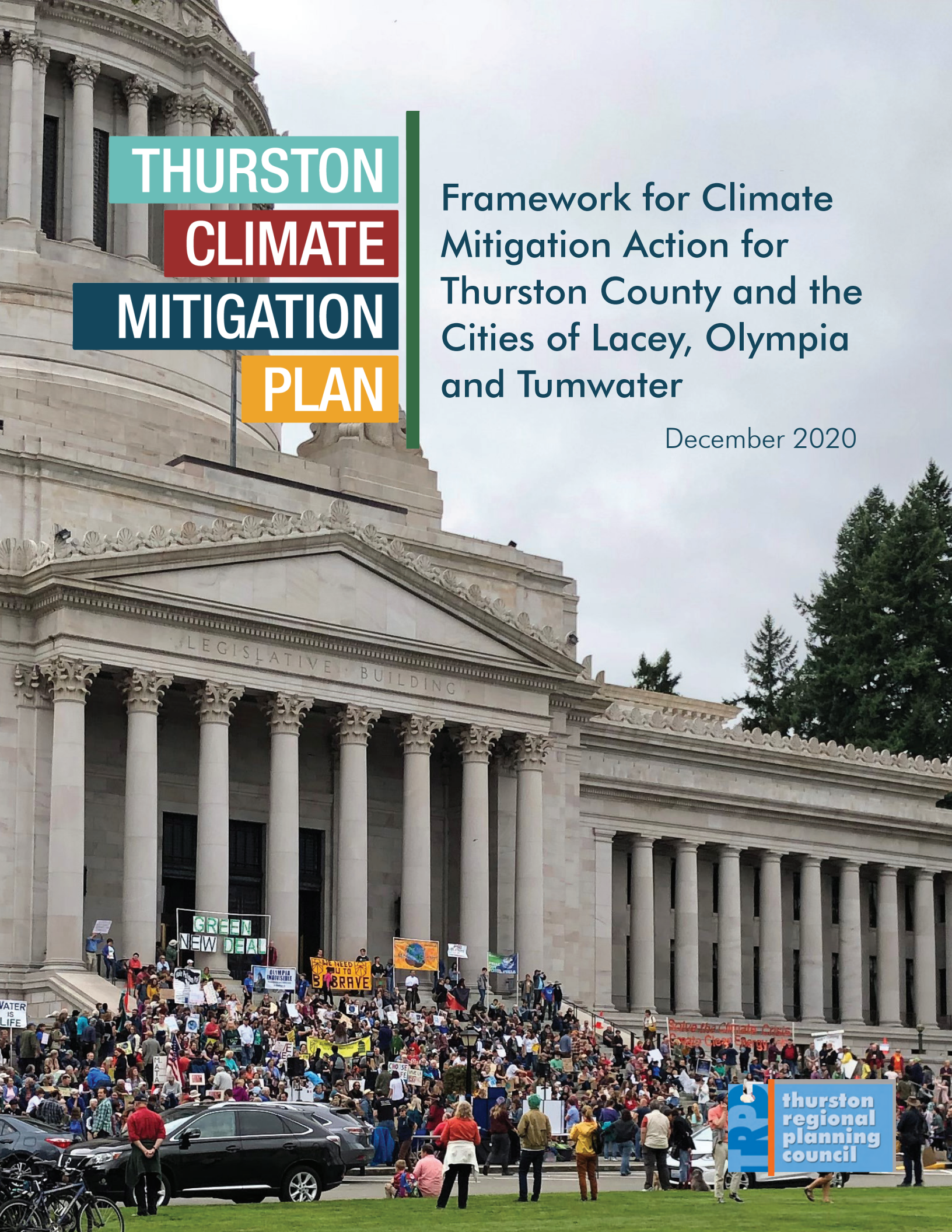
THURSTON CLIMATE MITIGATION PLAN

Framework for Climate Mitigation Action for Thurston County and the Cities of Lacey, Olympia and Tumwater

December 2020



thurston regional planning council

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THURSTON REGIONAL PLANNING COUNCIL (TRPC) is a 23-member intergovernmental board made up of local governmental jurisdictions within Thurston County, plus the Confederated Tribes of the Chehalis Reservation and the Nisqually Indian Tribe. The Council was established in 1967 under RCW 36.70.060, which authorized creation of regional planning councils.

TRPC's mission is to **"Provide Visionary Leadership on Regional Plans, Policies, and Issues."**

To Support this Mission:

A. Support **regional transportation planning** consistent with state and federal funding requirements.

B. Address **growth management, environmental quality, economic opportunity,** and other topics determined by the Council.

C. **Assemble** and **analyze data** that support local and regional decision making

D. Act as a **"convener"** to build regional **consensus** on issues through information and citizen involvement.

E. Build **intergovernmental consensus** on regional plans, policies, and issues, and advocate local implementation.

2020 MEMBERSHIP
THURSTON REGIONAL PLANNING COUNCIL

Governmental Jurisdiction	Name of Representative
City of Lacey	**Malcolm Miller,** Councilmember
City of Olympia	**Clark Gilman,** Councilmember
City of Rainier	**Dennis McVey,** Councilmember
City of Tenino	**David Watterson,** Councilmember
City of Tumwater	**Tom Oliva,** Councilmember
City of Yelm	**JW Foster,** Mayor
Confederated Tribes of the Chehalis Reservation	**Amy Loudermilk,** Staff
Nisqually Indian Tribe	**David Iyall,** Tribal Treasurer
Town of Bucoda	**Alan Carr,** Mayor
Thurston County	**Tye Menser,** County Commissioner
North Thurston Public Schools	**Chuck Namit,** School Board Member
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Tumwater School District	**Mel Murray,** Staff
Intercity Transit	**Carolyn Cox,** Authority Member
LOTT Clean Water Alliance	**Cynthia Pratt,** Board Member
Port of Olympia	**Joe Downing,** Port Commissioner
PUD No. 1 of Thurston County	**Chris Stearns,** PUD Commissioner

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Lacey Fire District #3	**Gene Dobry,** Commissioner
Puget Sound Regional Council	**Josh Brown,** Executive Director
Timberland Regional Library	**Cheryl Heywood,** Director
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Thurston Conservation District	**David Iyall,** Conservation District Board Supervisor

Chair	Vice Chair	Secretary
JW Foster	**Cynthia Pratt**	**Clark Gilman**
City of Yelm	LOTT Clean Water Alliance	City of Olympia

Marc Daily, Executive Director

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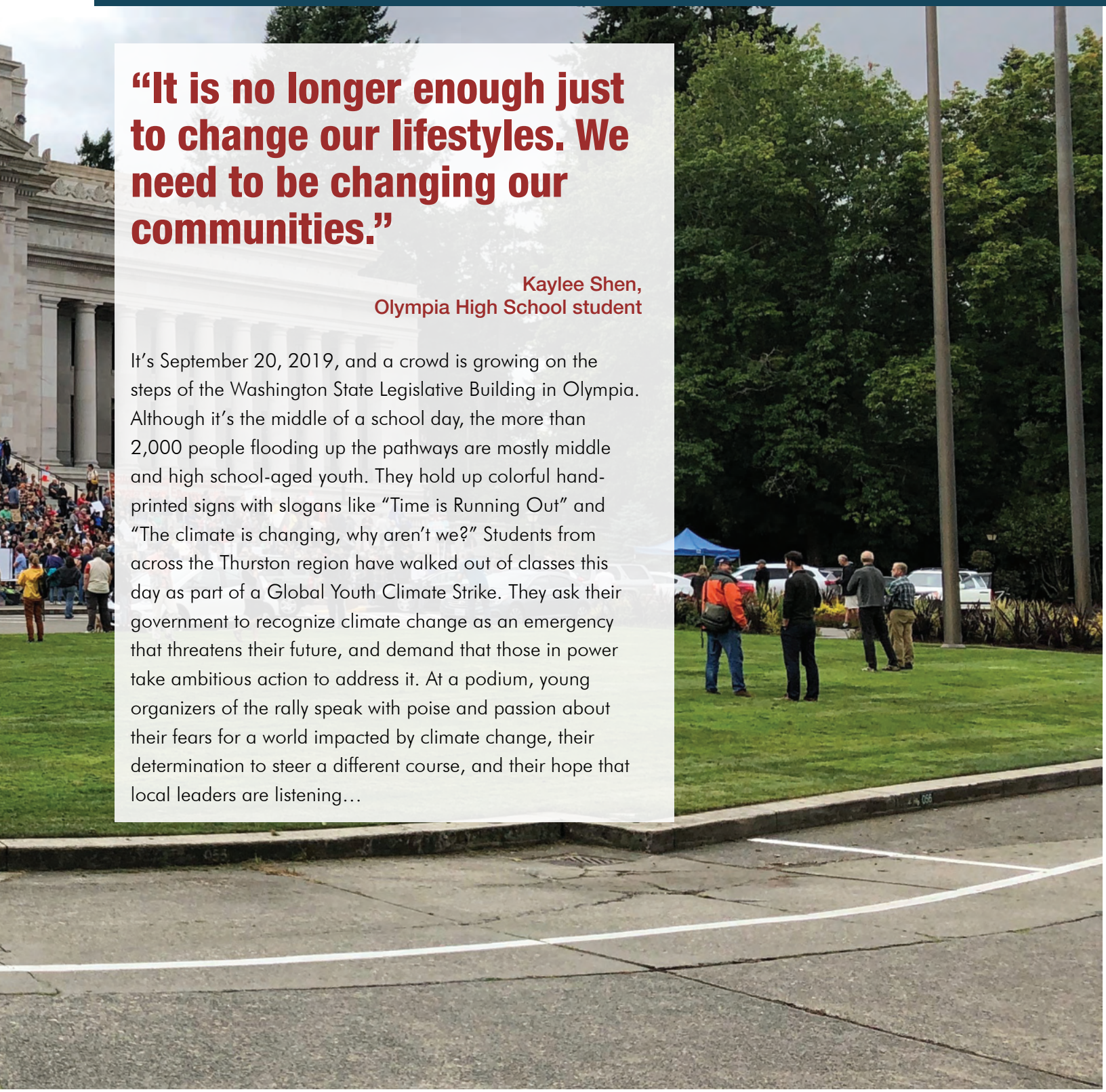
People gather at the Washington State Capitol Building in September 2019 to rally for action on climate change. *Source: TRPC*

1. Introduction



“It is no longer enough just to change our lifestyles. We need to be changing our communities.”

Kaylee Shen,
Olympia High School student

It’s September 20, 2019, and a crowd is growing on the steps of the Washington State Legislative Building in Olympia. Although it’s the middle of a school day, the more than 2,000 people flooding up the pathways are mostly middle and high school-aged youth. They hold up colorful hand-printed signs with slogans like “Time is Running Out” and “The climate is changing, why aren’t we?” Students from across the Thurston region have walked out of classes this day as part of a Global Youth Climate Strike. They ask their government to recognize climate change as an emergency that threatens their future, and demand that those in power take ambitious action to address it. At a podium, young organizers of the rally speak with poise and passion about their fears for a world impacted by climate change, their determination to steer a different course, and their hope that local leaders are listening…

Climate change is already affecting our communities. Impacts like hotter summers, wildfire smoke, and flooding endanger our homes, damage public health, and affect local business. The *Thurston Climate Mitigation Plan* is a continuation of the efforts of the Thurston Regional Planning Council (TRPC), Thurston County, and the cities of Lacey, Olympia, and Tumwater to prepare for and reduce the impacts of climate change. This plan presents a framework for climate mitigation in our region. It includes actions these local governments can take to make measurable progress toward greenhouse gas emission reduction goals, while maintaining—and even improving—quality of life in our region. Transforming our community to meet the challenges of climate change will require participation from every segment of society—public agencies and private businesses, parents, students, scientists, artists, producers, and consumers. This plan is not intended to be the last word on climate action, and it doesn't have all the answers. Instead, it begins a conversation about how local governments can best act together, and enable and empower their residents to build a future in which we can all thrive. While that future brings risk and uncertainty, it also promises great opportunity.

We have one planet but many climate solutions, so let's get to work.

A firefighter overlooks damage resulting from a wildfire in eastern Thurston County. A warming climate is projected to exacerbate wildfire risks in coming decades.
Source: McLane Black Lake Fire Department

1.1 What is Climate Mitigation?

Climate mitigation refers to actions that take heat-trapping greenhouse gases like carbon dioxide out of the atmosphere or prevent them from entering the atmosphere in the first place. The amount of greenhouse gases we emit is directly related to how warm the planet will become. The more emissions we produce through our activities, the more severe and damaging climate change impacts will be.

Reducing—or mitigating—our emissions locally will help to limit the amount of warming we will experience globally and will mean fewer negative impacts on our community and region. Reducing emissions can help protect our infrastructure and the health and safety of our families.

1.2 A Foundation of Regional Sustainability Planning

The Thurston Climate Mitigation Plan builds on many years of sustainability work across our region. Prior to this planning effort, Thurston County and the cities of Lacey, Olympia, and Tumwater had all adopted plans or resolutions expressing their commitments to address climate change by reducing greenhouse gas emissions.

- **Thurston County:** The Board of County Commissioners adopted Resolution 14395 in 2010 that set the County on a "pathway to zero greenhouse gas emissions" from its municipal operations and says the County shall develop and implement an "adaptable, long-term plan considering all aspects of Thurston County operations as they relate to energy and greenhouse gas emissions."
- **Lacey:** In 2009, Lacey completed the *Carbon Reduction and Resiliency Plan* (CR2), which identified climate risks to the city and outlined actions to mitigate those impacts through preparedness and greenhouse gas reductions. The Lacey City Council adopted the CR2 plan as an appendix to the Lacey Comprehensive Plan in 2016.
- **Olympia:** In response to a citizen asking the Olympia City Council about what the City was doing to address the issue of global warming, the first interdepartmental team to address climate change was formed in 1990. Based on the team's work, the City committed to a three-part strategy to address the "challenge of global climate change," including the reduction of greenhouse gases. Since 1990, Olympia has taken steps to reduce its municipal greenhouse gas emissions through concrete actions such as installing solar panels on city facilities, has shown its commitment to climate mitigation through participation in organizations such as the Global Covenant of Mayors and has revised its Comprehensive Plan to include climate policies.
- **Tumwater:** In 2008, Tumwater completed a Climate Action Plan, which measured and projected the city's municipal emissions, identified existing mitigation actions, and proposed additional measures to reduce emissions from municipal operations.
- **Thurston Regional Planning Council:** In 2013, TRPC adopted *Sustainable Thurston*, which set a priority goal for the Thurston region to "move toward carbon neutrality," and identified "find resources to work on climate change" as a first action step.

Climate Adaptation

In 2018, TRPC adopted the *Thurston Climate Adaptation Plan*, which includes a summary of observed and projected impacts from climate change on the Thurston region (see sidebar), a vulnerability assessment of the risks those changes pose to community goals, and a list of more than 90 actions to help our region prepare for and adjust to climate impacts. The Thurston Climate Mitigation Plan builds on that same science-based foundation, to address local contributions to the causes of climate change. Together, the two documents form a comprehensive Climate Action Plan for the Thurston Region.

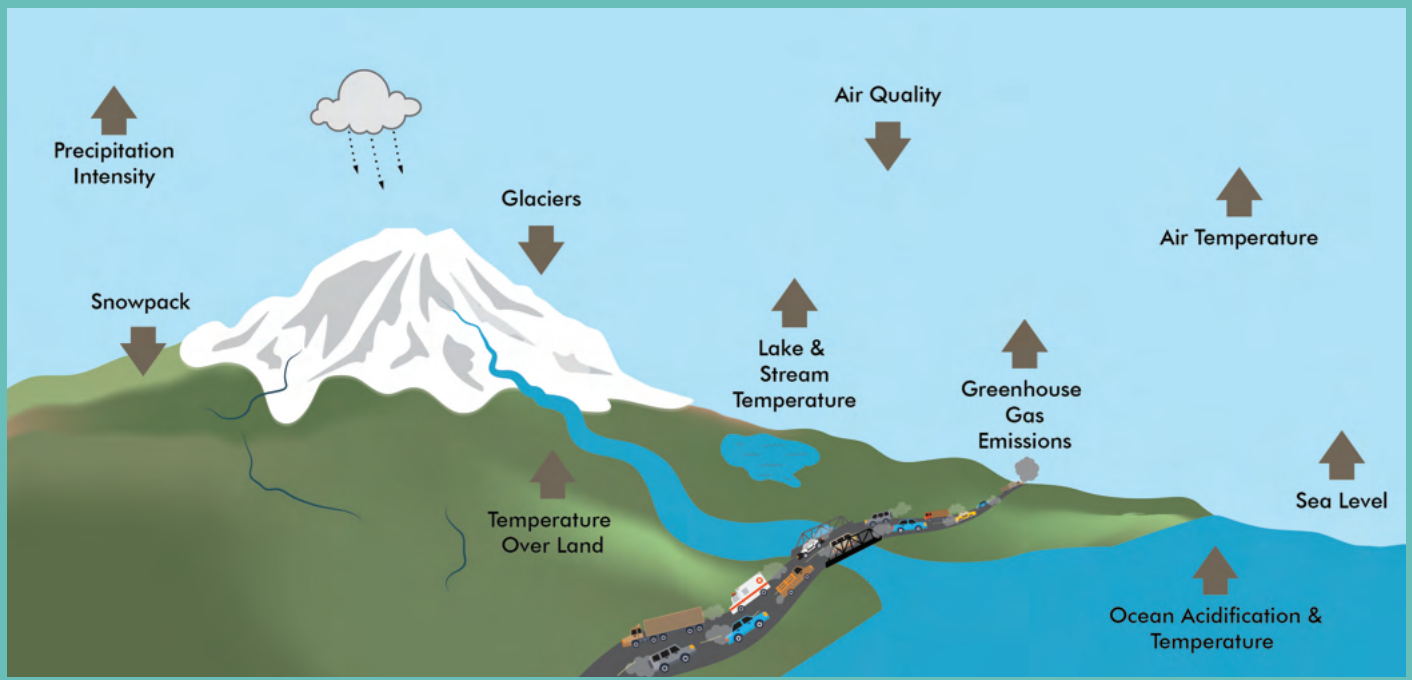
THURSTON CLIMATE ADAPTATION PLAN

How Will Climate Change Affect the Thurston Region?

Our climate is changing in ways that will have significant implications for human and natural systems. The Thurston Climate Adaptation Plan summarized observed and projected climate change impacts, using information from the United Nations Intergovernmental Panel on Climate Change (IPCC) and the University of Washington Climate Impacts Group. This report informed a Vulnerability Assessment that identified major risks to our area from climate change:

Outlook

The region's average annual air temperature will continue to rise over the 21st Century. While there will continue to be variability from year to year, due in part to atmospheric cycles like El Nino and La Nina, we can generally expect to experience hotter, drier



Pictured above are key indicators of the region's changing climate. Arrows show increasing or decreasing trends, based on empirical data and modeling. *Source: TRPC, adapted from image in U.S. Global Change Research Program's (USGCRP) 2014 National Climate Assessment*

In 2019, the City of Olympia, the LOTT Clean Water Alliance, and the Port of Olympia completed the jointly funded *Olympia Sea Level Rise Response Plan*. This plan identifies the actions that are required to protect Downtown Olympia and the Port peninsula from rising seas.

summers and warmer, wetter winters. These changes are anticipated to worsen existing hazards—like floods, landslides, and wildfires—and introduce new threats—like invasive plants, insects, and infectious diseases.

Climate scientists predict that without significant reductions in greenhouse gas emissions by the 2050s, we can expect:

- Temperature on hottest days to increase by 6.5 degrees. Our average high in August will increase to 94 degrees, from 88 degrees.
- Summer rainfall to decrease by 22 percent, and minimum streamflows in the Nisqually River to drop by 27 percent.
- More frequent rain events in winter, with the heaviest storms dropping 20 percent more precipitation.
- Less winter precipitation falling as snow, with peak river flows arriving up to a month earlier.

Risks and Impacts

- Shrinking snowpack ➔➔ changes streamflow timing, affecting groundwater recharge and fish habitat.
- Changing oceans (acidification and temperature) ➔➔ threaten local subsistence and commercial fisheries.
- Rising sea levels ➔ ➔exacerbate coastal flooding and erosion, and undermine infrastructure and wells.
- Warming lakes and streams ➔➔ threaten water quality, increase algae blooms, impacting human health and aquatic species.
- Intensifying storms ➔➔ increase flood damage to structures and endanger people.
- Deepening droughts ➔➔ spur water shortages, wildfires, crop and livestock losses.
- Expanding wildfires ➔➔ endanger people and property and increase health impacts from air pollution.

Review the *Thurston Climate Adaptation Plan* for additional information on these risks and regional actions to reduce our vulnerability.

1.3 What is in this Plan… and What is Not

The Thurston Climate Mitigation Plan is the sum of many parts completed over a more than year of conversations, research, and analysis. Those pieces include:

- A shared vision for how climate mitigation activities align with community goals. (Chapter 2—Vision, Goals, & Guiding Principles)
- An understanding of the activities in our community that contribute greenhouse gas emissions that cause climate change. (Chapter 3—Background)
- A list of communitywide strategies and actions that aim to lower greenhouse gas emissions and help our region progress toward adopted reduction targets. (Chapter 5—Strategies & Actions)
- An estimate of how those strategies and actions can—collectively—enable our region to achieve the substantial emission reductions targeted by the four partner jurisdictions. (Chapter 4—Plan Development, Section 4.4 – Emissions Target Analysis)
- A strategy for implementing climate mitigation actions (Chapter 6—Implementation Strategy)

Taken together, the Thurston Climate Mitigation Plan lays out a road map for continuing regional collaboration on reducing local contributions to climate change.

This plan is not a decision-making document under the State Environmental Policy Act. It is intended to provide perspective on the challenge of meeting emission reduction goals and provide a selection of actions that, if implemented, would help achieve these goals.

More to Learn

While we learned a lot, this process also revealed many gaps in our knowledge that we'll need to fill as we move ahead. This plan is intended to provide Thurston County and the cities of Lacey, Olympia, and Tumwater with a framework of solid strategies that will guide next steps, not lock them into specific tasks that may not make sense as we work out the details. We'll need to do more to understand the potential costs of actions, how they may impact different parts of our community, and the tools and resources available to get the work done. We'll need to better understand and quantify the role carbon sequestration can play in our overall strategy. We'll need to continue listening to what our community needs and wants and bring even more voices into those conversations.

We completed this plan as the Thurston region grappled with the impact of the COVID-19 pandemic. This global public health emergency has revealed how fast, and how thoroughly, our expectations about the future can be upended. Our analysis is based on assumptions about what the future will look like and what we can or cannot do to change it. However, in the coming years, new laws, technologies, scientific discoveries, and economic and social disruptions (including disruptions from climate impacts) will undoubtedly shake up the options available to us for addressing climate change in ways we can't predict today. These changes have the potential to unlock new solutions, if we are prepared to respond with flexibility and creativity. The project partners acknowledge that successful implementation will require adapting to changing conditions and new information as we go.

We also recognize that though this plan focuses on what local governments can do to reduce greenhouse gas emissions, that is only a portion of the change that will be needed across our society to avoid the most severe impacts of climate change. According to a recent survey, while seven in ten Americans say they wish there were more they could do to combat climate change, more than half say they don't know where to start[1]. Throughout this plan, we highlight climate mitigation efforts already underway in our community. These examples demonstrate just a fraction of the incredible energy and ingenuity that people in the Thurston region are bringing to this challenge.

Climate change is a global threat that has no borders. It will take meaningful action from governments and individuals across the country and around the world to change course. The Thurston region makes up just a small portion of that large puzzle. But by starting locally, we can do our part and show others the way. Our action, when multiplied by millions, can change the world. The four jurisdictions involved in this plan recognize that though they bring different perspectives and priorities to this challenge, by working together, we can amplify our impact. Together, we can build a more resilient, sustainable, and equitable future.

What We Heard...

"None of us will have a future if we don't save our planet, which is why we are demanding:

1. *Major legislation be passed to combat climate change at state and local levels.*
2. *Adopt practices to shift our country to 100% clean, renewable, and net-zero emission energy sources through a fair and just transition for all communities and workers.*
3. *Declare the climate crisis a national emergency, because that's what it is.*

We will continue to demand these things, and if adults don't listen, trust me, I'm prepared to yell louder."

-- Elyanna Calle,
Timberline High School student,
organizer of the 2019 Olympia Climate Strike

[1] American Psychological Association, February 2020.

