trees.
- Implement city-wide recycling programs.

## Take intra- and inter-governmental actions to reduce GHGs

### Intra-governmental actions

- Designate a staff person to advance efforts and provide accountability and coordination between community and city efforts.
- Create a management and reporting system to monitor activities related to CAP goals, including the progress of actions that have been initiated, implementation schedule, and community and municipal GHG emissions.
- Educate all city staff members about the CAP.
- Consider initiatives that modify behavioral patterns to increase energy efficiency in municipal operations.
- Evaluate the differential impact of climate change on neighborhoods and communities.
- Develop and incorporate equity metrics into the evaluation of CAP activities.

- Prepare an annual report for the city’s Planning Commission and City Council to assess the implementation of the CAP.

### Inter-governmental actions

- Provide a leadership role with other local government agencies and businesses to share best practices and successes, such as Mukilteo’s Green Business Certification Program.
- Work with local and regional partners to conduct a public education and outreach campaign promoting local tool-lending libraries, car share, swap events, and service and sustainability websites and Facebook groups (e.g. Buy Nothing).<sup>19</sup>

## Modify and implement programs in support of reducing GHGs

### Commercial and community programs

- Establish policies that require and assist schools, businesses, and restaurants in recycling, composting, and reducing waste, including food waste.<sup>20</sup>
- Educate and guide residents in implementing composting and water savings.
- Support “collaborative consumption” community projects such as tool-lending libraries and repair cafes.
- Expand and encourage community gardens, urban agriculture, community-supported agriculture, and farmers’ markets.

### City programs

- Educate city employees on climate-protection and develop internal programs regarding environmental issues.
- Ban polystyrene.
- Develop a city-wide Environmentally Preferable Purchasing Policy (EPP). Consider life-cycle costing as one of the decision-making tools in this process.
- Evaluate and align future development applications and the city’s Capital Improvement Program with this Climate Action Plan.

<sup>19</sup> “Snohomish County Reusable Materials Exchange,” 2Good2Toss, accessed September 26, 2020, <https://2good2toss.com/>

<sup>20</sup> “Carbon Footprint of Global Food Wastage,” Food and Agriculture Organization of the United Nations, accessed September 26, 2020, <http://www.fao.org/3/a-bb144e.pdf>

## BUILDINGS



An estimated 230 billion meters of new construction is expected to be built over the next 40 years worldwide.<sup>21</sup> Given that buildings produce 40% of energy-related carbon emissions,<sup>22</sup> generating and procuring 100% clean, renewable energy is imperative to offset rising energy demands by 2040 and meet the standards set by the Paris Agreement.<sup>23</sup>

Washington’s Clean Energy Transformation Act (CETA) stipulates that electric utilities must be greenhouse gas neutral by January 1, 2030, and supplied by 100% renewable electricity by 2045.<sup>24</sup>

To support CETA requirements, the Committee recommends that Mukilteo reduce building GHG net emissions to zero by 2040 by applying the following standards, incentives, and certifications to both new construction and existing facilities. This should start with de-incentivizing the use of natural gas for all structures.

## Establish incentives and certifications to leverage building conversions to net-zero emissions

### Incentives

- Provide direct monetary rebates, aggregation purchases, or property tax abatements for energy efficiency improvements.
- Eliminate permitting fees and streamline zoning and inspection costs for businesses and residents to upgrade to solar.<sup>25</sup>

<sup>21</sup> “Global Status Report 2017 - World Green Building Council,” UN Environment, accessed September 26, 2020, [https://www.worldgbc.org/sites/default/files/UNEP%20188\\_GABC\\_en%20%28web%29.pdf](https://www.worldgbc.org/sites/default/files/UNEP%20188_GABC_en%20%28web%29.pdf)

<sup>22</sup> “Why the Building Sector?,” Architecture 2030, accessed September 26, [https://architecture2030.org/buildings\\_problem\\_why/](https://architecture2030.org/buildings_problem_why/)