View of the Capitol Dome and Black Hills.
Source: TRPC

2. Vision, Goals, and Guiding Principles

"Thurston County, Lacey, Olympia, and Tumwater, and neighboring tribes recognize the urgent threat and opportunity that climate change poses to our community's economy, public health, public safety, and environment. We will work together to identify and boldly implement the most effective, efficient, and equitable actions to reduce locally generated greenhouse gas emissions to protect current and future generations from the most severe impacts of climate change."

– Vision Statement,
Thurston Climate Mitigation Plan

From the start of this planning process, community members and policymakers expressed a desire to focus on action. They emphasized the need to understand what it will take to achieve meaningful progress on reducing local contributions to climate change, and to build broad community support for investment in those solutions. While much about the coming decades is uncertain—how exactly climate change will affect us, what technology may become available, what policy direction may come from the state and federal government—the partners on this project committed to finding tangible, practical steps that will put our region on the path toward a more secure and thriving future.

Climate Advisory Workgroup Members' most frequently used terms when asked, "What do you hope the Thurston Climate Mitigation Plan will Accomplish?"

VISION STATEMENT

MITIGATION

The vision for the *Thurston Climate Mitigation Plan* is:

> *"Thurston County, Lacey, Olympia, and Tumwater, and neighboring tribes recognize the urgent threat and opportunity that climate change poses to our community's economy, public health, public safety, and environment. We will work together to identify and boldly implement the most effective, efficient, and equitable actions to reduce locally generated greenhouse gas emissions to protect current and future generations from the most severe impacts of climate change."*

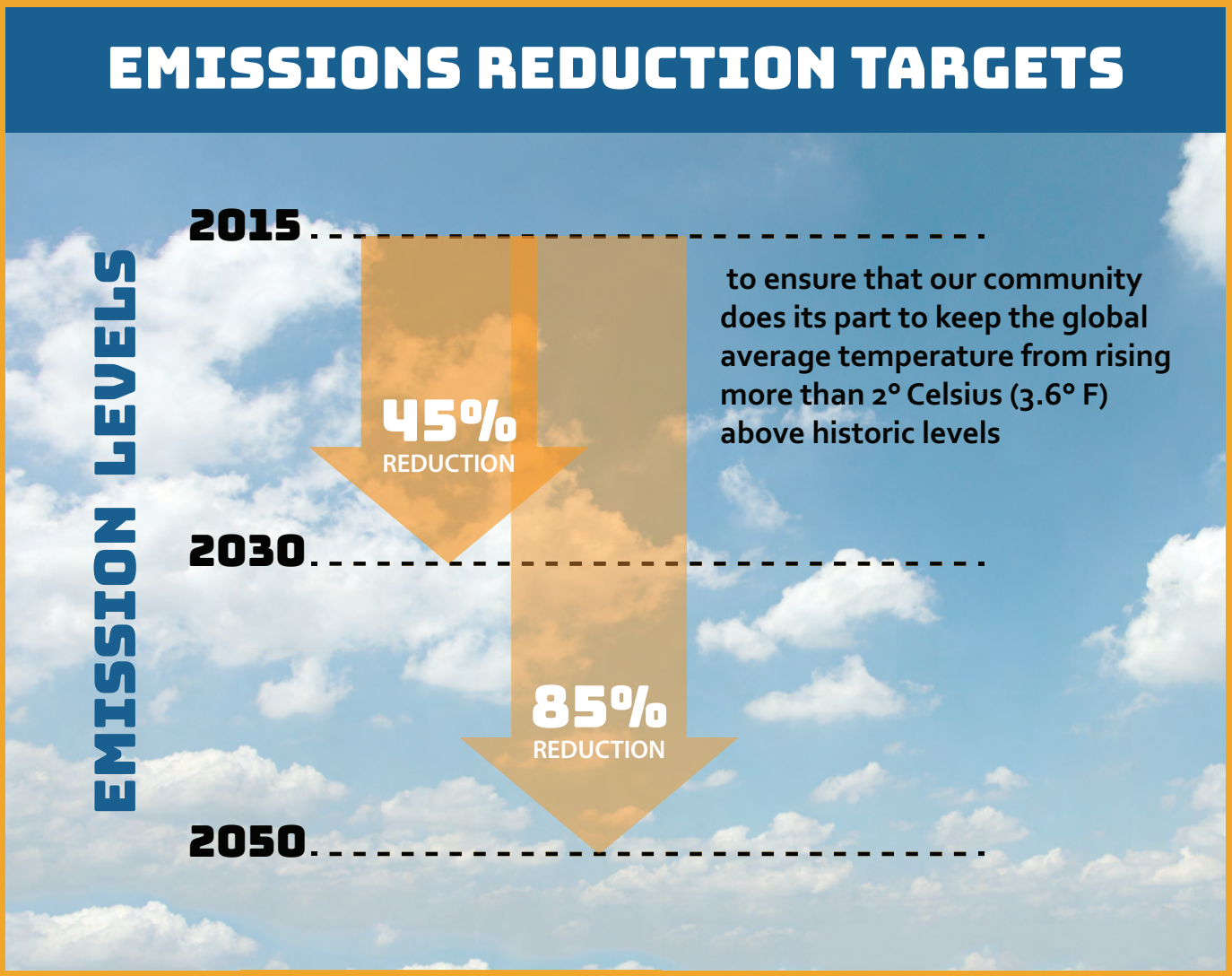
This statement, coupled with the one below from the *Thurston Climate Adaptation Plan*, constitute an overall vision for climate action in the Thurston region.

ADAPTATION

> *"In addition to doing its part to reduce greenhouse gas emissions, the Thurston County region will remain resilient in the face of climate change impacts during the 21st century and beyond."*

2.2 Emissions Targets and Project Goals

The primary focus of the *Thurston Climate Mitigation Plan* is to identify actions that will enable our region to work collectively to minimize the causes of climate change. To that end, in 2018 the four jurisdictions adopted shared emissions reduction targets (Appendix 10.1). These targets are in line with those set by other countries and communities around the world and ensure that our community does its part to address global climate change.



Emissions Reduction Target

> *Reduce net communitywide greenhouse gas emissions 45% below 2015 levels by 2030 and 85% below 2015 levels by 2050 to ensure that our community does its part to keep the global average temperature from rising more than 2° Celsius (3.6° F) above historic levels.*

Along with the emissions targets, the Steering Committee adopted regional goals that emphasize the co-benefits of climate action in supporting the strength and resilience of the broader community. These 12 goals are drawn from TRPC's 2013 *Creating Places—Preserving Spaces: A Sustainable Development Plan for the Thurston Region* (Sustainable Thurston), and guided the *Thurston Climate Adaptation Plan*.

REGIONAL GOALS

1. Create vibrant centers, corridors, and neighborhoods while accommodating growth.
2. Preserve environmentally sensitive lands, farmlands, forest lands, prairies, and rural lands, and develop compact urban areas.
3. Create a robust economy.
4. Protect and improve water quality, including groundwater, rivers, streams, lakes and Puget Sound.
5. Plan and act toward zero waste in the region.
6. Ensure that residents have the resources to meet their daily needs.
7. Support a local food system to increase community resilience, health and economic prosperity.
8. Ensure that the region's water supply sustains people in perpetuity while protecting the environment.
9. Move toward a carbon-neutral community.
10. Maintain air quality standards.
11. Provide opportunities for everyone in the Thurston Region to learn about and practice sustainability.
12. Make strategic investments to advance sustainability regionally.

How do our emissions reduction targets compare to international and state targets?

In 2014, the Intergovernmental Panel on Climate Change (IPCC) concluded that the United States and other industrialized countries need to reduce emissions 85-90 percent from 1990 levels by 2050 to stabilize atmospheric concentrations of carbon dioxide and other heat-trapping gases at 450 parts per million. Achieving this target will likely keep the global average temperature from rising 2° Celsius above pre-industrial levels by the end of this century, and thus avoid the most severe climate impacts. These are the goals that were included in the 2016 Paris Agreement, which has been signed by 194 individual countries and the European Union. The IPCC has further recommended that countries aim to limit global warming to 1.5° Celsius by accelerating reductions in the coming decades—reducing emissions by 45 percent from 2010 levels by 2030 and achieving "net zero" by 2050.

In 2020, as this plan was being developed, Washington State adopted updated greenhouse gas emission limits for consistency with the most recent science assessments:

- By 2020, reduce emission to 1990 levels
- By 2030, reduce to 45 percent below 1990 levels
- By 2040, reduce to 70 percent below 1990 levels
- By 2050, reduce to 95 percent below 1990 levels, and achieve net zero greenhouse gas emissions

Washington State also adopted strong emission reduction targets for the operation of state agencies, many of which are based in Thurston region, and make up a significant portion of the local employment base.

During the public review period, many commenters requested that the region consider adopting a carbon neutrality target and commit to a more aggressive reduction in emissions. While a route to carbon neutrality was not assessed as part of the analysis for this plan, such a target could be considered as a stretch goal that reaches beyond the targets adopted for the region. For example, in 2019 the City of Olympia worked with local youth to adopt a Climate Inheritance Resolution, which set a goal to achieve net-zero emissions by 2040. Successful implementation of this plan will include periodically reviewing and revising its goals and targets as new information changes our understanding of the best routes to address climate impacts. Going forward, actions at the state, national, and international level will influence the Thurston region's ability to achieve our goals locally.

2.3 Guiding Principles

In addition to the project goals, ten guiding principles governed the planning process. These principles built on those from the *Thurston Climate Adaptation Plan* and influenced all pieces of this climate mitigation strategy.

1. **Holistic.** Think in terms of multiple generations and connected built and natural systems, as well as view local and regional decisions through the lens of social, economic, and environmental sustainability.
2. **Action-oriented.** Develop actions and strategies that are meaningful and realistic: go beyond general guidance to identify the specific steps needed to make changes that are effective at reducing greenhouse gas emissions below the emission targets.
3. **Adaptive.** Consider both the short- and long-term impacts of climate change, regularly report on progress, and review and revise targets and approaches as needed to address emerging information about the timing and severity of climate impacts or the effectiveness of policies.
4. **Co-benefits.** Identify and leverage climate change mitigation strategies and actions that offer other benefits to the community, such as increasing resilience or access to resources, reducing energy or other costs, improving health outcomes, or addressing equity.
5. **Science-based.** Utilize sound scientific research, modeling, economic analysis, and other tools to understand the outcomes of strategies to reduce greenhouse gas emissions.
6. **Track record.** Incorporate and complement work produced by others, including successful examples from existing local and regional climate action plans.
7. **Equity.** Consider how the costs and benefits of mitigation actions will be shared across all communities: including both urban and rural areas, low-income households, communities of color, and other populations that historically have been impacted by environmental hazards or are otherwise vulnerable to climate impacts.
8. **Tribal sovereignty.** Recognize and support protection of local indigenous tribes' community health and well-being, including natural resources security and self-determination.
9. **Public engagement.** Seek broad community input, educate residents about climate change, and inspire them to take action.
10. **Readiness.** Consider and prioritize strategies that can be launched and realized quickly using existing resources and/or networks.

What We Heard...

"Strategies that center our tribes—Squaxin Island, Nisqually, Chehalis"

Comment at Olympia Arts Walk

"Create realistic list of actions that individuals can do to help."

Response on community questionnaire

"Make sure that all residents of the county, regardless of income levels or background, can participate in the clean energy economy and benefit from it."

Response on community questionnaire

2.4 Equity and Climate Action

Climate change and climate action have the potential to reshape our society in ways that either worsen existing inequalities or that uplift and strengthen the most vulnerable in our community. Solutions to reduce greenhouse gas emissions can impact all aspects of people's lives and, if ill-designed, can leave many behind. Equity was one of the guiding principles that informed the development of the *Thurston Climate Mitigation Plan*. The project partners recognize that addressing the challenge of climate change will need to occur in tandem with uprooting the legacies of racism and other systemic inequalities that undermine the vision for our region as one that supports and provides opportunities for all. Climate mitigation action cannot occur in isolation from our region's work to address housing affordability, heath, and economic disparities. This section reviews how equity was considered in the planning process—it was added in response to comment during the public review period and refers to pieces of the plan that are described more fully in later sections.

What is Climate Equity?

When people say climate action should be equitable, they can mean multiple things. A 2014 report by the Urban Sustainability Directors Network defined equity in the following way: "Equity in sustainability incorporates procedures, the distribution of benefits and burdens, structural accountability, and generational impact. This includes:

- **Procedural Equity**—inclusive, accessible, authentic engagement and representation in processes to develop or implement sustainability programs and policies.
- **Distributional Equity**—sustainability programs and policies result in fair distributions of benefits and burdens across all segments of a community, prioritizing those with highest need.
- **Structural Equity**—sustainability decision-makers institutionalize accountability; decisions are made with a recognition of the historical, cultural, and institutional dynamics and structures that have routinely advantaged privileged groups in society and resulted in chronic, cumulative disadvantage for subordinated groups.
- **Transgenerational Equity**—sustainability decisions consider generational impacts and don't result in unfair burdens on future generations."

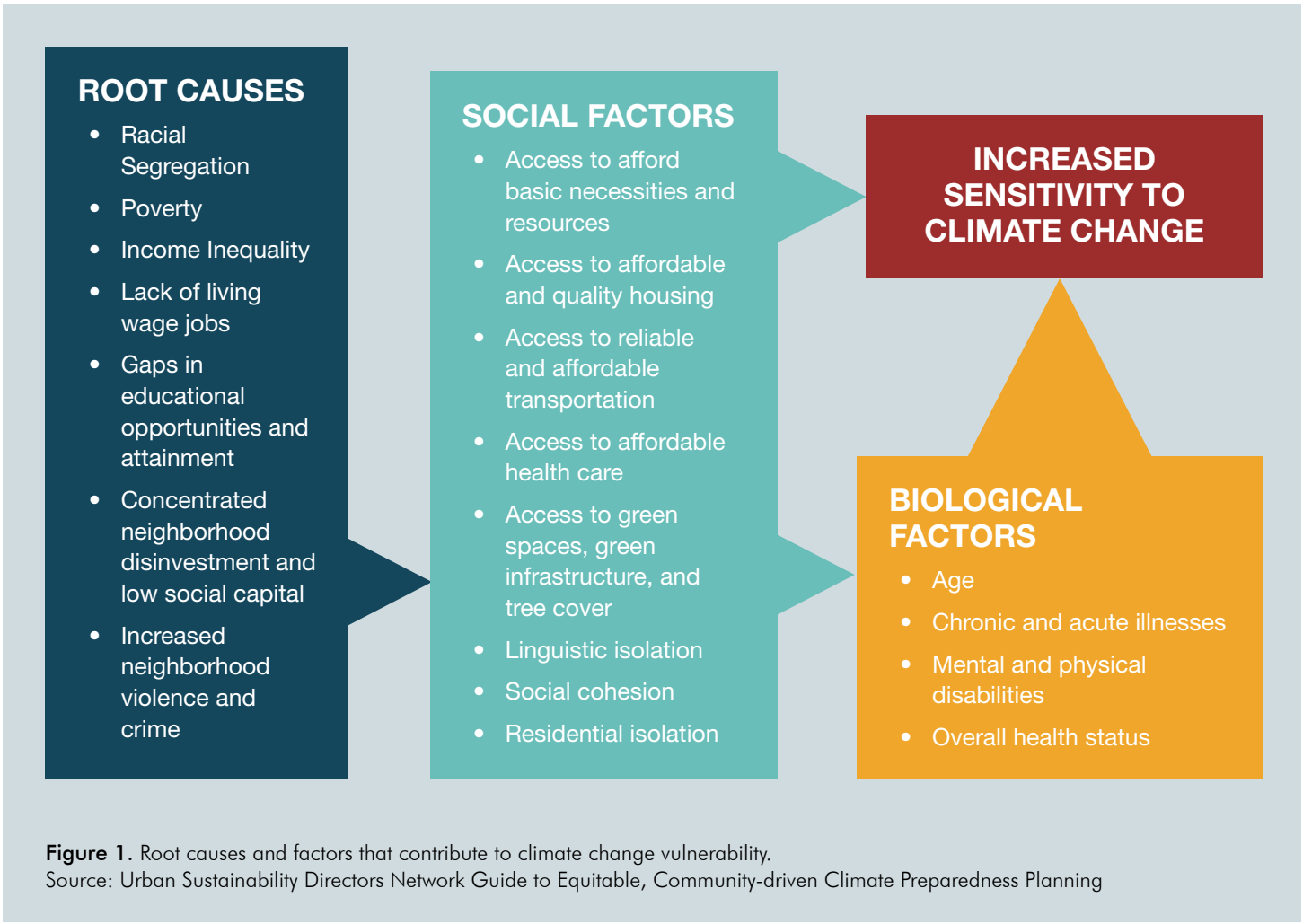


Figure 1. Root causes and factors that contribute to climate change vulnerability.
Source: Urban Sustainability Directors Network Guide to Equitable, Community-driven Climate Preparedness Planning

Though climate change affects everyone, not all people are impacted equally. Communities of color, immigrants, lower-income populations, and the elderly are often more vulnerable to climate impacts like increased heat, flooding, food insecurity, and air quality impacts. The same people may experience multiple, overlapping structural, social, and biological factors that limit their ability to respond and adapt to climate change (see Figure 1). The result is that populations that have contributed the least to create the climate crisis, are set to bear the greatest burden of its impacts. The vision of the *Thurston Climate Mitigation Plan* begins with the principle that it is our responsibility to do our part to protect vulnerable communities by reducing our local contributions to climate change.

The *Thurston Climate Mitigation Plan* addressed several facets of equity in its development:

- **Procedural**—The planning process involved broad outreach to a wide variety of groups as well as key audiences, including tribes, communities of color, low income, and rural communities. The planning team used a variety of methods to provide opportunities for people to engage in the work, such as by offering representation on the Climate Advisory Workgroup, hosting information booths at community fairs, asking for interviews with key representatives, and reaching out to community liaisons. TRPC recorded and posted online all meeting materials to enable people to participate at convenient times and offered translation of materials on request. Despite these opportunities, not all facets of the community were well represented among those who participated. Going forward, regional partners can improve in this area by continuing to build authentic relationships with key contacts for populations often left out of planning decisions and by investing time and resources in building the capacity for climate leadership among different sectors of the community.
- **Distributional**—The multicriteria analysis (see Section 4.3 or Appendix 10.4) included an assessment of how well each action supported social equity as a co-benefit, by asking whether the action would either:
    - "Ensure that residents have the resources to meet their daily needs;" or
    - "Increase equal distribution of or access to housing, financial incentives, open space, economic opportunity, or other resources, among disadvantaged or marginalized communities."

  This criterion was interpreted narrowly, and only applied to actions that explicitly offered greater benefits to a marginalized community, rather than to actions that may affect such populations indirectly. In practice, limiting the application of actions to certain groups often meant the action would have a smaller scope for reducing greenhouse gases. The Climate Advisory Workgroup and Steering Committee agreed it will be more meaningful to consider and address equity impacts as actions are implemented, than to use equity to filter actions that reduce greenhouse gases. Costs and benefits for a subset of priority actions, and the distribution of those costs and benefits, will be considered in a supplemental analysis that will be completed in mid-2021.
- **Structural**—The project partners identified a need to better identify and understand the existing inequities in our region that contribute to climate vulnerability (Action G4.4) and the need to incorporate those social costs into decisionmaking (Action G4.6) as two of the priority actions included in this plan. Several climate-equity indicators are included in the Monitoring Protocol developed for the plan (Appendix 10.7) to track and monitor how our region integrates equity considerations into climate action.

- **Transgenerational**—The Steering Committee acknowledges a responsibility for future generations in the vision for this plan, and youth perspectives were represented throughout the process. A youth representative served on the Climate Advisory Committee and youth and educator priorities were one of the factors used to identify priority actions for the plan in the multicriteria analysis (see Section 4.3 or Appendix 10.4).

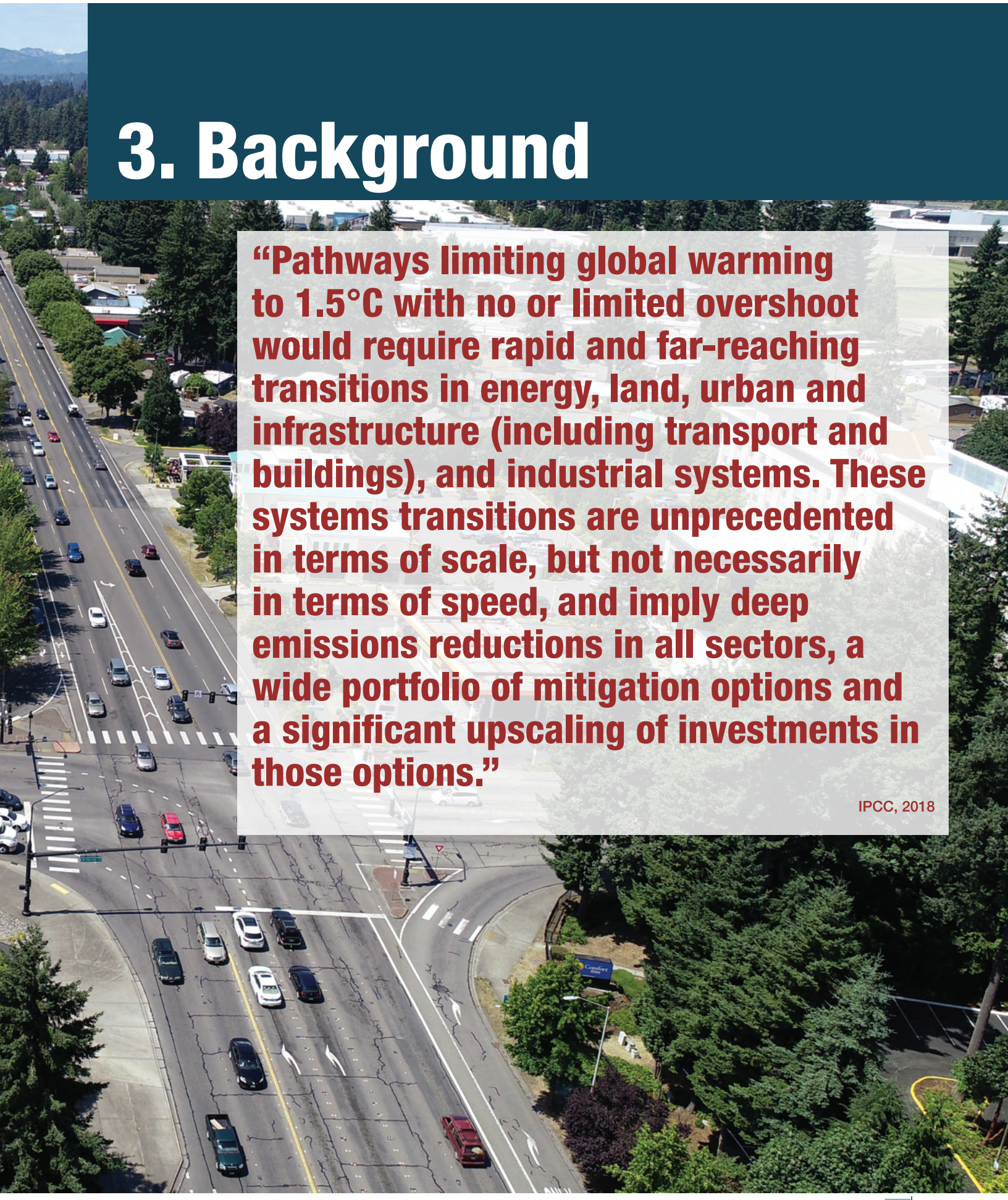
In addition, the *Thurston Climate Mitigation Plan* identifies strategies and actions that can support low income and marginalized communities while reducing greenhouse gas emissions, including in the areas of:

- **Transportation**—Focus on building out a transportation network that enables people to get where they need to go though modes like biking, walking, and transit rather than requiring dependence on a personal vehicle. (Strategies T1, T4, and T5)
- **Housing**—Support for more and greater varieties of housing in urban hubs and along transit corridors, paired with anti-displacement policies to maintain affordable housing options. (Strategy T1)
- **Energy costs**—Increased financing options for energy efficiency improvements that reduce energy costs, especially in rental housing, which disproportionately serves lower income and people of color. (Strategy B1)
- **Green technology**—Increased access to emission-reducing technologies like solar infrastructure and electric vehicles. (Strategies B5, and T3)
- **Health**—Policies that support clean outdoor and indoor air, clean water, access to greenspace, and areas for recreation and physical exercise. (Strategies B6, T1, T2, T5, and A6)

A key principle to embrace as we move forward is that everybody has the right to take part in building a climate forward region. Communities of color, lower income, and otherwise disadvantaged groups are at higher risk of being left behind or harmed, but they can benefit the most from climate solutions that improve livelihoods, services, and human health. Delivering an equitable approach to mitigating climate change will require that policymakers be deliberate in how they shape climate actions, and a focus on equity should continue to guide climate action in the Thurston region.

Traffic flows along Martin Way, one of the region's major transportation corridors. Source: Thurston County Public Works.

3. Background



"Pathways limiting global warming to 1.5°C with no or limited overshoot would require rapid and far-reaching transitions in energy, land, urban and infrastructure (including transport and buildings), and industrial systems. These systems transitions are unprecedented in terms of scale, but not necessarily in terms of speed, and imply deep emissions reductions in all sectors, a wide portfolio of mitigation options and a significant upscaling of investments in those options."

IPCC, 2018

Every kilowatt we use, mile we travel, and ounce of food and waste we produce contributes —either directly or indirectly—to our carbon footprint. As the Thurston region grows, more buildings, more vehicles, and more demand for goods and services come at a cost we'll eventually pay in impacts from climate change. Bringing down concentrations of carbon dioxide (CO_2), methane (CH_2), and other heat-trapping gases in the atmosphere is the most important action we can take to slow the warming of our planet. That's why the *Thurston Climate Mitigation Plan* sets ambitious goals to reduce local generation of greenhouse gases. This chapter describes what we know about our current contributions to climate change and presents success stories of how our community is already working to reduce our impact.

3.1 Greenhouse Gas Emissions

Sources of greenhouse gas emissions in the Thurston region include:

- **Buildings and energy,** including electricity and natural gas consumption.
- **Transportation and land use,** including fuels used to power vehicle travel.
- **Waste and wastewater,** including solid waste management and wastewater treatment.
- **Agriculture and forests,** including animal farming and land fertilization.
- Other sources such as refrigerant use, street lighting, and land clearing.

Currently, the majority of our region's inventoried contributions to climate change come from powering, heating, and cooling our buildings and driving vehicles. The built environment and transportation account for 90 percent of the Thurston region's total measured emissions. Emissions related to solid waste disposal, wastewater treatment, and agriculture also contribute to the region's total, but a much smaller percentage. Some sources of greenhouse gases—including emissions from refrigerant leakage, land use practices, and products manufactured outside the Thurston region—currently are not measured or included in our regional inventory (see "Greenhouse Gas Inventory" or Appendix 10.2).

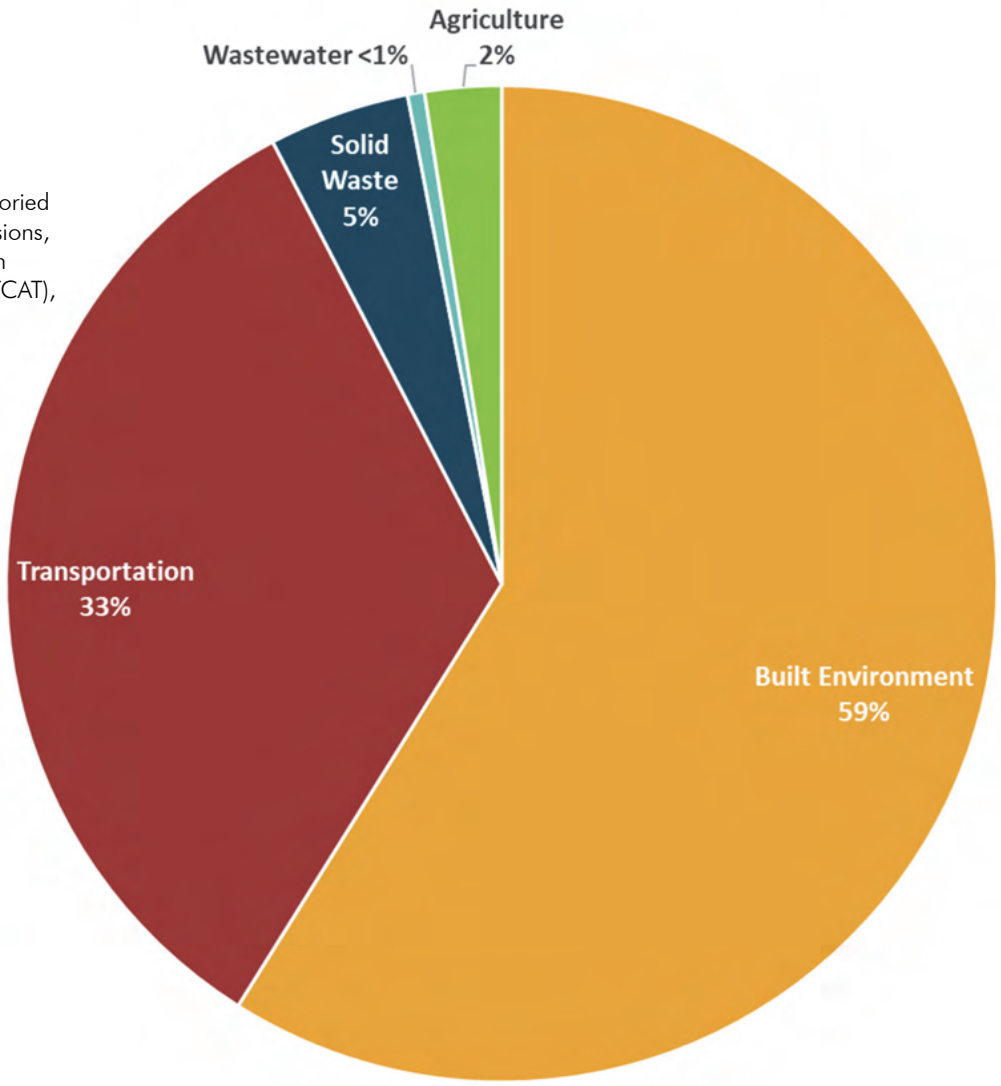


Figure 2. Sources of Thurston County Inventoried Greenhouse Gas Emissions, 2018. Source: Thurston Climate Action Team (TCAT), 2020

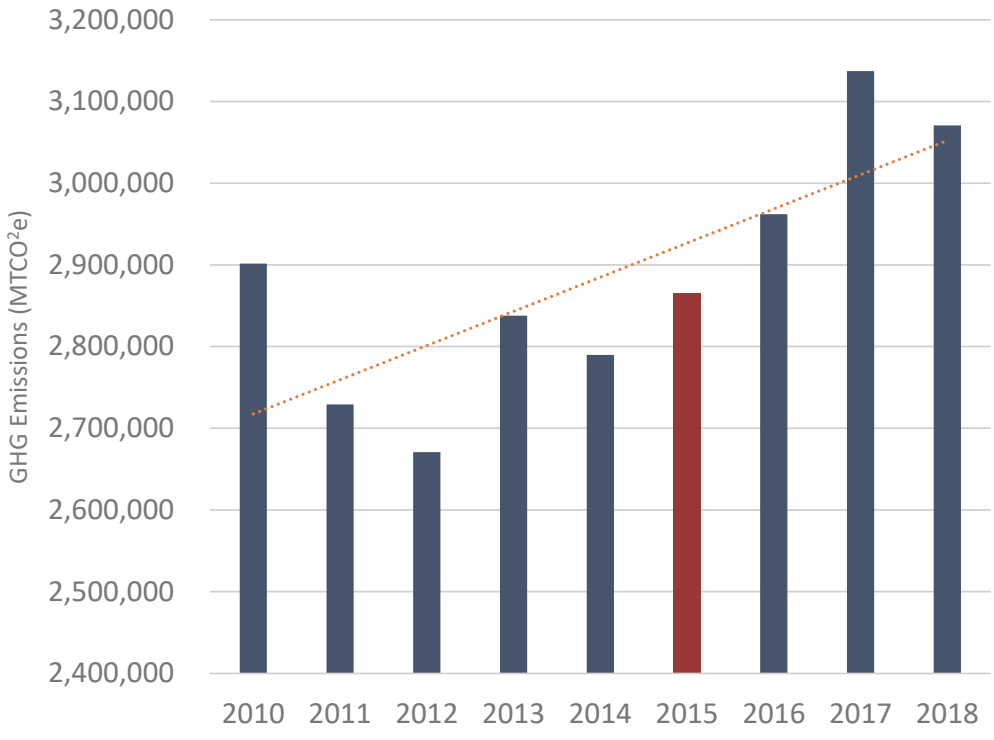


Figure 3. Total Thurston County Greenhouse Gas Emissions, 2010-2018. The baseline target year 2015 is highlighted. Source: TCAT, 2020.

The Thurston region's total measured carbon footprint in 2018 was more than three million metric tons of carbon dioxide equivalent ($MTCO_2e$)—that amount is equivalent to the emissions from more than 650,000 passenger vehicles in a year. While annual emissions have fluctuated over the past decade, our total emissions increased over time—including by more than seven percent since our target baseline year 2015. This upward trend will make our emissions targets that much more challenging to reach.

On a per-capita basis, each Thurston region resident emitted an average of 11 $MTCO_2e$ in 2018. A Thurston region resident contributes fewer emissions than the average residents of Washington State as a whole, and less than the average American, but more than the average residents of King, Kitsap, Pierce, and Snohomish Counties. While emissions per person has held relatively steady over the past decade, Thurston County is one of the fastest growing regions in Washington. That population growth accounts for some of our increases in emissions.

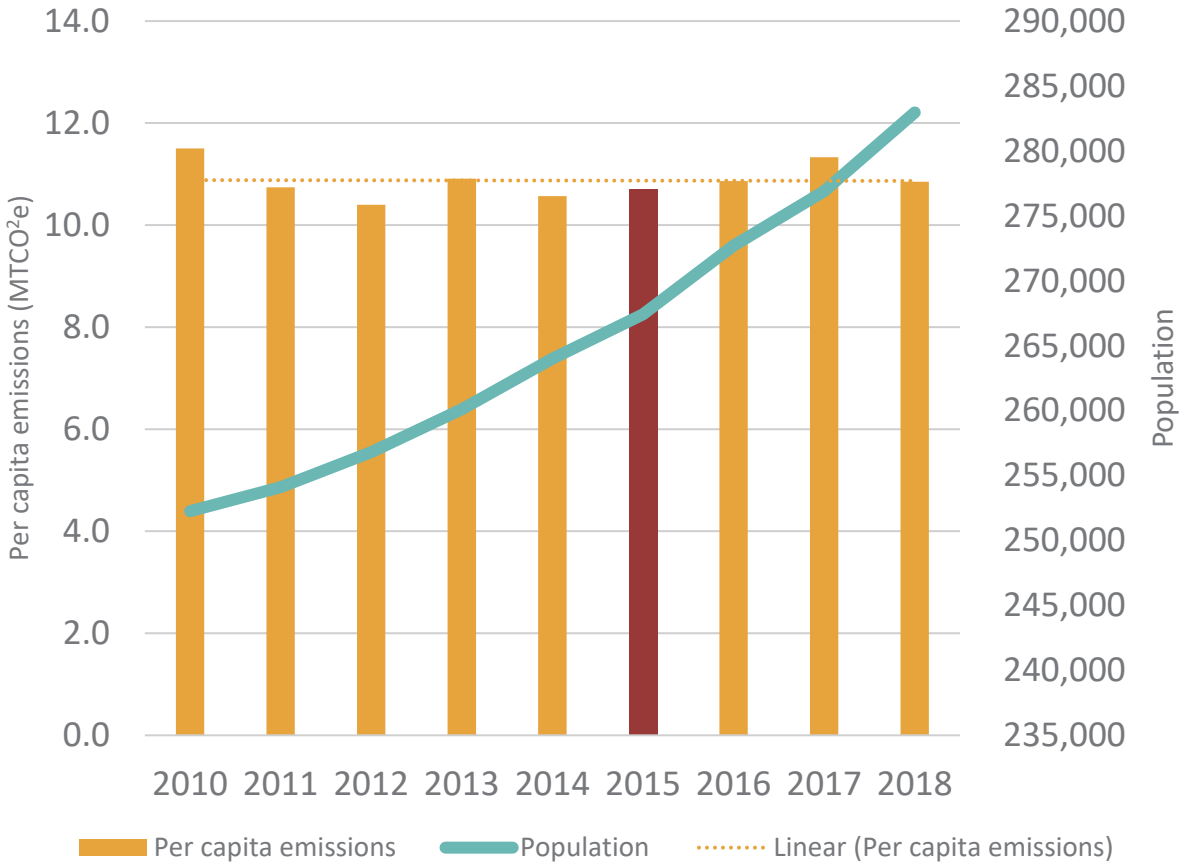


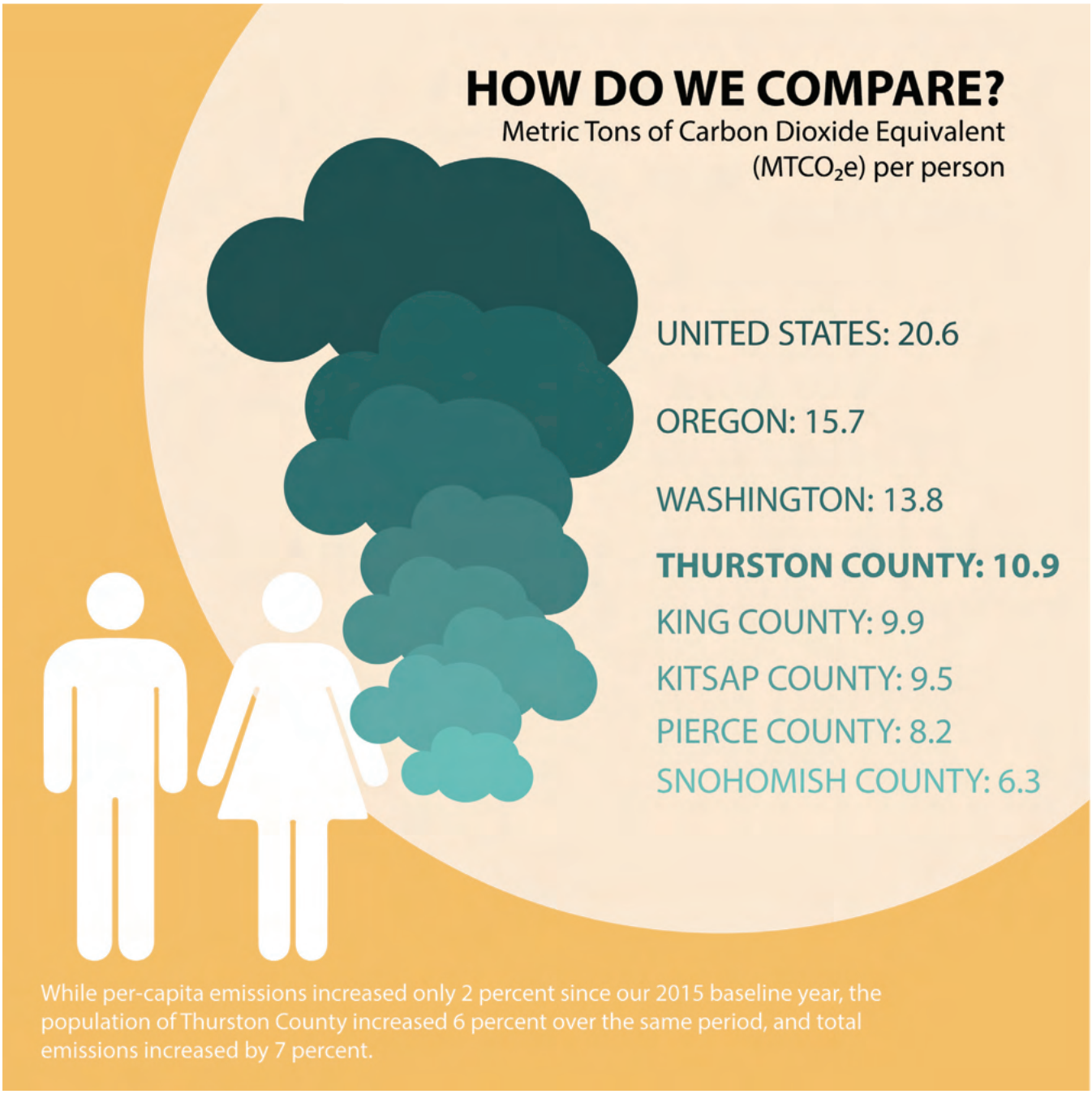
Figure 4. Thurston County Per Capita Emissions and Population, 2010-2018. The Baseline Target Year 2015 is Highlighted. Source: TCAT, 2020.

Greenhouse Gas Inventory

The Thurston Climate Action Team (TCAT) has tracked our regional carbon footprint regularly since 2010. TCAT is a local non-profit made up of experts and members of the public who develop data and advocate for climate change action in our community. TCAT uses a protocol developed by the International Council of Local Environmental Initiatives (ICLEI) and the World Resources Institute to calculate our regional carbon footprint. (Greenhouse Gas Inventory, Appendix 10.2)

What about emissions from goods and other sources produced outside the Thurston region?

The method TCAT currently uses to develop the Greenhouse Gas Inventory only tracks emissions from activities that occur within the Thurston region. That means it does not measure the impact of many choices made by people in the Thurston region that contribute to global emissions, such as travel beyond the county boundary (including all air travel) and goods purchased and consumed here that are manufactured elsewhere. This is why solid waste and agriculture make up such a small proportion of the current emissions inventory. A full account of the community's climate impact should recognize these consumption-based emissions. While TCAT currently lacks a reliable way to accurately measure consumption-based emissions, the partners involved in this project recognize the large role they play in our region's carbon footprint. These activities may be incorporated into future updates of the plan as better information becomes available.


HOW DO WE COMPARE?
Metric Tons of Carbon Dioxide Equivalent
($MTCO_2e$) per person
UNITED STATES: 20.6
OREGON: 15.7
WASHINGTON: 13.8
THURSTON COUNTY: 10.9
KING COUNTY: 9.9
KITSAP COUNTY: 9.5
PIERCE COUNTY: 8.2
SNOHOMISH COUNTY: 6.3
While per-capita emissions increased only 2 percent since our 2015 baseline year, the population of Thurston County increased 6 percent over the same period, and total emissions increased by 7 percent.

3.2 Emissions Sectors

We can't mitigate climate change if we don't know what behaviors and choices need to change. What activities are contributing the most to our regional carbon footprint? The following sections describe key sectors in more detail to help identify our options to reduce regional greenhouse gas emissions and help to limit climate change impacts.

Buildings and Energy

When we turn on the lights, turn up the heat, or power up an appliance in our homes and workplaces, we are tapping some source of energy. The Buildings and Energy sector includes the generation, transmission, and distribution of electricity and natural gas for heating, cooling, lighting, and other uses. Greenhouse gases are released during the combustion of fossil fuels—such as coal, oil, and natural gas—to heat buildings and produce electricity.

- The buildings and energy sector is the greatest contributor to emissions in the Thurston region, accounting for around 60 percent of total emissions. Residential buildings are the largest source of emissions within this sector, followed by commercial and government buildings, industrial facilities, and outdoor area lighting including street lights.
- Electricity accounts for the largest portion of this sector's emissions—about 76 percent. Most Thurston region residents get electricity from Puget Sound Energy, and coal-fired power plants make up over a third of the utility's current fuel mix (see "Greening Our Grid" on the following page).
- Natural gas is the second biggest portion of emissions at 21 percent, and a growing proportion. Other fuels such as fuel oil, liquid petroleum gas (LPG), and wood make up a much smaller part—about 3 percent combined.

Reducing emissions from this sector will require shifting away from using dirtier fuels like coal and natural gas for electricity and heating by expanding renewable energy generation and use, as well as improvements in building materials and management that increase energy efficiency. Engaging and empowering individuals and organizations to make changes in the way they use energy can also lead to considerable reductions, and actions related to demand response can reduce energy emissions during peak times, which in turn allows utilities to rely less on their dirtiest power sources.

Greening Our Grid

Most people in the Thurston region get electricity from Puget Sound Energy, which uses a mix of different fuel sources to provide a reliable source of power to its customers. Hydroelectricity has long produced a portion of that energy mix, and renewable sources like wind are increasing, but fossil fuels like coal and natural gas still supply the majority of power to our electrical grid. This reliance on fossil fuels leads to the high levels of emissions we see from use of electricity in our building sector. (Note that this section only refers to natural gas that is part of the fuel mix for electricity. Puget Sound Energy also supplies natural gas directly to customers for heating and cooking—emissions from this source are included in the emissions from the built environment sector shown in Figure 2.)

In 2019, Washington State passed the Clean Energy Transformation Act (CETA), which sets milestones for utilities such as Puget Sound Energy to transition toward a clean fuel standard. Under CETA, utilities must eliminate coal-fired electricity from their mix by 2025, become greenhouse-gas neutral by 2030 (using offsets, if necessary), and provide 100 percent renewable energy by 2045. Other recent state legislation lays out steps toward production of renewable natural gas and greater energy efficiency.

Supporting the transition of our electrical grid to clean energy is one of the most powerful things we can do locally to achieve our greenhouse gas reduction targets (see Chapter 6—Implementation Strategy).

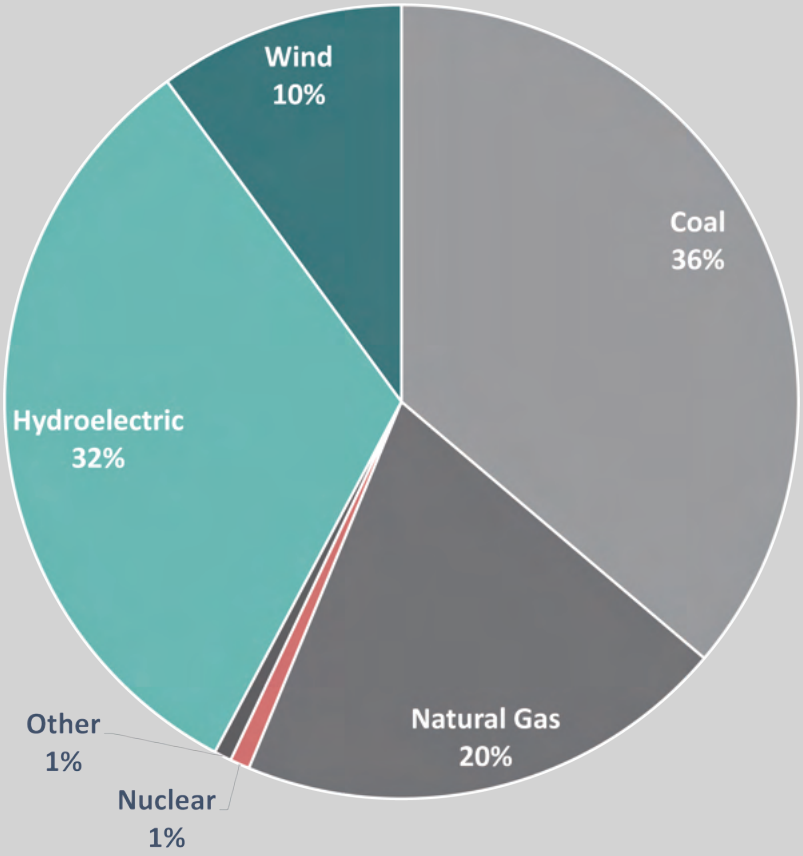


Figure 5. Puget Sound Energy 2018 Electricity Fuel Mix. Source: Washington Department of Commerce and Puget Sound Energy

SUCCESS STORY:

Climate Change Mitigation by Increasing Efficiency and Equity

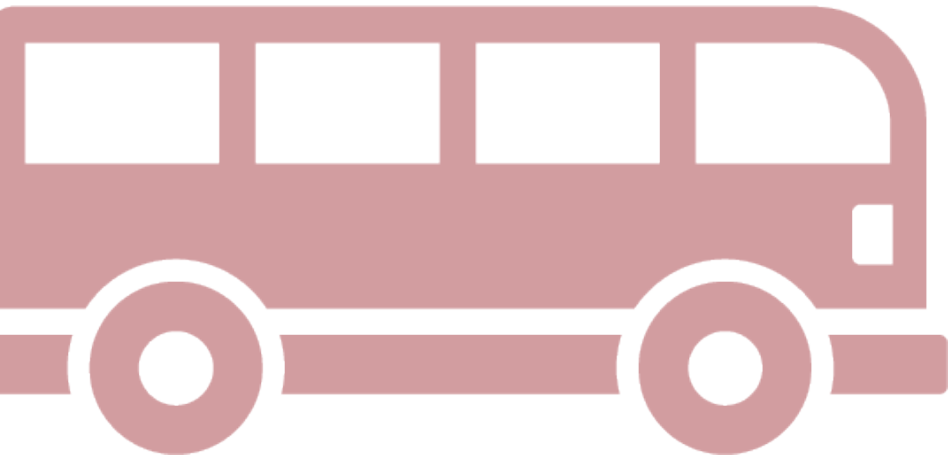
The Community Action Council of Lewis, Mason, and Thurston Counties is a regional non-profit whose Weatherization Program helps low-income households make their homes more energy efficient. Weatherization efforts can include weather-stripping and caulking to improve air seals, installing or replacing insulation, replacing windows, and similar repairs. The Weatherization Program helps these households decrease energy use by providing many services free of charge. Lower income populations are more likely to experience respiratory illnesses, like asthma and chronic obstructive pulmonary disease (COPD). This work also supports the health and safety of families by helping identify and repair heating system troubles and indoor air quality issues. Programs like this one reduce our local contributions to climate change while also increasing the distribution of resources among people who might otherwise find energy efficiency improvements out of their reach.