<sup>23</sup> Global Status Report 2017 - World Green Building Council,” UN Environment, accessed September 26, 2020, [https://www.worldgbc.org/sites/default/files/UNEP%20188\\_GABC\\_en%20%28web%29.pdf](https://www.worldgbc.org/sites/default/files/UNEP%20188_GABC_en%20%28web%29.pdf)

<sup>24</sup> “Chapter 19.405 RCW: Washington Clean Energy Transformation Act,” May 7, 2019, <https://app.leg.wa.gov/RCW/default.aspx?cite=19.405&full=true#19.405.030>

<sup>25</sup> “Pathways to 100—An Energy Supply Transformation Primer for U.S. Cities,” Cadmus Group (formerly Meister Consultants Group), accessed September 2020, <https://cadmusgroup.com/papers-reports/pathways-to-100-an-energy-supply-transformation-primer-for-u-s-cities/>

- Create a city financial assistance program to aid homeowners in improving home energy efficiency, such as local financial incentives for on-site renewable energy upgrades (e.g. solar rebates, tax credits, zero-interest loans).<sup>26</sup>
- Partner regionally and with the state government to revise building codes to de-incentivize natural gas for heating.
- Incentivize infill and mixed-use development through alternative code compliance, fee waivers, density bonuses, investment prioritization, development impact fees, or tax benefits.
- Evaluate the effectiveness of regulations and provide incentives for Accessory Dwelling Units.
- Create an oil-heated home conversion program that provides incentives for homeowners to replace oil heating systems with electric heat pumps.
- Encourage voluntary electrification of natural gas appliances through actions such as pilot programs, process streamlining, fee reduction, and contractor/supplier engagement.

### Certifications

- Require that commercial and residential buildings meet LEED standards at the time of sale or rental, and offer financial incentives for meeting said standards.

### Establish net-zero emissions building standards

- Study benefits and economic tradeoffs of regulations that require all-electric buildings.
- De-incentivize natural gas for new construction and major renovations/redevelopment.
- Work with regional energy partnerships to develop and implement an Electrification Action Plan for all city facilities.
- Change city building codes.
  - Allow for passive heat and cooling.
  - Require solar panels on new or remodeled structures.

<sup>26</sup> Ibid

- Address home orientation, roof overhang, use of trees for shade.
- Require all new buildings be designed according to a certified sustainability assessment method such as LEED<sup>27</sup>, or BREEAM<sup>28</sup>, to include green roofs, cool roofs, and additional landscaping that is tolerant to a range of climate conditions.
- Encourage the use of green roofs, green walls, cool roofs, cool pavements, and additional landscaping that are tolerant of a range of climate conditions.
- Work with disposal companies to implement residential and commercial composting.
- Require that an independent Residential Energy Services Network rate newly built or substantially reconstructed dwellings.
- Require that demolition contractors fully deconstruct houses or duplexes so that materials can be salvaged or reused.
- Work with community partners to offer training and certification on deconstruction.

### Support upgrades that reduce/eliminate building GHG emissions and reduce the City's dependence on hydroelectric and nuclear power.

- Install energy-efficient and energy-reducing upgrades in all city buildings such as occupancy-driven HVAC controls, on-demand water heaters, improved insulation, light sensors, and programmable thermostats.
- Install solar systems on all city buildings, including Rosehill Community Center, the Public Works shop, Police and Fire Stations.

<sup>27</sup> "Leadership in Energy and Environmental Design," LEED, accessed September 26, 2020, <http://leed.usgbc.org/leed.html>

<sup>28</sup> "What is BREEAM?," BREEAM®, October 07, 2019, <https://www.breeam.com>

# PRIORITIZATION MATRIX

Climate Action Plan Prioritization Matrix identifies actions with higher impact in reducing GHG emissions and lower implementation costs vs. those with less impact on GHGs and higher costs. The Committee used this matrix to determine areas of initial focus. See the [Getting Started Plan](#).