Transportation and Land Use

Moving people and goods efficiently is a key function of a thriving community. However, all that driving, and sitting in traffic, adds up to a big emission bill we'll pay in climate impacts. The majority of greenhouse gas emissions from transportation result from the use of fossil fuel-based products, like gasoline, in internal combustion engines.

- Transportation is the second largest source of emissions in our region (33 percent). Passenger vehicles are the largest source of on-road emissions, followed by heavy duty trucks, and commercial vehicles.
- Regional transit options like buses and vanpools make up less than one percent of transportation-related emissions.

As the Thurston region continues to grow, low-emission transportation will become even more important. This will require that we drive less, telework more, use more fuel-efficient vehicles, and promote alternative forms of travel, like biking and walking. Focusing a high proportion of future development in urban centers and along major transportation corridors, and reducing sprawl can help support this transition.



In 2020, Intercity Transit adopted a Zero Fare model to reduce delays and increase access for passengers. *Source: Northwest News Network*

SUCCESS STORY:

Climate Change Mitigation by Encouraging Public Transit

Increasing access to public transit is a strategy that has benefits beyond its climate impact. In 2020, both Intercity Transit and ruralTransit stopped charging for rides on their buses. Revenue from bus passes contributed a small percentage of Intercity Transit's funding—less than 2 percent. In 2018, voters approved a local sales tax increase to improve transit funding, making bus fare effectively prepaid by local economic activity. Intercity Transit's zero-fare program is a five-year demonstration project intended to both increase the efficiency of transit operation and reduce barriers to taking the bus. The strategy can also support climate mitigation, by making it easier for people to opt for a less-carbon intensive way to get around town, decreasing the number of polluting vehicles on the road. More than 75 percent of residents in our region support or strongly support zero-fare services, and in just the first month of the pilot project, Intercity Transit saw a 20 percent increase in ridership. Over the longer term, a zero-fare system can increase return on taxpayer investment, reduce congestion, and provide more equitable service to all, all while helping to reduce greenhouse gas emissions.

Water and Waste

As a rapidly growing region, the amount of water we use and waste we produce are also on the rise. Trash produced by Thurston County residents and businesses is sent to a landfill to decompose. During the decomposition process, solid waste produces methane—a gas that can be 84 times more potent than carbon dioxide during the first two decades after its release. If uncaptured, this leakage can be a primary source of greenhouse gas emissions from solid waste disposal. Waste collection, transportation, and processing require energy as well, which is often derived from the combustion of fossil fuels. There are similar emissions related to wastewater: wastewater must be collected, transported, treated, and released back into the environment—all of which requires energy and, in some cases, releases potent methane.

- In 2018, waste-related emissions contributed to a little over four percent of Thurston County's total emissions. Methane leaks are often a major source of solid waste emissions—however, the Roosevelt Regional Landfill where most of Thurston County's waste ends up is a leader in methane capture (see sidebar). Other solid waste emissions originated from processing and transportation of solid waste.
- The Thurston region has one of the most innovative wastewater treatment facilities in the country in the LOTT Clean Water Alliance. Wastewater treatment only makes up a small fraction of Thurston County's total emissions (less than one percent). The largest sources of wastewater emissions were related to digester and methanol emissions—both of which are necessary in treating wastewater solids.

Diverting waste keeps materials out of landfills, where it would traditionally break down and produce greenhouse gases. Reducing the sources of waste is the most impactful way to cut the emissions associated with solid waste. Not only does source reduction decrease direct landfill emissions, it also can drive reductions in emissions associated with the manufacturing and transport of products and services. While these consumption-side emissions are not currently included in our inventory, incentivizing reduction, reuse, and recycling strategies can ultimately have a big influence on emissions.

Reducing water use also can reduce emissions generated from the energy used to heat water and pump water and wastewater. These emissions are typically included in the building sector totals discussed above, and they can be among the largest electricity demands for households and municipalities.

Methane being captured and turned into Renewable Natural Gas (RNG) at the Roosevelt Regional Landfill in Klickitat County. *Source: Republic Services*

SUCCESS STORY:

Climate Change Mitigation by Improving Waste Processes

Reusing our excess waste can be a win-win mitigation strategy. The Roosevelt Regional Landfill in southern Washington is the destination for much of the Thurston region's trash. Since the late 1990s, it has generated power through a waste-to-energy project, and now has transitioned from generating electricity to renewable natural gas (RNG). The initial power plant at the landfill generated 26 megawatts of electrical power, or enough electricity to power more than 20,000 homes. In 2018, the Klickitat Public Utility District began investigating using methane from the landfill to generate renewable natural gas in partnership with Republic Services. In 2020, the PUD shifted entirely from electricity generation to the generation of RNG. Since methane is a powerful greenhouse gas, redirecting any methane emissions from the atmosphere can help reduce local contributions to climate change. By the end of the system's 80-year lifespan, it will offset a total of 35.4 million tons of carbon dioxide emissions, and the land will be returned to agricultural use. The project generates more than 1.6 million dekatherms of renewable natural gas per year—a portion of which may circulate back to heat Thurston region homes through an agreement with Puget Sound Energy.

Agriculture, Forests, and Prairies

Farms, forests, prairies, and other open space are important to the identity of the Thurston region, and they can play an essential role in achieving our emission reduction targets by sequestering carbon and helping limit urban sprawl. While these sectors make up only a small proportion of the Thurston region's emissions (two percent), agricultural activities, forest practices, and land conversion can contribute greenhouse gas emissions in a variety of ways:

- **Deforestation** causes the carbon stored in trees to be released into the atmosphere. Deforestation also prevents trees from capturing more carbon from the atmosphere—a process known as carbon sequestration.
- **Poor land management practices** on agricultural soils can lead to increased concentrations of nitrogen in the soil and result in emissions of nitrous oxide (N2O), a potent greenhouse gas. Specific activities that emit N2O emissions include the application of synthetic and organic fertilizers and inefficient irrigation practices.
- **Livestock,** especially cattle, produce methane (CH4) as part of their normal digestive processes—another potent greenhouse gas. This process, called enteric fermentation, represents nearly half of the emissions from Thurston County's agriculture sector.
- **Manure management** from livestock also emits potent methane and nitrous oxide gases. The amount of gases produced varies depending on the manure treatment and storage method.
- **Development of prairies** reduces opportunity for stored carbon and contributes to urban sprawl.

Carbon sequestration refers to the ability of plants, soils, and other organic material to capture and store carbon from the atmosphere. By planting trees, amending soils, and creating natural drainage systems with certain plant species, the Thurston region can remove carbon from the atmosphere and store it in plant matter and soils. Carbon sequestration strategies can bring other benefits as well. For example, adding organic matter to soil supports soil structure and microbiology, retains water, reduces erosion and stormwater run-off, and filters out pollutants. Carbon sequestration is not currently measured in the greenhouse gas inventory, so we don't have a good baseline of the role it plays in our emissions picture. Improving our understanding of the mechanics of sequestration in our region will be an important next step in order to better assess the potential impact of new sequestration actions.

Livestock help with weed control, one of several regenerative agriculture practices on Sapsucker Farm in Olympia. *Source: Sierra Smith, Sapsucker Farm*

SUCCESS STORY:

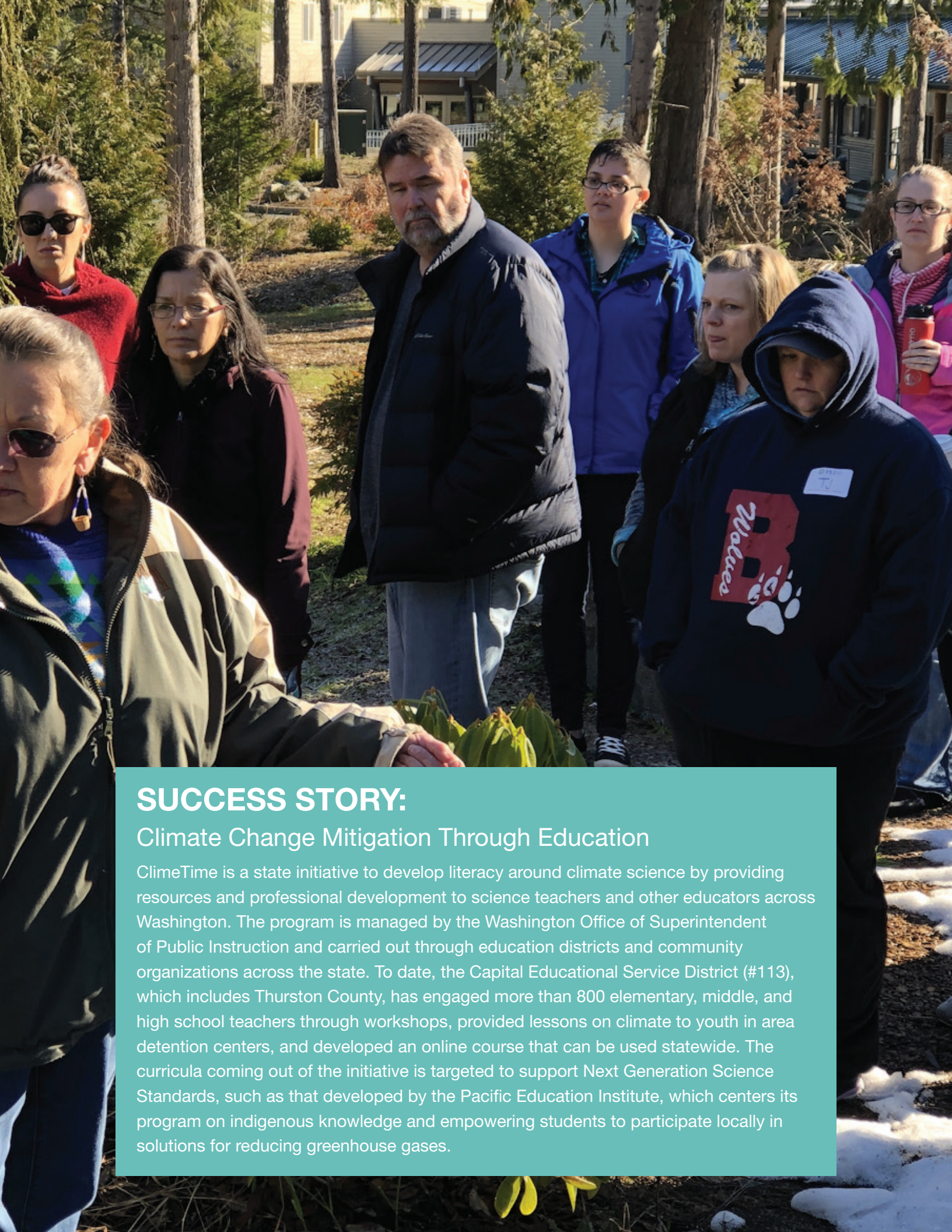
Climate Change Mitigation Through Farming Practices and Preservation

Thurston County loses more than 1,000 acres of farmland a year to other uses, yet this land is critical for our regional goals of maintaining a local food network, preserving open space and wildlife habitat, and offsetting local greenhouse gas emissions. This loss of local farmland forces us to source more of our food from outside our region, making our community more dependent on outside suppliers while increasing transportation emissions and undermining local food security. Programs that fund farmland preservation include the Washington Wildlife and Recreation Program, and Thurston County's Conservation Futures and Transfer of Development Rights programs, which purchase property or development rights, allowing these areas to remain as open space available for farming. In 2017, Conservation Futures' funding helped purchase an agricultural conservation easement for Oyster Bay Farm, permanently preserving 39 acres for future generations of food production. Preservation of working farmland will be essential to support both a reliable local food supply and climate mitigation.

Farmers also can make a positive contribution to climate change mitigation with the way they manage their land. In particular, regenerative agriculture is an approach to farming that aims to capture carbon in both soil and plants. It employs a suite of practices including no-till, managed grazing, and selective planting of crops and trees that also benefit local biodiversity and ecosystem health. These techniques are used at farms of all sizes and styles. Sapsucker Farm in Olympia makes the most of its six acres to raise a mix of sheep, cattle, turkeys, geese, and chickens by using rotational grazing, keyline water management, and a silvopasture system that will intersperse nut- and fruit-bearing trees with grazing areas—all with the goal of providing carbon-negative meat. Calliope Farm in the Littlerock area has 18 acres where they are working to build soil health and sequester carbon. Their vegetables grow interspersed with "harvest lanes" that help prevent soil erosion and create habitat for beneficial insects. In 2020, the Washington State Legislature established the Sustainable Farms and Fields grant program, which will aid farmers and ranchers in adopting practices that increase carbon storage. These resources allow families to continue farming land they have worked on for generations and provide Washingtonians with healthy local food and a diverse economy. Agricultural land preservation and the stewardship practices adopted by local farmers, including those profiles above, will play a key role in future climate solutions.

Cross-Cutting Concerns

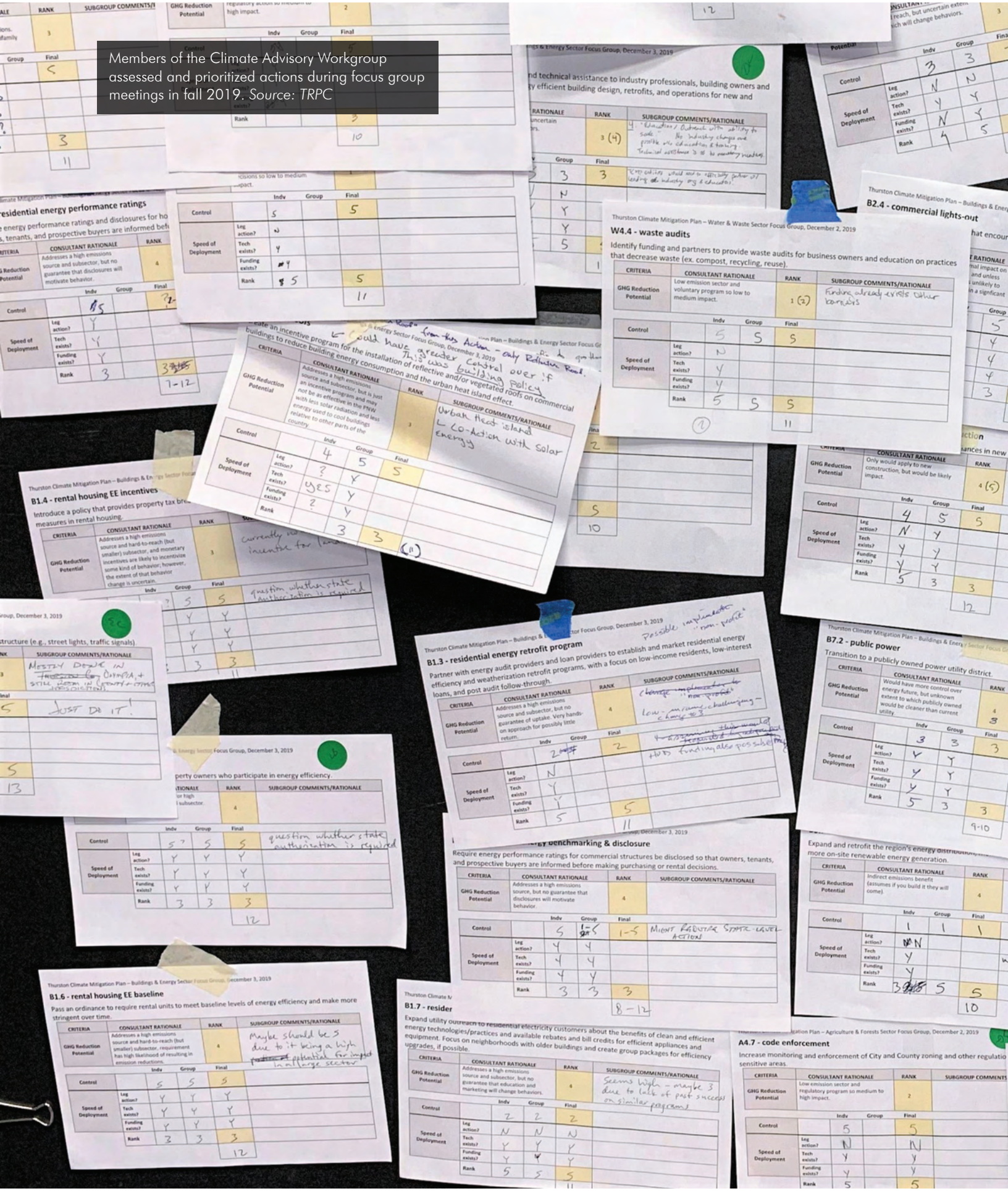
Climate change poses a fundamental threat to the future health and well-being of our community and addressing it will require a strong response from across society. In addition to addressing specific local sources of greenhouse gas emissions, such as those described in the previous sections, success will depend on building the resources, expertise, and constituency within our community to carry out the change we need and amplify its impact. Through effective and strategic education, advocacy, monitoring, and policy development, the Thurston region can increase awareness of, participation in, and impact of climate mitigation efforts.



SUCCESS STORY:

Climate Change Mitigation Through Education

ClimeTime is a state initiative to develop literacy around climate science by providing resources and professional development to science teachers and other educators across Washington. The program is managed by the Washington Office of Superintendent of Public Instruction and carried out through education districts and community organizations across the state. To date, the Capital Educational Service District (#113), which includes Thurston County, has engaged more than 800 elementary, middle, and high school teachers through workshops, provided lessons on climate to youth in area detention centers, and developed an online course that can be used statewide. The curricula coming out of the initiative is targeted to support Next Generation Science Standards, such as that developed by the Pacific Education Institute, which centers its program on indigenous knowledge and empowering students to participate locally in solutions for reducing greenhouse gases.



Members of the Climate Advisory Workgroup assessed and prioritized actions during focus group meetings in fall 2019. *Source: TRPC*

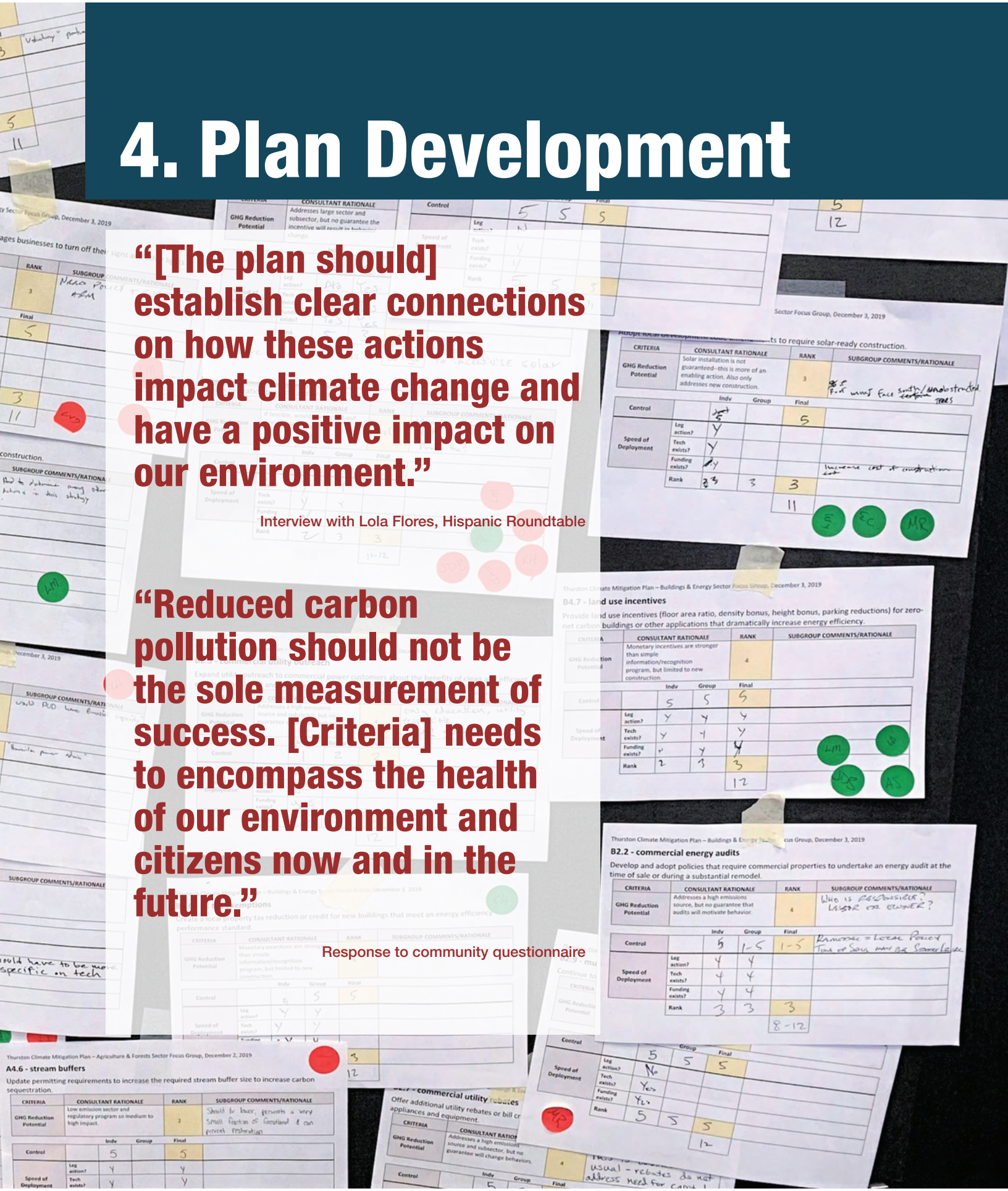
4. Plan Development

"[The plan should] establish clear connections on how these actions impact climate change and have a positive impact on our environment."

Interview with Lola Flores, Hispanic Roundtable

"Reduced carbon pollution should not be the sole measurement of success. [Criteria] needs to encompass the health of our environment and citizens now and in the future."

Response to community questionnaire



The *Thurston Climate Mitigation Plan* is the result of more than a year of technical analysis and engagement with Thurston region stakeholders, including local governments, businesses, community organizations, and residents. An overview of this planning process is provided below.

4.1 Plan Development Framework

Several groups met regularly to inform and provide oversight of all aspects of the planning process:

- **Interjurisdictional Project Team.** This group consisted of lead staff from TRPC and each of the four partner jurisdictions: Thurston County and the cities of Lacey, Olympia, and Tumwater. The Project Team provided staff-level direction and coordination throughout the project, reviewed draft products, and facilitated development of implementation plans.
- **Consultant Team.** Seattle-based Cascadia Consulting Group and sub-consultant Hammerschlag LLC contributed technical support throughout the project, including developing the public engagement strategy and outreach materials, developing and analyzing actions, and quantifying emission reductions from those actions.
- **Climate Advisory Workgroup.** This committee included public- and private-sector members of the community with subject matter expertise in one of five sectors: Buildings and Energy, Transportation and Land Use, Water and Waste Management, Agriculture and Forestry, and Cross-cutting. The Climate Advisory Workgroup was tasked with identifying, evaluating, and recommending a list of impactful actions to achieve the emissions reduction goal. Workgroup members also reviewed and provided input on project goals and guiding principles, public engagement strategy, scenario results, and implementation strategies.

  On two occasions, members of the Climate Advisory Workgroup split into their five ***Sector Focus Groups***, which included additional subject matter experts and interested members of the public. One round of the Sector Focus Groups included a meeting dedicated to youth and educator perspectives. All meetings of the Climate Advisory Workgroup were open to the public, and time for public comment was provided at each meeting.

- **Steering Committee.** The Steering Committee was composed of elected officials and staff from each of the four partner jurisdictions and was the decision-making body for the plan. This committee used a consensus-based decision-making process to approve each stage of the planning process. All meetings of the Steering Committee were open to the public, and time for public comment was provided at each meeting. The Steering Committee approved the *Thurston Climate Mitigation Plan* on December 10, 2020.

Each jurisdiction's policymaking body (Board of Commissioners or City Council) will ultimately consider a resolution that accepts the *Thurston Climate Mitigation Plan* as a framework for future action and affirms the jurisdiction will further explore implementation of these strategies.

Figure 6. Plan Development Structure of the *Thurston Climate Mitigation Plan*

WHAT DO YOU THINK?

THURSTON CLIMATE MITIGATION PLAN

What actions or ideas should be included in the Climate Action Plan?

STOP making Zoos and Traping innocent innocent Animals for your Enjoyment

Carbon Farming ↓
* biochar

More electric cars (or different fuels)

More carpooling, Carpool Lanes

STOP Dumping Garbage in the Ocean and Polluting the air

Expand recycling
reduce plastics
Plant more trees

Use goats to mow your lawn

Increase the amount of things we can reuse/recycle locally

More Rural Transit (Rochester) *

Grow Hemp Industrially!

don't use that much power *

ride bikes

Reduce water useage and conserve energy

Stop cutting down trees in our area and in developements.

less wasted plastic within resturants

Put fans around the planet -6 year old ♡

Tax gas hog vehicles.

Tax bussiness waste like Sweaters does

Embrace it. Enjoy it. Change with it. Make more wine less beer.

Less air pollution

deal with back funding for low income cars w/ oil leaks & high gas useage.

STOP Deforestation !!!

Shuttles to popular hiking spots

Educate for population reduction = smaller family sizes

Electrisite in sted of using gass

Ferry's frequent + service to Seattle

Your Bike Don't

Invest in renewable energy sources, reusable water bottles and containers, recycle correctly.

alternative energies address homeless as to not pollute downtown

Recycle / Rideing

fossil fuels ASAP

4.2 Community Engagement

The benefits and costs of climate mitigation actions will affect everyone in the Thurston region. Therefore, it was crucial to gather as many perspectives as possible to inform the plan. The following goals and objectives guided public engagement during the planning process:

A. Lay the groundwork for continued community engagement on climate action.
   - Deliver honest and consistent messaging to the public.
   - Build relationships with trusted community liaisons to help engage hard-to-reach populations such as communities of color, low-income, rural, youth, and elderly communities, and military families.
   - Provide a range of engagement options to suit different lifestyles, availability, and ways of processing information.

B. Promote alignment between community and government climate priorities, while recognizing the separate roles, responsibilities, and interests of individuals and organizations.
   - Solicit meaningful input from a diverse and representative set of partners and stakeholders.
   - Capture areas of convergence and divergence regarding climate action priorities throughout the Thurston region, including gaps and unmet needs, where applicable.

C. Build public support for climate action across the Thurston region.
   - Develop broad awareness of anticipated climate impacts throughout Thurston County and the cities of Lacey, Olympia, and Tumwater and efforts to address them, including the co-benefits of action and the costs of inaction.
   - Meet participants where they are, with respect for their involvement in climate change action and their different needs, wants, and priorities regarding climate mitigation.
   - Clearly describe the focus and boundaries of the Thurston Climate Mitigation Plan, how the plan is to be used, and the role that public input and informed decision making will play in plan implementation.

Input from the community was used to inform the development, refinement, and prioritization of actions in the draft plan. To ensure a robust engagement process across our region, the planning process included both broad and targeted engagement. Responses from the public are shown throughout this plan. A few of the methods used are summarized below—for a complete description of community engagement activities, see Appendix 10.8.

Public comments on climate action gathered at the Thurston County Fair, August 2019. *Source: TRPC*

Community Questionnaire

In 2019, an online community questionnaire gathered a baseline understanding of the community's priorities, perspectives, and concerns. The survey was shared through the TRPC website, social media, e-newsletters, listservs, and partner networks. The survey was open from August 12 to September 30, 2019, and received 1,397 responses.

Pop-Up Events

The Project Team engaged with the community at local events early in the planning process, including Tenino Oregon Trail Days; Thurston County Fair; the Yelm, Olympia, and Tumwater Farmers Markets; Tumwater Brewfest; and the Olympia Fall Arts Walk, among others. These pop-up events provided an opportunity for visitors to learn more about the project, ask questions to project staff, and provide input through interactive activities.

Community Presentations

The Project Team gave presentations to organizations upon request. These presentations gave an overview of the project and an opportunity to provide high-level recommendations for the plan's development. In addition to regular updates to City Councils and the County Commissioners, staff made presentations to the South Thurston Economic Development Initiative (STEDI), Olympia Master Builders, Deschutes Estuary Restoration Team, Transportation Policy Board, Nisqually River Council, Thurston County Solid Waste Advisory Committee, and Lacey Youth Council, among others.

Interviews

To better understand the impacts of the strategies and actions being considered, the Consultant Team conducted interviews with representatives from key sectors and organizations. Interview subjects included representatives from the Thurston County Food Bank, Confederated Tribes of the Chehalis Reservation, Olympia Master Builders, Hispanic Roundtable, and Homes First. Interviewees provided feedback on their organization's climate impact mitigation work; climate impacts to the communities in which they work; as well as concerns, challenges, and potential barriers to implementation of the actions.

Tumwater city staff host an information booth at Tumwater Brewfest in August 2019.
Source: City of Tumwater

Online Open House & Feedback Survey

Cascadia Consulting Group created an interactive online open house at www.ThurstonClimatePlan.com where members of the public could explore an overview of the plan contents and share their feedback and priorities through an online survey. The online open house was available 24-hours a day during the public review period—more than 650 unique users attended the online open house.

Virtual Community Meetings

TRPC hosted two virtual Community Meetings during the public review period. Each meeting included an overview presentation on the planning process and draft plan, a panel discussion among people involved in developing the plan, and an opportunity for attendees to ask questions of the panelists and staff. More than 100 participants attended the virtual meetings.

Public Comments

Members of the public had opportunities to comment throughout the planning process. Time for public comments was set aside at all Steering Committee and Climate Advisory Workgroup meetings. Public comments also were received through direct email and voicemail messages to TRPC staff. Between February 2019 and December 2020, TRPC staff tracked 307 comments from 198 separate individuals. The majority of comments (160) were received during the draft plan review period.

Website, Contact List, Social and Traditional Media

Throughout the project, TRPC maintained a dedicated website which was frequently updated with meeting materials and other relevant project information. Visitors to the website had the option to sign up to receive project updates via email, a list of 674 interested parties as of October 2020. TRPC promoted opportunities for public input at key decision points through social media posts and press releases.

Attendees of a Youth and Educator Focus Group prioritize actions in November 2019. *Source: TRPC*

Key Themes from Early Community Outreach

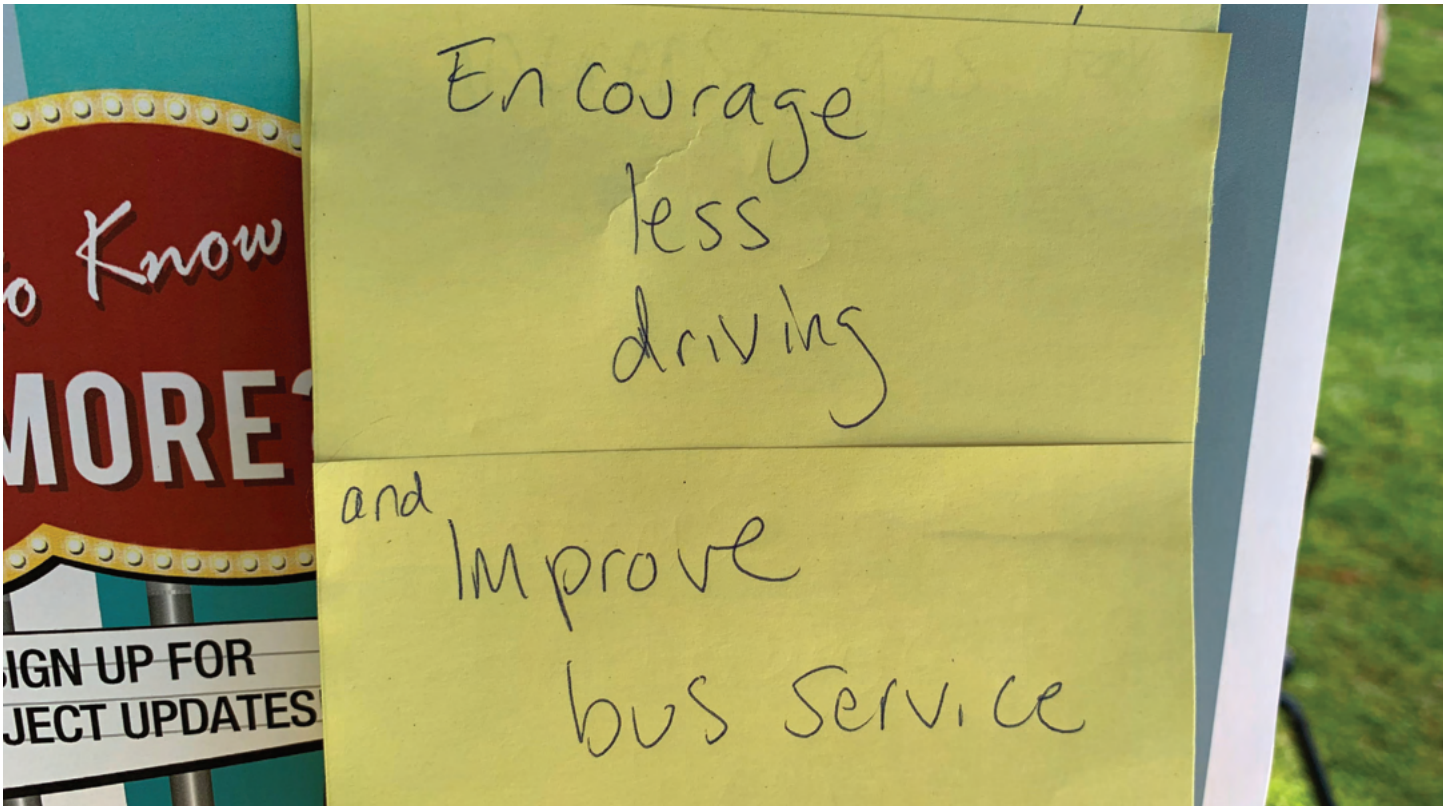
- **Across outreach methods, participants showed the broadest support for Buildings and Energy sector actions.** Whether prioritizing focus areas, investing fictitious money, or choosing the personal actions they would like to take, survey respondents showed the broadest support for actions to shift to more renewable and clean energy sources, and to make buildings more energy-efficient and carbon-smart. This includes exploring incentives, subsidies, and mandates to encourage renewable energy; investing in renewable energy; and improving building energy-efficiency.
- **Transportation and Land Use actions were a focus at public events and of actions people would like to take.** At public events, actions to support transportation and land use were the overwhelming choice. Ideas included investing in bicycle and pedestrian facilities, electric vehicles, and public transit, and encouraging high-density areas that improve resource sustainability and efficiency. Similarly, two of the four most popular actions survey respondents said they would like to take are purchasing or driving an all-electric vehicle (48 percent) and driving a high-efficiency vehicle (25 percent).
- **The individual actions of greatest interest to survey respondents are those the *Thurston Climate Mitigation Plan* could support:** These include investing in solar panels for home or business (57 percent), purchasing or driving an all-electric vehicle (48 percent), participating in a renewable energy program through local utility (30 percent), and driving a high-efficiency vehicle (25 percent).
- **People favored balancing multiple goals when identifying priority actions.** Impact (how much carbon pollution will be reduced) was considered the most important driver of action.
- **Priority focus areas and the most important drivers of action varied by factors like age, where survey respondents lived, and their income.**

Key Themes from Fall 2020 Draft Plan Review Period

- Across outreach methods, **a large majority of participants supported the Thurston Climate Mitigation Plan and think local jurisdictions should adopt this plan.** Many commenters, especially the many youth who commented on the plan, highlighted their concerns about how climate change will impact their lives, and asked that the four cities and County take urgent action to begin implementation.
- Most survey respondents believed the plan **presents a clear path for meeting regional climate goals and provides a roadmap for elected government and staff.** While some commenters requested the region consider a more aggressive carbon neutrality goal and others wished to see more specific details about the actions, equity impacts, and costs of implementation, many noted that that the plan is a good starting place for action.
- **People wanted to understand the costs of actions and are concerned about how climate mitigation actions might unintentionally worsen inequality and housing affordability in our region.** Realtors and builders worry about the impact of focusing on regulatory approaches to increase energy efficiency and shifting away from natural gas. Others note that strategies and actions must be implemented in ways that support a just transition toward greater sustainability.
- **A majority of survey respondents (70%) indicated that all strategies included in the plan are a priority.** Strategies with strongest support include preserving trees and managing forests to sequester carbon, reducing energy use in existing buildings, increasing density in urban areas to support more efficient transportation options, reducing energy use in new construction, and increasing the production and use of local renewable energy.

There will be additional opportunities for community engagement as individual jurisdictions work to implement actions in the years to come.

Figure 7. Responses to Climate Mitigation Community Questionnaire, September 2019.



4.3 Communitywide Action List

The *Thurston Climate Mitigation Plan* includes a list of communitywide actions to reduce greenhouse gas emissions in order to meet the adopted emissions reduction target. The planning process began by compiling a comprehensive initial list of potential strategies and actions. Between May and September 2019, the Project Team and Consultant Team gathered ideas from the Climate Advisory Workgroup, Steering Committee, sector focus groups, survey respondents, general public, and other climate planning efforts to develop a list of over 300 potential actions to reduce greenhouse gas emissions. Contributors also provided details on likely partners, resources, funding opportunities, and barriers to implementation.

This initial list of actions was refined and consolidated, resulting in a list of 242 actions addressing a wide variety of sectors and strategies. While the shorter list of actions assessed for this draft plan focuses on where local government can play a leading role, addressing the causes of climate change will require action from the state and partners throughout our community—including the private sector, nonprofits and nongovernmental organizations, and individuals. The complete list of actions is full of great ideas that can and should be taken up by others seeking to create change; it is available in Appendix 10.3.

Attendees of a Transportation and Land use Focus Group prioritize actions in December 2019.
Source: TRPC

Prioritizing Actions

To focus time and resources on actions that could best achieve the goals set for this process, the project partners narrowed the long list of actions using a multicriteria analysis. The Consultant Team, Climate Advisory Workgroup, and technical experts assessed each action against four criteria: impact on greenhouse gas emissions, speed of deployment, local control, and community co-benefits. Stakeholders reviewed and discussed the outcomes from this multicriteria analysis to arrive at the priority actions assessed for this draft plan (see Chapter 5—*Strategies & Actions*). For a thorough description of the multicriteria analysis, see Appendix 10.4.

CRITERIA	DESCRIPTION
GHG reduction potential	The annual quantity of greenhouse gas emissions (GHG) an action will avoid or sequester as of 2030.
Speed of deployment	Minimum time possible between decision to recommend an action, and achievement of the annual GHG reduction potential.
Control	One or more of the four project partners can likely influence the implementing party(ies) or can create the necessary regulatory structure.
Co-benefits • ecosystem health • social equity • economic benefit • other	Supports one or more of the regional goals (aside from #9 – carbon neutrality).

Figure 8. Criteria Used to Prioritize Actions for the Thurston Climate Mitigation Plan

4.4 Emissions Target Analysis

The next step was to understand what it would take to reach the adopted greenhouse gas emission reduction targets, and whether the actions we prioritized would do enough. The Consultant Team developed a tool to display the impacts of climate policies on future emissions. Their analysis, summarized below, shows that the emissions reduction targets adopted by the four partner jurisdictions are ambitious, but achievable. For a thorough discussion of the Scenario Analysis, see Appendix 10.5.

"Business as Usual" Scenario

This analysis began by assessing the amount of emissions we can expect if energy and climate policies remain fixed as they were in 2018. This "business-as-usual" scenario looked at how greenhouse gas emissions for the Thurston region would grow between now and 2050, with our anticipated population growth and no new climate action at the federal, state, or local level.

The "business-as-usual" scenario projects that without any action, our local emissions will grow by more than 760,000 metric tons of greenhouse gases over the next 10 years—a 26 percent increase from 2015 (see Figure 6). By 2050, that footprint could grow again by half—more than a million additional tons of greenhouse gases each year, compared to where we are today. This upward trajectory is tied to anticipated population growth, and it would put current and future residents of the Thurston our region on the path to experiencing the most severe impacts from climate change.

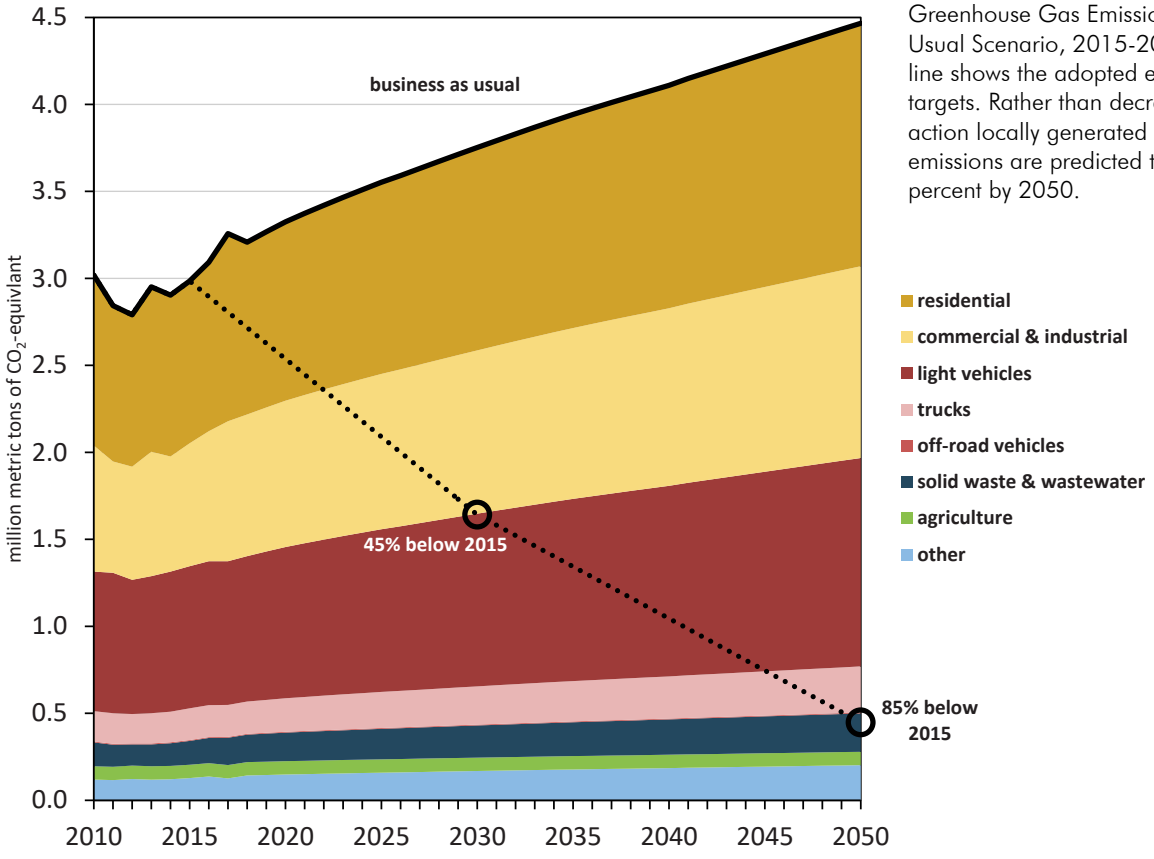


Figure 9. Thurston County Projected Greenhouse Gas Emissions: Business as Usual Scenario, 2015-2050. The dotted line shows the adopted emission reduction targets. Rather than decrease, without action locally generated greenhouse gas emissions are predicted to increase by 50 percent by 2050.

State Policy-Adjusted Scenario

The Consultant Team then assessed how recent federal and state actions will contribute to local greenhouse gas emission reductions over the next 30 years. This "policy-adjusted forecast" estimated the impact of the following recently adopted state laws:

- **Updates to Washington State Building and Energy Code.** Code changes that were set to go into effect in 2020 will significantly increase energy performance requirements for new residential and commercial buildings. In June 2020, the Washington State Building Code Council voted to extend the effective date of the new standards to February 1, 2021. This extension was not reflected in the Consultant Team's analysis.
- **Clean Energy Transformation Act (CETA).** State legislation adopted in 2019 requires that electric utilities operating in the state eliminate coal as a fuel source by 2025, and source 100 percent of the electricity they supply to Washington customers from renewable and non-greenhouse-gas-emitting resources by 2045.
- **Low-Emission Vehicle Standard.** State legislation adopted in 2018 requires that vehicles sold or licensed in Washington State must meet the same emissions standards as those set by the California Air Resources Board (CARB). CARB standards require efficiency increases of 3.7 percent each year from 2020-2026, resulting in a similar standard as the Obama-era Corporate Average Fuel Economy (CAFE) rule. Additional state legislation passed in 2020 extends these requirements to medium-duty trucks. The state Low-Emission Vehicle Standard currently is unaffected by the Trump administration's replacement of the CAFE standards with lower federal efficiency requirements.

State legislation plays a large role in local greenhouse gas emissions. The Clean Energy Transformation Act, adopted in 2019, sets a timeline for shifting Washington State's electricity grid to renewable sources.

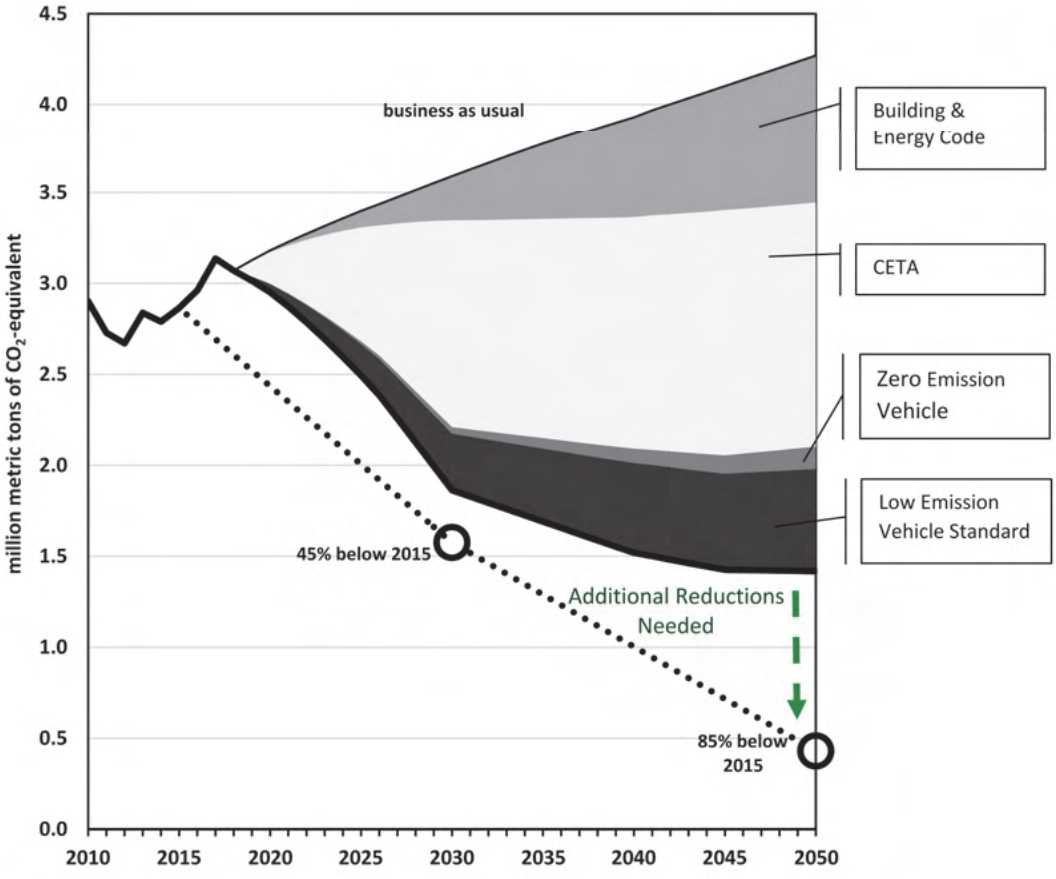


Figure 10. Potential Reduction in Thurston County Emissions from State Policies. The dotted line shows the adopted emission reduction targets. *Source: Hammerschlag 2020*

- **Zero-Emission Vehicle Standard.** State legislation adopted in 2020 requires car manufacturers selling vehicles in Washington State to follow California's zero emission vehicle (ZEV) standards here as well. An increasing portion of vehicles provided for sale in Washington State must be ZEV, or car manufacturers may obtain credits equal to that portion.