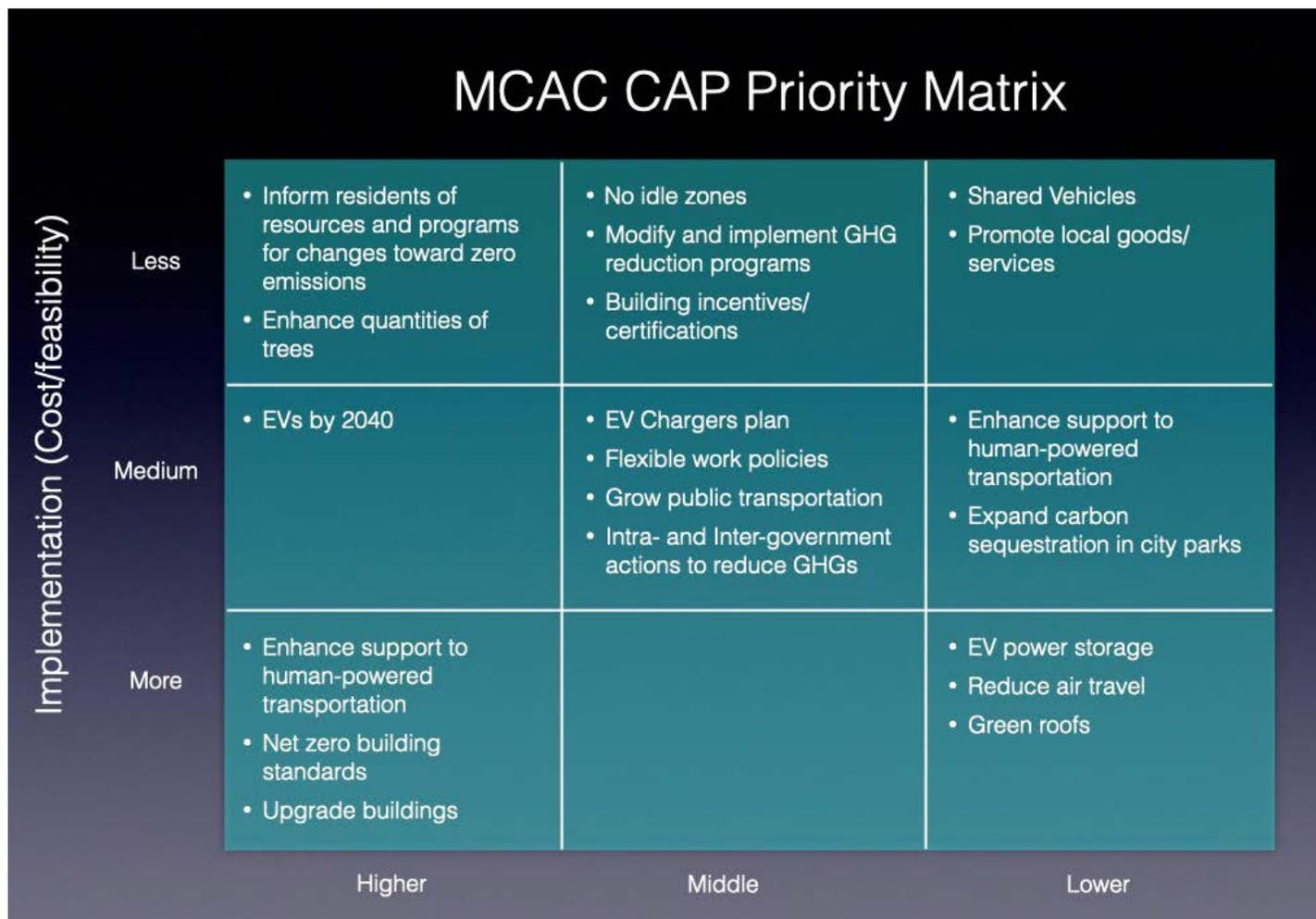


Figure 3: CAP Prioritization Matrix

# GETTING STARTED PLAN

## 2021 ACTIONS

The Mukilteo Climate Action Committee recommends the City take the following actions beginning in 2021.

### City Operations

- Implement the following processes to monitor and track the progress of the Climate Action Plan (CAP):
- Designate a staff person as Climate Coordinator to advance efforts, and provide accountability and coordination between community and city efforts.
  - Create a management and reporting system to monitor activities related to CAP goals, including the progress of actions that have been initiated, implementation schedule, and community and municipal GHG emissions.
  - Educate all city employees about the CAP and develop internal programs regarding environmental issues.
  - Develop and incorporate equity metrics into the evaluation of CAP activities.
  - Prepare an annual report for the City's Planning Commission and City Council to assess the implementation of the CAP.
- Adopt a city telecommuting policy and procedure for employees.