There are additional actions happening at a state level that will affect local emissions, directly and indirectly. This analysis was not intended to provide a comprehensive account of the potential impact of all state actions. The Consultant Team highlighted those that seemed most likely to directly affect the Thurston region's largest emission sectors.

As shown in Figure 7, state action can have a large impact on emissions from the Thurston region. Taken together these four policies could reduce emissions by nearly half (46 percent) by 2030, when compared with the "business-as-usual" scenario—and by nearly two-thirds (64 percent) by 2050. In particular, the Clean Energy Transformation Act (CETA) can play a critical role in reducing emissions in the near-term, by removing coal as a source of the Thurston region's electricity by 2025, and fully transitioning our electrical grid to clean energy sources by 2045. These changes will dramatically reduce emissions from the building sector, currently our region's largest source of emissions. If implemented as intended, electricity will go from contributing almost half of our local emissions (43 percent) to contributing zero.

By comparison, building code changes and increased fuel efficiency will take longer to impact emissions—this is because it will take time for people to trade up for newer, more fuel-efficient cars, and even longer to replace our current building stock with new or remodeled energy-efficient structures. These improvements play an increasingly important role as we look out toward achieving our 2050 goal.

Local Action Scenario

After evaluating the impact of state policies, the Consultant Team estimated how local actions can close the remaining gap and put our region on track to a 45 percent reduction in emissions by 2030 and an 85 percent reduction by 2050. Using the list of actions prioritized in the multicriteria analysis, they assessed how those actions could work together to affect different greenhouse gas contributors (see Table 1 and Appendix 10.5).

These pathways assume that each assessed action is feasible and will be completed with the full support of local and state officials and other relevant partners. In many cases, the emission reductions, which were estimated by the Consultant Team, will require a significant level of focus and sustained commitment from local partners.

Figure 8 shows how this suite of local actions, when paired with state policies, could reduce emissions enough to meet our target. While all the actions identified play a part, a few strategies stand out as bringing about the most substantial reductions. These include strategies that:

- reduce natural gas use
- reduce the amount that people drive and increase fuel efficiency for when they do
- store additional carbon in soil and plants

GREENHOUSE GAS EMISSIONS SOURCE	ESTIMATED REDUCTION FROM 2015 BASELINE	
	2030	2050
ENERGY USE		
Residential		
Electricity use	20%	30%
Natural gas use	20%	50%
Other fuels (LPG, wood)	10%	20%
Commercial		
Electricity use	20%	30%
Natural gas use	20%	50%
Industrial		
Electricity use	2%	5%
Natural gas use	10%	30%
TRANSPORTATION		
Passenger vehicles		
Vehicle miles traveled	5%	20%
Fuel efficiency	20%	60%
Light-duty trucks		
Vehicle miles traveled	10%	15%
Fuel efficiency	10%	40%
Heavy-duty trucks		
Vehicle miles traveled	0%	20%
Fuel efficiency	0%	10%
WATER & WASTE		
Solid waste	10%	30%
Wastewater treatment	20%	20%
AGRICULTURE		
Fertilizer use	20%	50%
OFFSETS		
Carbon Sequestration	4%	12%

Table 1. Estimated Impacts of Assessed Actions on Various Greenhouse Gas Emission Sources. Source: Hammerschlag 2020

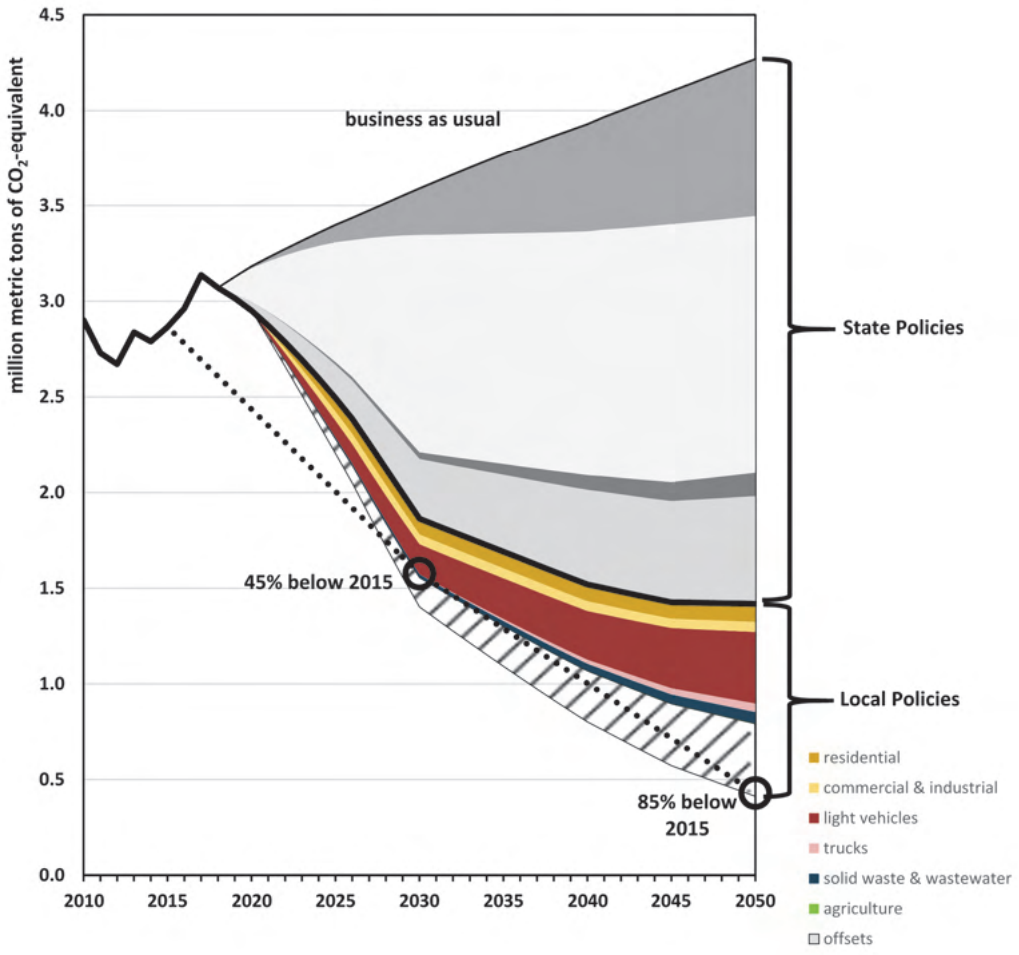


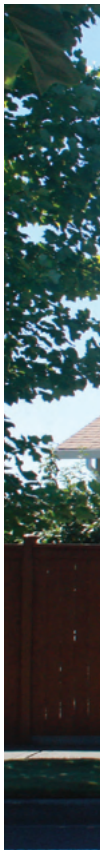
Figure 11. Potential Reduction in Thurston County Emissions from State Policies and Local Actions. The dotted line shows the adopted emission reduction targets. Colored wedges show reduction to individual emissions sectors. Reductions in the agriculture sector are too small to be visible. the hashed area shows offsets from actions that increase carbon sequestration. Source: Hammerschlag 2020

It is important to note that this analysis only considers the potential for certain policies and actions to reduce greenhouse gas emissions—it does not weigh the impact those actions may have on other important factors, such as any additional cost to consumers of energy or housing. It does not look at how the costs and benefits of the actions are distributed to different people within our community, and whether those costs or benefits would accrue disproportionately to some people over others. These factors are considered elsewhere in this plan and can and should be considered as the project partners move ahead and determine how to take action.

In addition, this analysis presents just one of many possible pathways for reducing greenhouse gas emissions. New discoveries, technologies, or legislation at the state and federal level could dramatically change the picture, and that uncertainty increases as we look ahead ten and twenty years. For example, a clean fuel standard that significantly reduces the carbon intensity of vehicle fuels could have an impact on local transportation emissions similar to that of CETA on local building emissions, reducing the amount of local investment needed in sequestration or other actions.

Despite these caveats, looking at these potential futures led to some conclusions that guide the priorities laid out in this plan:

- **Our adopted emission reduction targets are achievable, but only with significant attention on many fronts.** No single action will reduce local emissions enough to reach our targets; local governments will need to show leadership across many different programs to meaningfully address climate change.
- **State action will play a large role in our ability to achieve our targets.** Recent legislation, especially the Clean Energy Transformation Act, is helping to bring our emission reduction targets within reach. Our ability to achieve that goal is dependent on those rules being rolled out as envisioned.
- **Electricity is an ally.** Today, electricity use is our largest source of local emissions. With a cleaner electrical grid, that picture changes completely. Additional reductions are possible by shifting more uses to that greener power source. This means transitioning away from heating and cooking with natural gas and accelerating the adoption of electric vehicles.
- **Transportation is where local government action can affect the largest reductions.** While the building sector is our largest source of emissions today, those sources will be substantially reduced by state legislation. That leaves transportation as the area where the attention of local governments can make the biggest difference, by influencing what, where, and how much people drive.
- **Land use and building code changes will be more important over the long term.** The benefits of these changes will take longer to observe, but they need to be put in place in the near term to enable the urban density, bicycle and pedestrian networks, and greener buildings that are critical to achieving the 2050 target.
- **Carbon sequestration will need to be a part of the package.** Without new technology or state or federal action, even aggressive local action to reduce emissions may not be sufficient to achieve our longer-term 2050 target. To succeed, we'll need to tap the carbon-storing potential of local farms and forests, and we'll need to consider the role existing trees and other habitats serve in sustaining our climate.
- **Good data can help us better understand how individual actions translate to emission reductions.** The scenarios described in this section estimate future emissions based on general assumptions about how certain actions could affect human behavior in the future. This was the best information available at the time this plan was being developed, and it simplifies the complex interactions of the world. We will need to identify and gather more specific data to track and reflect the real outcomes of our actions, in order to truly understand where we lag and where we are making progress. This is particularly true for the assumptions around the potential to offset emissions through sequestration.



Solar package added by developer at the Jubilee development in City of Lacey. *Source: City of Lacey*

What We Heard...

"Work with current partners, build on what already exists, leverage all assets and skills, create a phased approach with clear deliverables. But in the end do something."

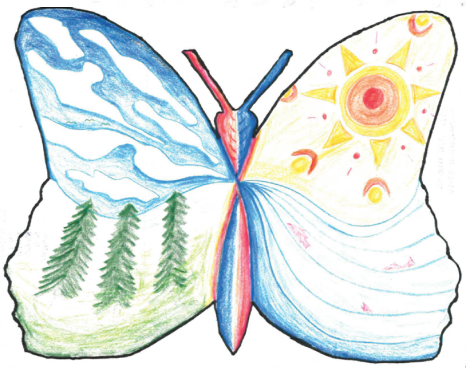
Interview with Robert Coit,
Thurston County Food Bank

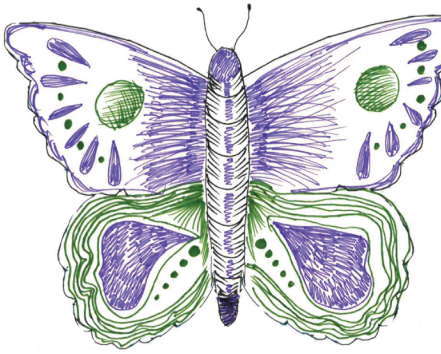
"[Housing, transportation, and access to services that address the needs of low-income families and individuals should be a major part of the climate justice plan.

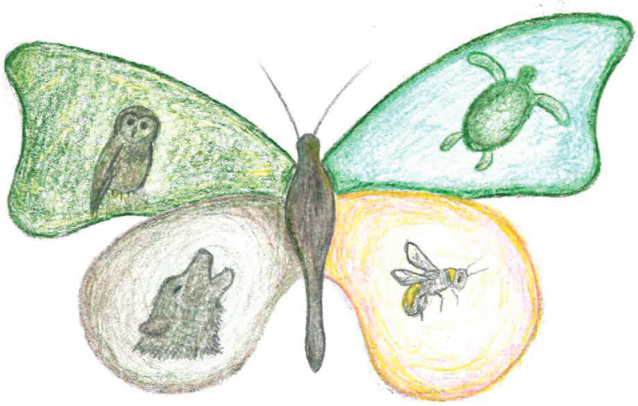
Community Questionnaire

"Listen to the teenagers. They'll be the ones to suffer if we don't act."

Public comment
at Thurston County Fair





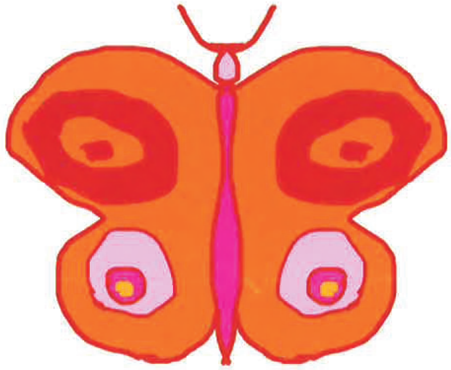


Transforming Together

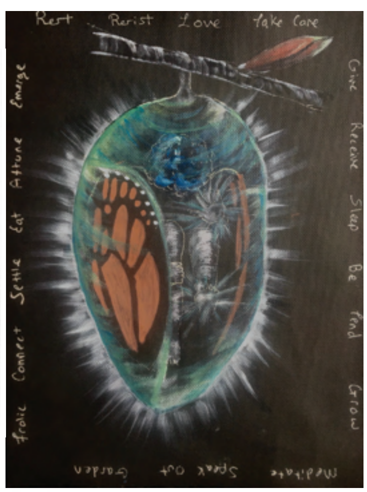
During the development of the Thurston Climate Mitigation Plan, community members have spoken out in different ways about their hope for action to address climate change. The Chrysalis Project, an effort developed by local artist Carrie Ziegler working with Thurston Climate Action Team, invited participants in online workshops to express themselves creatively, using the metaphor of a caterpillar transforming into a butterfly as inspiration for envisioning the transformative change they would like to see in our community. Participants then mailed their artwork as comments to local elected officials asking for strong climate action. Several hundred people have participated in the project, with a small selection of their work shown here. For more information on the project, visit https://thurstonclimateaction.org/the-chrysalis-project-transforming-together/

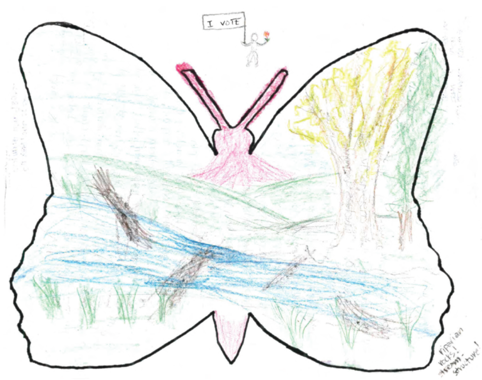

Another world is not only possible.
She is on her way.
On a quiet day I can hear her Breathing
~Arundhati Roy~

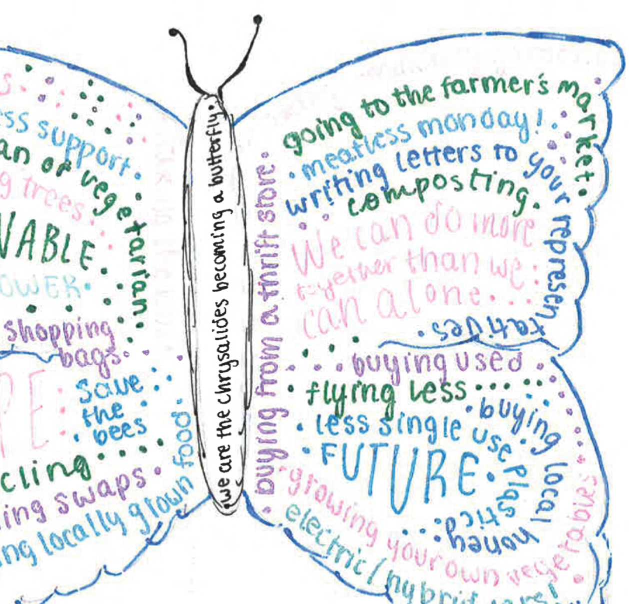

S.O.W.
SAVE-OUR-WORLD
so hurt
Don't let it go down in flames there's still time but we need to be smart




Community Resiliency and Resource Sharing!
Clean Water & Air
Healthy Ecosystems
Job Training, Creation of new Green Infrastructure Jobs!
Renewable Energy
Access to Healthcare
Affordable Housing for All!


Rest Resist Love Take Care
Give Receive Stop Be Feed Grow
Meditate Speak out Garden
Frolic Connect Settle Eat Attune Emerge


I VOTE


We are the chrysalides becoming a butterfly.
going to the farmer's market.
meatless monday!
writing letters to your representatives
composting.
We can do more together than we can alone.
buying from a thrift store.
buying used
flying less
buying local honey
less single use plastic
FUTURE
growing your own vegetables
electric/hybrid cars!
vegetarian
shopping bags
save the bees


SUPPORT THURSTON CLIMATE MITIGATION PLAN


Like the arduous path of the butterfly from caterpillar to flight
WE CAN DO THIS!

Rows of vegetables grow at Calliope Farm near Littlerock in Thurston County.
Source: Calliope Farm

5. Mitigation Strategies and Actions

"In the fight against climate change, cities and counties have become important leaders because of their role as laboratories, incubators, and implementers of climate solutions. Because local governments can be more responsive than those at the state and federal levels, and because and they are so, cities are playing a prominent role on the international stage in galvanizing climate action."

Center for Climate and Energy Solutions

5.1 Chapter Organization

The *Thurston Climate Mitigation Plan* lays out a framework of strategies and actions to put Thurston County and the cities of, Lacey, Olympia, and Tumwater on track to reach the 2050 goal of an 85 percent reduction in greenhouse gas emissions.

This chapter is structured around three levels: sectors, strategies, and actions.

Sectors

The strategies and actions are grouped to address the emissions sectors described in Chapter 3—Background:

- Buildings and energy
- Transportation and land use
- Water and waste
- Agriculture and forests
- Cross-cutting

Strategies

Strategies are methods or pathways to address a particular sector. The strategies form the frame of our plan, providing a structure for future action. They lay out the broad routes we'll use to achieve our vision for climate mitigation over the next 30 years.

Assessed Actions

The assessed actions listed below each strategy are potential means to address that strategy and emissions sector. They are the launching point for the partner jurisdictions as they develop specific work plans. Jurisdictions may opt how and whether they implement these actions, and they may be modified as those implementation strategies are developed in detail.

These actions emerged as priorities from the full list of potential climate mitigation actions proposed by stakeholders and community members (Appendix 10.3). They include those that rose to the top of the multicriteria analysis overall, as well as actions that address key sectors or strategies identified as important by members of the Climate Advisory Workgroup and Steering Committee. The impact icons next to each action show how it ranked for several categories in the multicriteria analysis (Appendix 10.4). To find out how these actions combine to help meet the goals of the Thurston Climate Mitigation Plan, review the results of the scenario analysis in Chapter 4—Plan Development and Appendix 10.5.

Relationship Between Sectors, Strategies, and Actions

This plan lays out a framework for climate mitigation over the next 30 years, based on our best understanding today. As the plan is carried out, we anticipate that sectors and strategies will largely persist as the backbone of that framework, while the actions needed will change over time as some actions are completed or found to not be feasible or desirable, and as new actions are considered.

Targets and Indicators

Performance measures can help us track whether we are making progress toward our climate mitigation goals and determine whether our actions have been effective. Each sector includes one or more targets based on the scenario analysis described in Chapter 4—Plan Development. To track progress for some strategies, we may need to set supplemental targets as part of the longer-term monitoring of the plan. Key performance indicators are the quantitative metrics that measure progress toward the targets over time. Targets and indicators are part of the monitoring and evaluation plan included in Appendix 10.7.

Considerations for Implementation

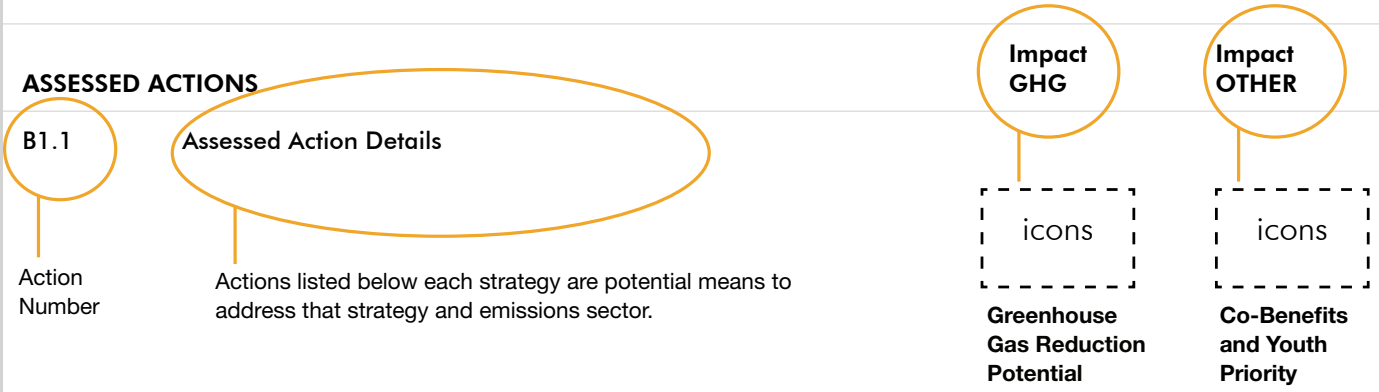
This section summarizes potential opportunities, obstacles, barriers, or tradeoffs raised throughout the process that we should consider as we move into implementation.

HOW TO READ THE ACTION TABLES IN THIS CHAPTER

SECTOR: A grouping of related strategies

Strategy: methods or pathways to address a particular sector

Strategy background and details.



WHAT THE ICONS MEAN

Greenhouse Gas Reduction Potential

The estimated annual quantity of greenhouse gas emissions an action will avoid or sequester as of 2030. This measure was the most important factor used to identify priority actions.

High: Addresses a large emissions source (e.g., energy use or transportation), has broad reach, and high enforceability.

Medium/High: Addresses a large emissions source, but relies on voluntary action.

Medium: Addresses a large emissions source, but has limited reach.

Medium/Low: Addresses a small or unmeasured emissions source (e.g., agriculture, solid waste), and has broad reach or high enforceability.

Low: Addresses a low emissions source, and has limited scope or enforceability; or lays the foundation for other actions, although it may not reduce emissions directly.

Co-Benefits

Nearly all the assessed actions support one or more of the Regional Goals adopted for this planning process (see Chapter 2). The icons below indicate an action's potential benefits to the community, in addition to its ability to address emission sources.

Ecosystem Health: Supports the protection and preservation of environmentally sensitive species and lands, open space, water quality and water supply, or air quality. *Regional Goals 2, 4, 8, 10*

Adaptation Value: Supports an action in the Thurston Climate Adaptation Plan.

Social Equity: Supports the equal distribution of resources among historically disadvantaged or marginalized communities. *Regional Goal 6*

Other Regional Goal: Supports another regional goal, including vibrant city centers and corridors, zero waste, or education. *Regional Goals 1, 5, 11*

Economic Benefit: Supports local prosperity, including through investments, markets, and jobs. *Regional Goals 3, 7, 12*

Youth Priority

As the generation who will be tasked with adapting most to climate impacts, youth voices have had a strong influence on this planning process. These actions were identified as important by a team of students and educators as part of the multicriteria analysis.

5.2 Buildings & Energy Sector

Strategy B1. Reduce energy use in existing residential buildings.

Residential energy use currently is the largest source of greenhouse gas emissions in our region. While newer buildings may be constructed to meet greener standards, the majority of homes in the Thurston region were built before 1988, with one in five dating back 50 or more years. Looking at our emission reduction targets, more than two-thirds of the housing units that will exist in 2050 already exist today, so retrofitting existing buildings is a key strategy. While energy efficiency improvements can pay for themselves over time through reduced heating and cooling expenses, the upfront cost may be a barrier for many. More than a third of homes in the Thurston region are rented, which means their occupants may have less control over choosing appliances or making building improvements that increase efficiency. The actions described below will support a transition toward higher efficiency homes by providing more information to consumers about home energy use and incentives for efficiency upgrades.

ASSESSED ACTIONS		Impact GHG	Impact OTHER
B1.1	**residential energy performance ratings.** Require energy performance ratings and disclosures for homes at time of sale, lease, or rent so that owners, tenants, and prospective buyers are informed before making purchasing or rental decisions		
B1.2	**residential energy audits.** Develop and adopt policies that require residential properties to undertake an energy audit at the time of sale or during a substantial remodel. Work with financial institutions to develop mortgage products that incorporate audited energy efficiency recommendations.		A
B1.4	**rental housing energy efficiency incentives.** Provide incentives such as property tax breaks for landlords who install energy conservation measures in rental housing.		E $
B1.5	**property tax credit.** Create incentives such as a property tax credit for property owners who participate in energy efficiency.		$
B1.6	**rental housing energy efficiency baseline.** Require rental units to meet baseline levels of energy efficiency and make more stringent over time.		A E

Potential Impact: Greenhous Gas Reduction Potential; Ecosystem Health; Social Equity; Economic Benefit; Adaptation Value; Other Regional Goal; Youth Priority

Strategy B2. Reduce energy use in existing commercial/industrial buildings.

Energy used to power businesses contributes to more than a quarter of our local carbon footprint (26 percent). Operations range from small retail and professional offices to sprawling warehouses. Improving efficiency across this sector will require approaches that target these different scales. The Thurston region currently has more than 42 million square feet of commercial and industrial area, but it is distributed unevenly. The greatest proportion of commercial building area is in the city of Olympia, while industrial space is concentrated in Lacey and Tumwater. As home to the headquarters of many state agencies, the Thurston region's stock of office space includes a large share of public sector buildings—these organizations can show leadership by increasing efficiency and reduce long-term energy costs to taxpayers. While it is hard to predict our future needs for work space, commercial and industrial buildings must be adapted over the coming decades to help reduce greenhouse gas emissions and accommodate the more than 50,000 new jobs anticipated to be added in our region between now and 2045.

ASSESSED ACTIONS		Impact GHG	Impact OTHER
B2.1	**commercial energy benchmarking & disclosure.** Require energy performance ratings for commercial structures be disclosed so that owners, tenants, and prospective buyers are informed before making purchasing or rental decisions.		
B2.3	**LED lighting.** Install LED lighting in public-sector buildings and infrastructure (e.g., streetlights, traffic signals).		
B2.6	**cool roofs.** Create an incentive program for the installation of reflective roofs on commercial buildings to reduce building energy consumption and the urban heat island effect.		
B2.8	**performance standard.** Set energy efficiency performance standards for commercial buildings with gross floor areas smaller than 50,000 square feet.		

Potential Impact: Greenhous Gas Reduction Potential; Ecosystem Health; Social Equity; Economic Benefit; Adaptation Value; Other Regional Goal; Youth Priority

What We Heard...

"The greenest development is updating and fixing old neighborhoods."

Public comment at Thurston County Fair

Strategy B3. Reduce energy use across building types.

Increasing efficiency in our built environment will require builders and contractors to learn and adapt to new materials and practices. The following actions will help support that transition by providing technical assistance to share what works and celebrating development that takes on this challenge.

ASSESSED ACTIONS		Impact GHG	Impact OTHER
B3.1	**energy education.** Provide educational resources and technical assistance to industry professionals, building owners and managers on all aspects of energy efficient building design, retrofits, and operations for new and existing buildings.	●	✱ A E O $ Y
B3.4	**exemplary buildings.** Partner with public, private, non-profit, and faith-based organizations to facilitate rapid deployment and public awareness of high-profile demonstration buildings that use innovative energy efficiency and/or technology to limit energy use.	●	✱ A E O $ Y
B3.5	**green building tracking.** Develop data methodology to monitor use and impacts of green building incentives, to inform future incentives and develop recommendations for policy or programs	●	✱ A E O $ Y

Potential Impact: Greenhous Gas Reduction Potential; Ecosystem Health; Social Equity; Economic Benefit; Adaptation Value; Other Regional Goal; Youth Priority

Strategy B4. Reduce energy use in new construction or redevelopment.

To meet the needs of a growing population, our region will need to add approximately 30,000 new housing units by 2030 and nearly 55,000 new units by 2050, as well as around 23 million square feet of additional commercial and industrial space. Standards for energy efficiency in new development are generally set by the State Building Code Council, and requirements scheduled to go into place in 2021[2] set stricter emissions thresholds for most new buildings. Developers can incorporate greener practices more easily in new construction than existing structures, but such requirements can increase upfront costs—incentives and tools like the actions listed below can help to encourage the adoption of green building practices while balancing the need to keep housing affordable and local business costs down.

ASSESSED ACTIONS		Impact GHG	Impact OTHER
B4.4	**green public buildings.** Require that new local government facilities and other public buildings demonstrate green building technologies and practices.		
B4.5	**permitting incentives.** Offer streamlined permitting, lower fees, or other incentives for projects that meet green building certification standards.		
B4.6	**energy efficiency tax exemptions.** Create a local property tax reduction or credit for new buildings that meet an energy efficiency performance standard.		
B4.7	**land use incentives.** Provide land use incentives (such as floor area ratio, density bonus, height bonus, or parking reductions) for zero-net carbon buildings or other applications that dramatically increase energy efficiency.		
B4.9	**permit counter technical assistance.** Hire or contract with dedicated green building specialists to provide technical assistance through the permitting and development process.		
B4.11	**grid-connected appliances.** Require smart appliances in new construction, especially water heaters that control timing of demand.		
B4.12	**multifamily submetering.** Require submetering for new multifamily buildings so residents can track energy use.		

Potential Impact: Greenhous Gas Reduction Potential; Ecosystem Health; Social Equity; Economic Benefit; Adaptation Value; Other Regional Goal; Youth Priority

[2] In response to the COVID-19 pandemic, Governor Inslee delayed scheduled implementation of changes to the State Building Code from July 1, 2020 to February 1, 2021.

Strategy B5. Increase the production of local renewable energy.

Shifting our reliance for electricity away from polluting fossil fuels toward renewable sources like wind and solar power is one of the most important strategies we have to reduce emissions. Action at the state level, with the adoption of the Clean Energy Transformation Act, will move us a long way toward this end, but smaller-scale installation of renewable energy infrastructure can help support the transition as well, while saving ratepayers money over time and increasing local resilience. As of 2020, more than a thousand residential customers and over 60 businesses in the Thurston region have installed solar panels that feed into the power grid, generating nearly 10 million kilowatt hours each year.[3] The actions identified below are intended to set the stage for broader access to this technology.

ASSESSED ACTIONS		Impact GHG	Impact OTHER
B5.3	**public building solar.** Install solar photovoltaics on all available and feasible municipal sites, including building rooftops, city hall, schools, police and fire stations, community centers, municipal water pump sites, and transit depots.		
B5.5	**SolSmart.** Evaluate and adopt elements of SolSmart program and adopt solar friendly practices.		
B5.8	**solar-ready.** Amend local development code to require solar-ready construction for all building types.		
B5.10	**group purchasing.** Develop/support a city-sponsored group solar purchasing program.		

What We Heard...

"Approve more options for very small, well-designed, affordable housing using incentives to cultivate interest by builders to construct."

Response to community questionnaire

[3] Puget Sound Energy, data provided 4/16/2020.

Strategy B6. Convert to cleaner fuel sources.

Greening our electrical grid is essential to achieving the climate targets, but electricity is not our only fuel source. Although it has a reputation for being "cleaner than coal," natural gas also contributes to climate change, particularly by leaking methane, a powerful greenhouse gas far more potent than carbon dioxide, although less prevalent. Natural gas also can affect both indoor and outdoor air quality, causing impacts to public health.[4] Approximately 32 percent of the Thurston region households rely on natural gas as their primary source of heat at home.[5] Across the partner jurisdictions, that proportion is highest in Lacey (45 percent), although the greatest number of households that use natural gas are in unincorporated Thurston County (12,487 homes). Actions assessed for this plan would restrict new natural gas connections and encourage those with existing connections to shift to cleaner options.

ASSESSED ACTIONS		Impact GHG	Impact OTHER
B6.1	**natural gas to electric conversions.** Educate business owners and residents on the options for electric appliances and the benefit of pairing electrification with the installation of renewable energy. Create incentives to support fuel switching.		
B6.2	**electric appliances in new construction.** Update municipal code to require electric appliances in new construction.		
B6.4	**natural gas transition.** Phase out new natural gas connections in new buildings over time.		

[4] Zhu, Y, et al., April 2020.
[5] U.S. Census Bureau, 2014-2018 American Community Survey 5-Year Estimates.

Buildings and Energy Sector: TARGETS AND INDICATORS

TARGETS

Baseline Year: 2015

- Reduce residential and commercial electricity consumption by 20 percent by 2030 and 30 percent by 2050.
- Reduce industrial electricity consumption by two percent by 2030 and five percent by 2050.
- Reduce residential and commercial natural gas consumption by 20 percent by 2030 and 50 percent by 2050.
- Reduce industrial natural gas consumption by ten percent by 2030 and 30 percent by 2050.
- Reduce residential consumption of other fuels (liquid petroleum gas, wood) by ten percent by 2030 and 20 percent by 2050.

KEY PERFORMANCE INDICATORS

- Annual residential, commercial, and industrial electricity consumption
- Annual residential, commercial, and industrial natural gas consumption
- Residential energy use per capita
- Commercial energy use per square foot

SUPPLEMENTAL PERFORMANCE INDICATORS

- Proportion of housing units with electric heat
- Grid-supplied renewable electricity
- Number of energy efficiency upgrades
- Proportion of households cost-burdened by energy and housing costs as a percentage of household income

Buildings and Energy Sector: CONSIDERATIONS FOR IMPLEMENTATION

The Thurston region is experiencing rising home prices and a severe lack of affordable housing. Actions taken to reduce emissions from the building sector must be designed with consideration of their impact to the cost of housing. Local builders already face a steep learning curve changing their practices in response to the new requirements of the state Building Code and a lack of local markets for some newer materials. A concern is that additional, restrictive requirements will favor large chains over local builders and contractors, who will be less able to purchase greener construction materials at scale.

The Clean Energy Transformation Act's push toward clean sources for electricity can dramatically reduce emissions from the building sector, but the tradeoffs include the need for new energy infrastructure and the potential for higher energy costs. Locally, we can support that transition by increasing energy efficiency of our building stock, including in lower income and senior households, and by enabling streamlined permitting for projects that support the energy grid of the future. This may include establishing clear expectations for how to proceed when renewable energy infrastructure conflicts with other community priorities, such as tree preservation. The most efficient way to shift our grid will likely involve large scale renewable energy infrastructure in other areas of the state and county, however, advancing more locally distributed renewable energy sources can help support local resilience and independence.

Actions that focus on changing price signals through subsidies and incentives must carefully consider their potential impacts. Property tax and permit fee reductions reduce revenue sources that fund schools and support staff, undercutting our ability to develop local expertise, update infrastructure, process permits for greener construction, and advocate for further climate mitigation measures. Tax and fee reductions should only be proposed when offset by new or different revenue sources. Incentives must be designed by first understanding what market or social factors create barriers to developing more energy efficient buildings. Such programs should be targeted to benefit disadvantaged groups, or to projects that go above and beyond to set a model for others. Pilot programs that begin through incentives can lay the groundwork to understand where regulatory requirements can be most effective.

5.3 Transportation and Land Use Sector

Strategy T1. Set land use policies that support increased urban density and efficient transportation networks and reduce urban sprawl.

When people opt to live close to the places they work, shop, and meet up with others, they make fewer, and shorter, driving trips— this is how increased density leads to reduced greenhouse gases. Planning for more compact growth in urban centers supports many of our regional goals, by making our cities and neighborhoods more vibrant, creating a robust economy, and reducing development pressure on environmentally sensitive areas. This strategy reinforces other approaches for reducing transportation emissions, by improving the viability of transit and making it safer and easier to get around by foot or bicycle.

The land use vision set out in *Sustainable Thurston* includes the following targets:

- By 2035, 72 percent of all (new and existing) households in our cities, towns, and unincorporated urban growth areas will be within a half-mile (comparable to a 20-minute walk) of an urban center, corridor, or neighborhood center.
- By 2035, at least 17 percent of homes in Lacey, Olympia, and Tumwater's urban areas will be located in an urban corridor or center.
- Between 2010 and 2035, no more than 5 percent of new housing will locate in the rural area.

As of 2019, our region is not on track to achieve these targets. The concentration of housing within walking distance of urban centers, corridors, and neighborhood centers has stalled around 46 percent, although recent development in downtown urban areas is pointing the way toward increases in density.

ASSESSED ACTIONS		Impact GHG	Impact OTHER
T1.1	**coordinated long term planning-future infill and urban sprawl reduction.** Coordinate long-term plans with transit agencies to project where increased density would support more transit corridors. Then change zoning/ density that would support new transit corridors and variety of household incomes. Promote long-term equity and healthy communities by developing incentives such as density bonuses for development where a percentage of the units will be permanently affordable for household incomes. Look for opportunities to meet the Sustainable Thurston land use vision by reducing urban sprawl.		
T1.2	**middle-density housing.** Reevaluate and change zoning as needed to allow for a range of housing types to promote social economic integration of housing near our region's urban centers or moderate-density zones.		
T1.3	**Eco districts.** Identify potential Eco districts to advance innovative district-scale urban development, sustainability, and neighborhood equity. Then make necessary code/zoning changes to support their development and set ambitious performance outcomes to ensure their long-term success.		

Potential Impact: Greenhous Gas Reduction Potential; Ecosystem Health; Social Equity; Economic Benefit; Adaptation Value; Other Regional Goal; Youth Priority

Intercity Transit buses line up at the Olympia Transit Center in downtown Olympia. *Source: Intercity Transit*

ASSESSED ACTIONS		Impact GHG	Impact OTHER
T1.4	**20-minute neighborhoods.** Increase the number of 20-minute neighborhoods (walkable environment, destinations that support a range of basic living needs and a residential density). Identify key infrastructure components needed to grow the number of 20-minute neighborhoods, then change zoning and codes if needed and coordinate with other jurisdictions to make public investments where necessary.	✓	✱ A E O $ Y
T1.9	**ADUs.** Amend development codes to allow for attached and detached accessory dwelling units (ADUs) in urban residential areas.	✓	A O $
T1.11	**land use efficiency.** Set integrated goals to consider network efficiency and reduce urban sprawl in land use decisions, including how density in certain areas supports transit, increases efficiency of utility service, and other support facilities. Consider vehicle miles traveled (VMT) in identifying locations for large employment facilities.	✓	✱ E O

Potential Impact: Greenhous Gas Reduction Potential; ✱ Ecosystem Health; E Social Equity; $ Economic Benefit; A Adaptation Value; O Other Regional Goal; Y Youth Priority

Strategy T2. Increase efficiency of the transportation system.

The minutes spent waiting in traffic can add up to a substantial climate impact. Actions that improve congestion on our roads, either through investments in transportation infrastructure or by reducing the number of people driving at peak periods, will reduce emissions while also improving air quality and the ability of people and goods to get where they need to go.

ASSESSED ACTIONS		Impact GHG	Impact OTHER
T2.2	**transportation efficiency.** Fund programs and projects to increase transportation efficiency, reduce delay, and reduce emissions such as signalization coordination improvements along with application of speed harmonization techniques (ex. reevaluate speed limits, roundabouts vs signalized intersection, street connectivity). Added benefits are decreased idling time (pollution) and improve fuel efficiency (cost savings to driver).		
T2.4	**vehicle efficiency outreach.** Develop educational campaigns about benefits (reduced greenhouse gas emission, increase fuel efficiency, safety) of properly inflated tires, including signage at gas stations and local businesses and partnering with schools.		
T2.17	**teleworking/flex work.** Increase opportunities for employee teleworking options and staggering workdays or schedules to reduce employees driving during peak traffic times.		
T5.13	**telecommuting infrastructure.** Develop grants and provide financial resources for installation of infrastructure necessary to support telecommuting.		

Potential Impact:

Strategy T3. Increase adoption of electric vehicles.

As our energy sources become cleaner, with electricity coming mostly from renewables, vehicles powered by gas and diesel will become our greatest local source of emissions. One of the easiest shifts we can make is to also power our transportation using electricity. As of April 2020, the Thurston region has 2,162 registered electric vehicles or EVs.[6] This number will need to increase substantially over the coming years to make a dent in transportation emissions. At the state level, the Zero Emission Vehicle standard adopted in 2020[7] will likely push auto companies toward offering a greater range of electric vehicles to consumers. Even as new EVs become more prevalent at dealerships, we know that generally one-third of the miles traveled in an average year in our region are driven in vehicles that are more than ten years old.[8] The actions assessed for this plan will help set the stage locally for greater adoption of EVs by reducing technical and economic barriers.

ASSESSED ACTIONS		Impact GHG	Impact OTHER
T3.1	**EV parking new construction.** Require large commercial and residential buildings to dedicate a percentage of parking spots for electric vehicle charging.		
T3.2	**free EV parking.** Allow free parking for all electric vehicles at local government buildings and in city centers to encourage the adoption of all electric vehicles. Increase cost of parking for non-EV vehicles.		
T3.5	**EV-ready building code.** Require all new residential construction be built EV ready. Create a simple and consistent residential charging station permitting process to reduce costs and time to development.		
T3.7	**EV integration.** Reevaluate regulations and make necessary changes to ensure charging stations are able to be permitted in locations where they are needed.		
T3.10	**zero emission fleets.** Investigate options then set appropriate timetables and policies for municipal and other governmental entities to replace public fleets with cleaner, energy-efficient vehicles to reduce long term fuel costs, improve air quality, and reduce greenhouse gas emissions.		
T3.11	**EV education.** Partner with environmental and other agencies to increase consumer awareness about EV options and incentives for use and purchase		

[6] Washington Department of Licensing.
[7] Washington Legislature, SB 5811.
[8] Resource Systems Group 2013.

ASSESSED ACTIONS		Impact GHG	Impact OTHER
T3.14	**EV mass purchase discounts.** Create a group purchase program for residents to get deep discounts on EVs, other fuel efficient and alternative fuel vehicles.		
T3.15	**EV purchase incentives.** Partner with car sale and lease dealerships to provide incentives for purchase of electric vehicles by Thurston County residents. Look to establish pilot programs with those neighborhoods, individuals with greatest VMT potential.		

Strategy T4. Increase the use of public transit.

Public transportation connects people with jobs, school, healthcare, and community services in ways that are more carbon efficient than driving alone. Applying many of the actions assessed for this strategy, Intercity Transit's 2019-2024 Strategic Plan predicts a minimum 40 percent increase in ridership in the next five years. Continued investment in transit will most aid those who don't have access to other forms of transportation due to disabilities, age, or income, but also brings broader community benefits, such as better access to employment, workforce recruitment, and improvements in air pollution.

ASSESSED ACTIONS		Impact GHG	Impact OTHER
T4.1	**increase transit.** Increase local public transit routes/frequency with a focus on ensuring the greatest number of riders have access to a low-carbon transportation option. Any expansion of service should include an analysis of climate impacts to ensure the program does not result in an increase in greenhouse gas emissions.		
T4.3	**transit connections.** Identify and implement first/last mile, low carbon solutions to connect neighborhoods without the population to support fixed routes transit options. Engage homeowners associations for representation and feedback. Any expansion of service should include an analysis of climate impacts to ensure the program does not result in an increase in greenhouse gas emissions.		
T4.4	**fareless system.** Maintain a fareless system for public transit.		
T4.10	**rider education/benefits.** Maintain and expand a regional online page that lists all the mode shift education efforts and employer benefits opportunities (Thurston Here-To-There). Include a comments section for suggestions to further transit education and ridership.		
T4.15	**promote transit benefits.** Work with employers and transit agencies to develop ways to incentivize employee ridership (ex. rebates for employees who give up use of employer parking facilities).		

Potential Impact: Greenhous Gas Reduction Potential; Ecosystem Health; Social Equity; Economic Benefit; Adaptation Value; Other Regional Goal; Youth Priority

Strategy T5. Increase use of active forms of travel (such as, bicycling, walking).

Currently, most Thurston region residents drive alone to work and use a car for most other trips. While many residents enjoy walking and bicycling for recreation, just three percent of commute trips are made using these active modes.[9] Making it easier for people to walk and bike for typical errands, rather than driving a car, will help reduce emissions while also supporting our regional goals and improved public health. These actions can benefit low income and other marginalized communities by reducing the need to rely on a private vehicle. The actions identified below will help address gaps and barriers in our current network.

ASSESSED ACTIONS		Impact GHG	Impact OTHER
T5.1	**walk/bike infrastructure.** Coordinate bicycle and pedestrian plans of the cities and Thurston County into a large regional plan to expand walking and bicycling infrastructure, including separated and protected opportunities. Coordinate efforts to maximize funding mechanisms and opportunities.		
T5.2	**barriers to active transportation.** Develop a regional inventory to identify gaps in connectivity for safe cycling and walking. Then develop a strategy to prioritize projects and a plan for funding.		
T5.4	**school drop-off alternative modes.** Maintain and expand a walking/ bicycling incentive program with safety education for families.		
T5.11	**mode-shift targets and car-free areas.** Reevaluate long term plans and update to prioritize people walking and riding bikes. Set goals for mode shift and plans on how to achieve those goals like developing car-free corridors in commercial and mixed-use areas to encourage mode shift.		

Potential Impact: Greenhous Gas Reduction Potential; Ecosystem Health; Social Equity; Economic Benefit; Adaptation Value; Other Regional Goal; Youth Priority

What We Heard...

"More incentives to bike. More protected bike lanes along with improving the existing network of trails/current bike lanes."

Response to community questionnaire

[9] U.S. Census Bureau, 2014-2018 American Community Survey 5-Year Estimates.

Transportation and Land Use Sector: TARGETS AND INDICATORS

TARGETS

Baseline Year: 2010

- By 2035, 72 percent of all (new and existing) households in our cities, towns, and unincorporated urban growth areas will be within a half-mile (comparable to a 20-minute walk) of an urban center, corridor, or neighborhood center.
- By 2035, at least 17 percent of homes in Lacey, Olympia, and Tumwater's urban areas will be located in an urban corridor or center.
- Between 2010 and 2035, no more than 5 percent of new housing will locate in the rural area.

Baseline Year: 2015

- Reduce vehicle miles traveled in passenger vehicles by five percent by 2030 and 20 percent by 2050.
- Reduce vehicle miles traveled in light-duty trucks by ten percent by 2030 and 15 percent by 2050.
- Reduce vehicle miles traveled in heavy-duty trucks by 20 percent by 2050.
- Increase average fuel efficiency of passenger vehicles by 20 percent by 2030 and 60 percent by 2050.
- Increase average fuel efficiency of light-duty trucks by ten percent by 2030 and 40 percent by 2050.
- Increase average fuel efficiency of heavy-duty trucks by ten percent by 2050.

KEY PERFORMANCE INDICATORS

- Vehicle miles traveled
- Average vehicle carbon intensity

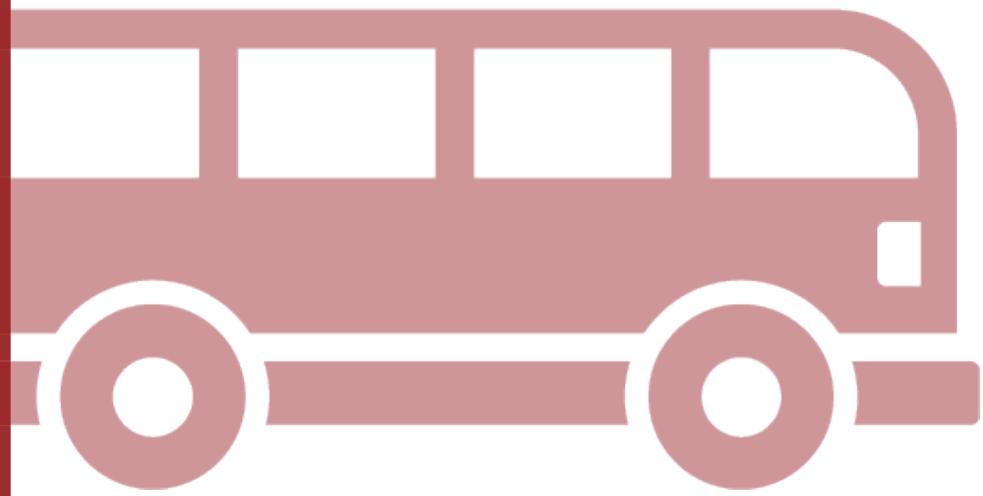
SUPPLEMENTAL PERFORMANCE INDICATORS

- Number of public transit passenger boardings
- Number of registered electric vehicles
- Number of public electric vehicle charging stations
- Proportion of vehicle trips made using modes other than driving alone (walk, bicycle, transit, carpool)
- Median household transportation costs as a percentage of median household income

Transportation and Land Use Sector: CONSIDERATIONS FOR IMPLEMENTATION

The transportation strategies included in this framework use different levers for reducing emissions: some rely on changing the conditions in which people behave, others rely on people deciding to change their behavior. Increasing the adoption of electric vehicles, for example, allows people to reduce their carbon footprint without substantially changing the amount that they drive alone. Actions that focus on reducing vehicle miles traveled, in contrast, rely on people behaving in different ways than we see today, by living in denser communities and choosing to walk or take the bus instead of driving.