### City Policies

- Introduce a policy to replace the City's fleet vehicles with electric options when a vehicle is ready to be retired.
- Adopt and implement a policy to limit vehicle idling. Post signs at businesses and holding areas (e.g. school and ferry areas).

### Development and Buildings

- Address options for increasing public access to chargers, including expediting the permitting process for private installation of EV charging stations and mapping optimal locations for chargers in commercial areas.
- Require developers, businesses, and/or residents take measures to lower the City's carbon footprint:
  - Plant shade trees, drought-resistant plants, and rain gardens in commercial parking lots.
  - Tighten or create restrictions on tree removal by developers, private businesses, and residents.
  - Encourage the use of green roofs, green walls, cool roofs, cool pavements, and additional landscaping tolerant of a range of climate conditions.
- Encourage voluntary electrification of natural gas appliances through actions such as pilot programs, process streamlining, fee reduction, and contractor/supplier engagement.
- Begin developing a program requiring commercial and residential buildings to meet LEED standards at the time of sale or rental. Offer financial incentives for meeting said standards.

### Regional Coordination

- Support the continuing transition of Community Transit and Everett Transit fleets to electric vehicles.
- Work with local auto dealers to promote EV sales within the community.
- Work with the Mukilteo School District to transition to electric buses.
- Adopt a leadership role with other local government agencies and businesses to share best practices and successes, such as the City's Green Business Certification Program.

## City Infrastructure

- Plant 100 trees per year throughout the City, including City parks, according to those that are most carbon-absorbing. Work with the Snohomish Conservation District, Save Our Streams, and other organizations to obtain education and resources for tree types, seeds, and beneficial locations.
- Assign City Public Work Crews to follow through with the proper planting/transplanting process of tree seeds and saplings and to maintain the City's urban forests with proper tree maintenance programs and protocols, including watering, pruning, and health checks.
- Advise urban land managers to avoid trees that require a lot of maintenance—the burning of fossil fuels to power equipment like trucks and chainsaws only erases the carbon absorption gains otherwise made.
- Focus on planting other trees throughout Mukilteo neighborhoods by providing residents with free seeds/saplings. Implement an Adopt-a-Tree campaign for both residents and businesses.
- Work with regional energy partnerships to develop and implement an Electrification Action Plan for all city facilities. In new and existing buildings, incorporate strategies to address electricity storage, and focus on highlighting any hurdles or solutions that would apply to the broader community.

## Communications

- Create an online presence by posting the CAP on the City's website, developing a social media strategy (Facebook, Twitter, Instagram), and setting up a YouTube channel.
- Submit articles on sustainability and net-zero emissions to the Mukilteo Beacon, Mukilteo Tribune, and other local publications.
- Support community organizations and events such as volunteer cleanup crews. Encourage community ownership.
- Initiate community events, such as open houses, public hearings, and presentations to educate the public and prioritize actions encouraging local change. Host booths at the Lighthouse Festival and Farmers Market.
- Encourage the Reduce/Reuse/Refuse mindset, including recycling, composting, using compostable dishes and utensils, and drying clothes on clotheslines.
- Erect a "Sea Level Circa 2100" sign at the beach (above the mean high-tide mark).
- Encourage residents to start or participate in Climate Action Family Groups such as Climate Action Families. Encourage businesses and residents to take a global climate pledge.
- Work with Waste Management to implement city-wide recycling programs.
- Encourage businesses and organizations to continue promoting telecommuting beyond the coronavirus pandemic.

# GHG EMISSIONS DASHBOARD

The Committee recommends using the following measurable indicators for tracking the City’s progress toward achieving net-zero **Greenhouse Gases** by 2045 or sooner.

**Table 1: Goal: Zero/Net-Zero Greenhouse Gas Emissions by 2045**

Emission Element	Measurable	2045 Goal	Notes
Gasoline/diesel	Internal combustion vehicle count	0	Could have separate goals for city, residents and businesses.
Gasoline/diesel	Gas/diesel sold annually	0	Subtract Biodiesel (a clean burning renewable fuel made using natural vegetable oils and fats)
Natural Gas	Quantity of gas utilized annually	0	100 clean electricity

**Note:** This table only measures CO<sub>2</sub> indicators as CO<sub>2</sub> is the most prevalent GHG in the atmosphere and the most reliable.

**Table 2: Elements of the MCAC Net Zero Outline**

Outline Element	Measurable	2045 Goal
Electric vehicles by 2040	Ratio of e-vehicles to internal combustion vehicles	Infinity
EV charger plan	Ratio of EV chargers to Gas/diesel pumps	Infinity
Sequester CO <sub>2</sub> through flora	Annual new tree count	2500 trees by 2045

# COST ANALYSIS

The costs of implementing a Climate Action Plan may seem daunting and insurmountable if viewed from a 100% perspective within a short time. A goal that requires the City’s entire motor pool be replaced with EVs in one year would come with a big price tag. However, a plan to replace the motor pool with EVs over the next twenty years could fit within the City’s budget and planning cycles. The Mukilteo Climate Action Committee has developed a [Getting Started Plan](#) for easily attainable goals that would have the greatest impact for the lowest cost in 2021.

**Table 3. Climate Action Plan Costs**

Element	Costs	Notes
<b>Electric Vehicles by 2040</b>	Costs comparable to Internal combustion engine vehicles with maintenance. Equivalent to no additional costs. Consider bio-diesel.	Transition to all EVs by 2040
<b>EV charger plan</b>	\$10-25k/(public/city) (220v) \$500-2k/unit resident (220v)	Develop EV charger plan
<b>Resources and educational programs for local changes toward achieving a goal of zero emissions</b>	Staff time/materials—0.3 FTE*	Inform residents of resources and educational programs for local changes toward achieving a goal of zero emissions.
<b>Sequester CO2 through flora</b>	\$30-50/tree + installation	Sequester CO2 through flora
<b>No idle zones</b>	Signs and installation	Establish no-idle zones
<b>Programs supporting GHG reduction</b>	0.05 FTE	Modify and implement programs that support GHG reduction
<b>Establish incentives and certifications to leverage building conversions to zero emissions</b>	0.05 FTE	Establish incentives and certifications to leverage building conversions to zero emissions
<b>Grow public transportation</b>	0.05 FTE	Grow public transportation
<b>Take intra- and inter-governmental actions to reduce GHGs</b>	0.05 FTE	Take intra- and inter-governmental actions to reduce GHGs
<b>Flexible work policies</b>	State COVID-19 response covers this	Flexible work policies

\*FTE: Full-time equivalent of staff time. Proposal would result in a total of one half-time FTE.

# CONCLUSION

Climate change impacts the planet and all who reside here more with each passing year. Many climate disasters already surpass their predecessors in terms of magnitude and impact—the 2020 wildfires on the west coast being a prime example. We must respond to climate change with the same urgency as we did with the 2020 coronavirus pandemic. If we do not invest in sustainable solutions now, the cost and damage to our planet and future generations will be irreversible.

Following the model and actions of the Mukilteo Climate Action Committee will help things move forward quickly. The City will be an example for its residents and businesses, other cities through Snohomish County, and for Washington State in securing a greener, more sustainable future for generations to come.

Being part of this Committee has been eye-opening. Weve learned a lotbut have much more to learn. It's been an honor to pull this information together, and we hope that it will prove useful in making substantial, lasting changes to decrease our greenhouse gas emissions and achieve a net-zero status by 2045 or sooner.

—Tim Ellis, Debbie King, Mari Atkinson, Eliza Kirk, Nicholas Ness, Ann Swadener, Allison Woodbury, Richard Emery, Riaz Khan, Christine Cook

*The Climate Action Committee would like to thank Mayor Jennifer Gregerson, Lindsey Arrington, and Nancy Passovoy for their invaluable help and support in preparing this Climate Action Plan.*