In implementing these actions, we will need to consider who benefits from these strategies and ensure we are distributing those benefits equitably and where they will make the most sense. Actions that focus on creating a denser transportation network have many community co-benefits, increasing equity and access, but only if implemented in a way that does not lead to higher costs that drive lower-income families farther away from the urban center. Actions to support electric vehicles may be best targeted for residents in rural communities where mass transit is not an efficient option to reduce emissions. Incentive programs could be targeted to benefit low income or other disadvantaged groups, although reducing the number of people who have access to such programs may reduce the amount of emissions they reduce.



5.4 Water and Waste Sector

Strategy W1. Increase the efficiency of water and wastewater infrastructure.

Strategy W2. Reduce water consumption.

Strategy W3. Reduce emissions from wastewater treatment operations.

While water and wastewater management contribute only a small piece of our regional greenhouse gas inventory, the energy used to power these utilities are large contributors to the carbon footprint of individual jurisdictions. The actions identified below center on ways for city and county governments to reduce waste and save money, while reducing their own emissions.

ASSESSED ACTIONS		Impact GHG	Impact OTHER
W1.1	**municipal energy efficiency.** Conduct efficiency improvements to municipal water and sewage treatment systems. Prioritize components that consume the most energy and have high greenhouse gas emissions.		
W2.2	**water audits.** Conduct water audits of city and county facilities to determine prioritization of capital improvements.		
W3.1	**nitrous oxide capture.** Research and implement nitrous oxide mitigation strategies and strategies to avoid or reduce nitrous oxide emissions in wastewater processing. Present findings and cost vs benefits analysis to policy makers to determine what changes should be made.		

Potential Impact: 

Strategy W4. Divert more solid waste from landfills.
Strategy W6. Reduce consumption of carbon-intensive goods and services.

Although emissions generated outside the Thurston region by manufacturing and transporting goods consumed here are not measured as part of our current inventory, many people involved in developing this plan were interested in addressing the impacts of consumption and waste. In *Sustainable Thurston*, our region set a goal to move toward zero waste, but currently, we are not on track to meet this goal. Waste collected on a per capita basis has increased from a low of 1,140 pounds per person in 2012 to 1,318 pounds per person in 2016.[10]

ASSESSED ACTIONS		Impact GHG	Impact OTHER
W4.4	**waste audits.** Provide waste audits for business owners and education on practices that decrease waste (such as composting, recycling, and reuse).		
W4.10	**waste less food program.** Expand Thurston County's "Waste Less Food" program.		
W6.6	**supply chain.** Provide free technical assistance to local businesses in reducing the carbon intensity of their supply chains.		

Potential Impact: Greenhous Gas Reduction Potential; Ecosystem Health; Social Equity; Economic Benefit; Adaptation Value; Other Regional Goal; Youth Priority

[10] Thurston County Solid Waste.

Water and Waste Sector: TARGETS AND INDICATORS

TARGETS

Baseline Year: 2015

- Reduce emissions from wastewater treatment by 20 percent by 2030.
- Reduce solid waste generated per capita by 10 percent by 2030 and 30 percent by 2050.

KEY PERFORMANCE INDICATORS

- Tons of waste disposed to landfill
- Annual emissions from wastewater treatment

SUPPLEMENTAL PERFORMANCE INDICATORS

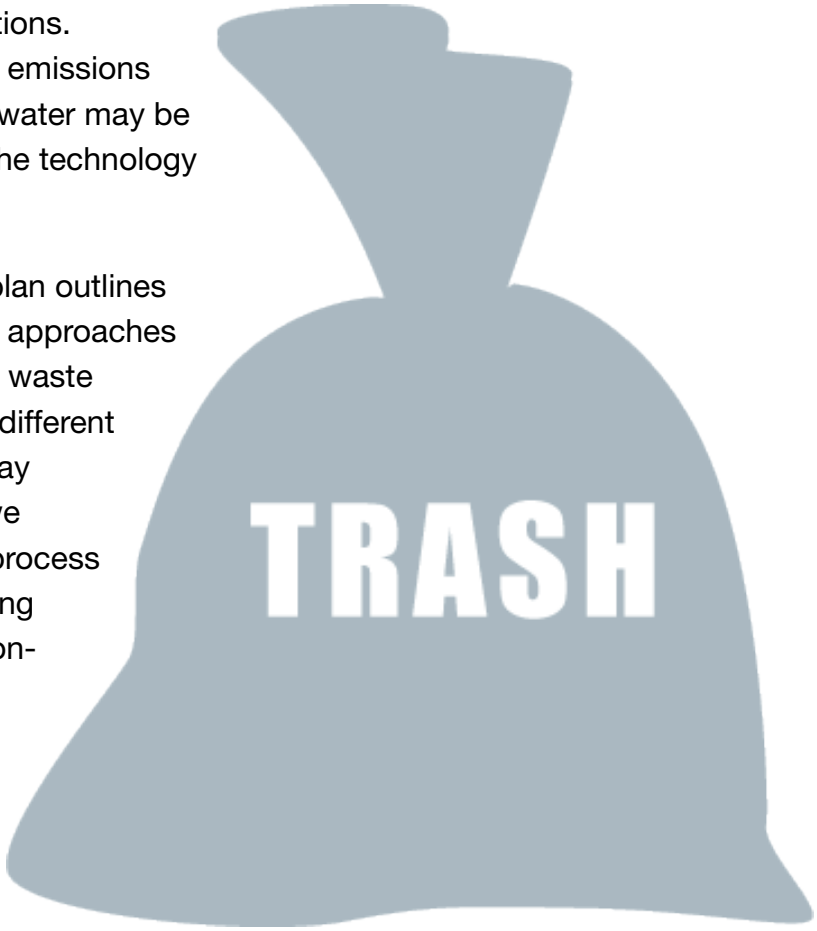
- Proportion of disposed waste that is compostable
- Number of septic tanks

Water and Waste Sector: CONSIDERATIONS FOR IMPLEMENTATION

A first step for this sector will involve reviewing the assumptions behind calculating emissions from water and waste. The current methods used in the greenhouse gas inventory may not sufficiently account for the innovative work already being done at the LOTT Treatment facility and Roosevelt Regional Landfill. These calculations should be updated to ensure they reflect our local conditions.

Addressing emissions from wastewater may be limited by the technology available.

While this plan outlines some initial approaches to reducing waste emissions, different priorities may emerge if we develop a process for measuring consumption-based emissions.



5.5 Agriculture, Forests, and Prairies Sector

Strategy A1. Reduce emissions from agricultural practices.
Strategy A2. Support agricultural practices that sequester carbon.

Agriculture in Thurston County is remarkably diverse—it includes everything from large commercial dairy and egg operations to orchards to specialty vegetables grown on small urban lots. Our average farm size is small at 14 acres. Around 500 farms have livestock—mostly cattle and chickens—and a large portion of agricultural land is managed minimally for grazing and growing hay.[11] While farms can reduce their impact with better management of animal waste and fertilizer, they can also play a role in offsetting the community's emissions as a whole. Land management practices like cover cropping, no-till and minimum tillage conservation practices, crop rotations, soil amendments, and changes in grazing management have been shown to increase the rate of carbon stored in plants and soil. In 2020, the Washington State Legislature established the Sustainable Farms and Fields grant program, which will aid farmers and ranchers in adopting practices that increase carbon storage.

ASSESSED ACTIONS		Impact GHG	Impact OTHER
A1.2	**nutrient management.** Provide education and incentives (e.g., grants, loans, technical assistance) to encourage practices that reduce emissions from manure and fertilizer.	▲	✱ A
A2.1	**regenerative agriculture.** Expand regenerative agricultural practices among farmers that aim for a "whole farm" approach. Provide education on how to increase organic matter content and water retention in soils within urban and agricultural settings.	▲	✱ A $

Potential Impact: ▲ Greenhous Gas Reduction Potential; ✱ Ecosystem Health; E Social Equity; $ Economic Benefit; A Adaptation Value; O Other Regional Goal; Y Youth Priority

[11] USDA 2017 Agricultural Census

Strategy A5/A6/A7. Preserve tree canopy and manage forests and prairies to sequester carbon.

Trees have been called the lungs of our planet, and they also can be very effective at removing carbon from the air and storing it in the soil. Historically, tall stands of Douglas fir, cedar and other tree species covered far more of Western Washington than they do today. Conserving existing tree canopy and forest areas and restoring areas that have been cleared can help to offset emissions from other activities, while providing a host of benefits for our local environment from storing and cleaning water to providing habitat for many sensitive species. Prairies can sequester large amounts of carbon in the roots of plants, and this sequestering is less vulnerable to fires than trees. Furthermore, working to preserve prairies will not only help several endangered species survive, it will reduce opportunities for urban sprawl. In enacting this strategy, it will be important to balance the carbon sequestering capacity of forests and prairies with the emission reducing potential of dense urban development and renewable energy infrastructure.

ASSESSED ACTIONS		Impact GHG	Impact OTHER
A5.1	**reforestation & afforestation program.** Develop a coordinated reforestation/afforestation program. Begin by identifying priority areas where reforestation and afforestation may have carbon reduction benefits.		
A6.5	**municipal canopy.** Maximize tree canopy on jurisdiction owned or managed land, where appropriate in balance with other jurisdictional goals.		
A6.9	**tree canopy preservation.** Develop a tree canopy ordinance that establishes a baseline for current urban canopy and sets goals for future canopy to increase resilience. Combine direct cooling value (urban heat island mitigation) with carbon sequestration value when evaluating urban tree management.		
A7.3	**prairie preservation.** Support aggressive implementation of habitat conservation plans that provide for preservation and restoration of prairie habitat for endangered and threatened prairie species. NOTE: the sequestration role of prairies was not assessed for the plan, and language and actions related to prairies were added after the multicriteria analysis for the plan wer completed, at the direction of the Steering Committee.		

Potential Impact: 

What We Heard...

"The number one priority needs to be preservation of wooded areas that contain our trees for carbon reduction."

Response to community questionnaire

Agriculture, Forests, and Prairies Sector: TARGETS AND INDICATORS

TARGETS

Baseline Year: 2015

- Reduce acres of conventionally fertilized land by 20 percent by 2030 and 50 percent by 2050.
- Manage 6,600 acres of agricultural land to store carbon through regenerative agriculture practices by 2050.
- Manage forestland and prairies sufficient to sequester 375,000 tons of CO_2 annually by 2050.

KEY PERFORMANCE INDICATORS

- Acres of fertilized farmland
- Tons of sequestered carbon

SUPPLEMENTAL PERFORMANCE INDICATORS

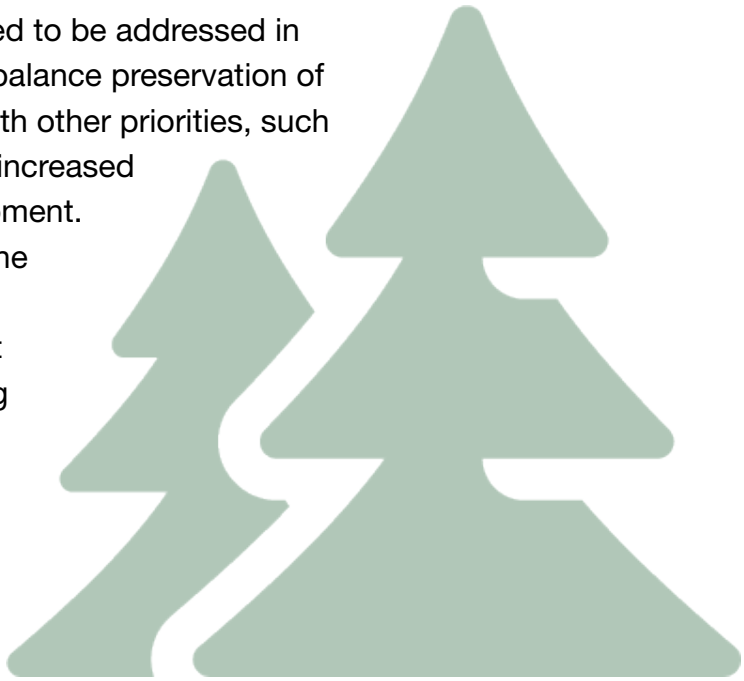
- Percent tree canopy cover
- Acres of land using regenerative agriculture practices
- Acres of trees planted
- Acres of tree canopy protected
- Acres of prairie protected

Agriculture and Forest Sector: CONSIDERATIONS FOR IMPLEMENTATION

Carbon sequestration was not included in the original suite of strategies proposed for climate mitigation but was added in response to community members who link the benefits of connecting land conversation and land management practices with climate mitigation goals. The wedge analysis shows carbon sequestration as a sizeable slice of our overall pathway to meet the 2050 emissions target. An important next step is to further analyze what actions will be required on the ground to meet our current carbon sequestration assumptions, and whether those assumptions are feasible. This may also include considering how preservation and restoration of other ecosystems, such as prairies and marine areas, may contribute to an overall carbon sequestration target.

Some stakeholders would prefer greater investment in reducing sources of emissions, before bringing sequestration into the mix of actions. If we are more effective at reducing the sources of emissions, we may need to rely less on sequestration to achieve our targets.

Another factor that will need to be addressed in implementation is how to balance preservation of trees and prairie habitat with other priorities, such as strategies that support increased urban density and development. We will need to better define where and at what scale sequestration can be most effective, while considering other priorities.



5.6 Cross-Cutting Sector

Strategy G1. Conduct education and outreach across climate mitigation areas.

This plan focuses on the ways local government can reduce local contributions to climate change but achieving those reductions will require action from people at all levels. Many local businesses, community partners, and residents have already expressed their desire for climate action and demonstrate their commitment to improving our community. This strategy acknowledges the need for the partner jurisdictions to understand and work out how climate policies and programs can be tailored to best meet the needs of the people they serve, and how to communicate in ways that inspire the change we need to meet our goals.

ASSESSED ACTIONS		Impact GHG	Impact OTHER
G1.7	**social research and behavior change campaigns.** Work with higher education institutions to research effective behavior change through marketing and education. Use this information in developing campaigns to reduce high emissions greenhouse gases.		

Potential Impact: Greenhous Gas Reduction Potential; Ecosystem Health; Social Equity; Economic Benefit; Adaptation Value; Other Regional Goal; Youth Priority

Strategy G4. Enhance monitoring and evaluation of climate mitigation measures and outcomes.

The actions included under this strategy will not reduce emissions directly, but they will help our community understand whether we are making progress toward achieving our goals. They also aim to fill information gaps identified over the course of this planning process and highlight ways to correct our course as we learn more.

ASSESSED ACTIONS		Impact GHG	Impact OTHER
G4.1	**emissions inventory.** Prepare and publish an annual emissions inventory that tracks greenhouse gas emissions by jurisdiction and source category. Review and update emissions inventory methodology as necessary to address improvements to data or methodologies, improve consistency, incorporate changes to state or federal policies, or report on issues of local interest.		
G4.2	**performance measures.** Develop performance measures to determine progress toward greenhouse gas reduction targets and other regional goals. Regularly update and publicize for community to track their progress.		
G4.3	**other emission sources and sinks.** Expand sources and sectors in future emissions inventories to inform future regulatory policy to reduce greenhouse has emissions. Connected to actions T1.5 and W6.1, and sequestration actions.		
G4.4	**vulnerable populations.** Develop a data and monitoring mechanism that is specific to marginalized groups and their needs related to climate change and climate reality (e.g., access to transportation, access to air conditioning, proximity to cooling centers) and develop a plan to address these vulnerabilities with solutions that help reduce greenhouse gas emissions.		
G4.6	**social cost of carbon.** Develop and adopt policies that require the use of a "social cost of carbon measure" in zoning, development, construction, and transportation decisions.		

Strategy G5. Advocate for climate-mitigating state and federal policy.

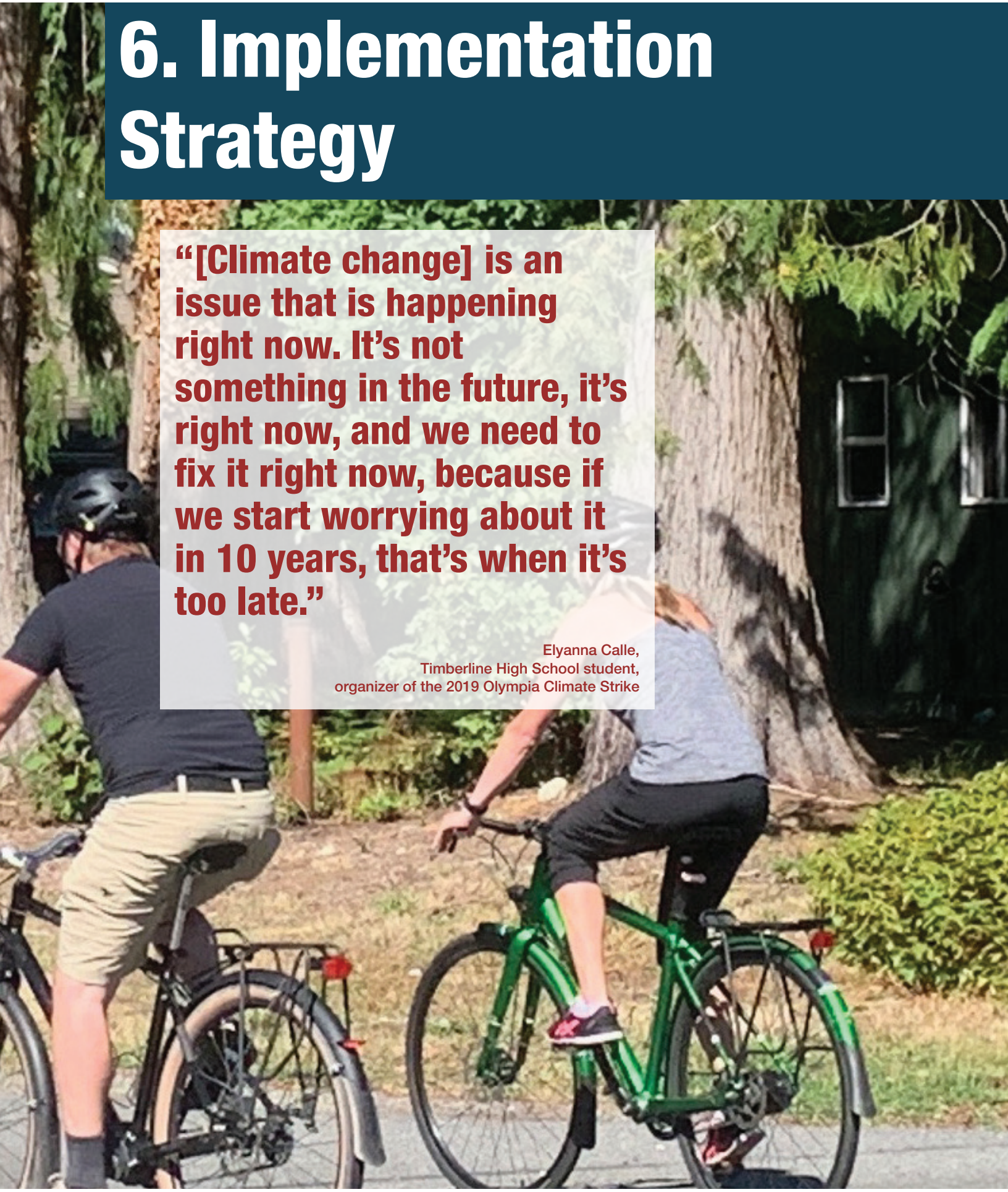
While this planning process has helped answer the question of what local governments can do to address sources of climate change, it also has shed light on the limits of local authority when it comes to triggering large-scale transitions in our energy and transportation systems. The partnership among four jurisdictions that has powered this process is one of our greatest tools. By working together to advocate for strong state and federal climate action, we can amplify our influence on policy debates to come.

ASSESSED ACTIONS		Impact GHG	Impact OTHER
G5.5	**legislative agenda.** Prioritize climate mitigation policy in the municipalities' legislative agenda each year. Instruct municipal lobbyists to track and report on climate bills, and advocate for those bills that will help reduce local emissions. Work with other jurisdictions across the state to add this to the priorities for the Association of Washington Cities and Washington State Association of Counties.		

Potential Impact:

City of Lacey's Judd Street Bike Corridor.
Source: City of Lacey

6. Implementation Strategy



"[Climate change] is an issue that is happening right now. It's not something in the future, it's right now, and we need to fix it right now, because if we start worrying about it in 10 years, that's when it's too late."

Elyanna Calle,
Timberline High School student,
organizer of the 2019 Olympia Climate Strike

Table 2. Framework for Climate Mitigation Action

Achieving the vision and goals laid out for this plan will require bold leadership and, just as important, a sustained commitment to realizing the change necessary. It will require the attention, buy-in, and creativity of people in many different areas of our community and economy.

The *Thurston Climate Mitigation Plan* sets a framework for addressing the causes of climate change through strategies and actions that will reduce local sources of greenhouse gas emissions (see Figure 9). It also lays out the steps each of the four partner jurisdictions (Thurston County and the cities of Lacey, Olympia, and Tumwater) will need to take in the near term to get on track to achieving the 2030 and 2050 emission reduction targets.

This implementation strategy draws from the list of communitywide actions described in Chapter 5—*Strategies & Actions*, the results of the scenario analysis described in Chapter 4—*Plan Development*, as well as from perspectives provided by community members throughout the planning process.

6.1 Implementation Approaches

The broad strategies identified in Chapter 5—*Strategies & Actions* form the basis for implementation of the plan and the realization of the plan's vision.

The suite of actions identified through the planning process cover a wide range of solutions. By including them in this plan, the intent is not to lock local jurisdictions into specific assignments, but to outline tangible, practical next steps worthy of further attention. As the plan is carried out over the next 30 years, it is expected that actions will change (be accomplished, found not effective, or new ones added), while the strategies will remain mostly unchanged. Prior to implementation, each action will require additional work to understand their feasibility, costs, and impacts.

To start that process, staff from the four partner jurisdictions grouped actions into four general approaches: legislative agenda, regionally coordinated, individual jurisdictions, and supporting partner.

Legislative Agenda

Over the course of the planning effort, it became clear that one of the most powerful actions available to local governments would be to use their shared influence to advocate for changes at the state level.

A number of assessed actions require steps by the state legislature to create additional authority or make other changes to state law before action can occur at the local level. For other actions, jurisdictions believe state direction would provide a more effective or efficient approach. Under the legislative agenda, partner jurisdictions commit to working together to advocate for changes to state law that advance our climate mitigation priorities, such as:

- Establish additional financial incentives for property owners to invest in energy efficiency upgrades, such as authority to provide local tax credits or exemptions. Such incentives should address all types of buildings, but in particular target improvements to rental housing units. Local jurisdictions can track properties receiving such incentives, once they are authorized.
- Set requirements that ensure standard building energy efficiency information is provided to prospective tenants and consumers during real estate transactions, at times of sale, lease, or rent.
- Build on changes in the state Building and Energy code to support an even faster shift toward efficient and electric appliances in new construction, and greater efficiency in smaller commercial buildings (less than 50,000 square feet).

Regional Coordination

One of the great strengths our region brings to this challenge is our history of collaborative partnership. A number of actions identified in the plan would build on existing regional programs. Others would require new partnerships to develop a shared approach. Partner jurisdictions commit to work together in the following areas:

- Buildings and permitting
  - Develop standard approaches to incentivize and track green building practices across our region.
  - Develop standard approaches to consider climate impacts in permitting decisions.
  - Develop model regional standards or codes for priority climate actions, including for green public buildings, land use incentives, solar and electric vehicle-ready buildings.
- Transportation planning
  - Support, and in some cases expand, existing programs, including the Commute Trip Reduction Program, Thurston Here-To-There, and Safe and Active Walks to School.

- Consider, and where appropriate, address climate mitigation goals, targets, and actions in upcoming regional projects, such as the Regional Trails Plan and Capitol Campus Telework project.
- Prioritize funding for transportation projects that advance climate mitigation priorities, including through congestion mitigation and supporting walk/bike infrastructure.

- **Food waste.** Support and expand Thurston County's waste less food program.

- **Carbon sequestration.** Develop a regional program to track and certify carbon sequestration, including through afforestation, prairie preservation and enhancement, and regenerative agriculture.

- **Monitoring and assessment.**
  - Monitor our region's progress on climate action, by continuing to track regional greenhouse gas emissions and progress toward climate mitigation targets. Incorporate additional information.
  - Regularly report on performance so our strategy can adapt as our understanding evolves.

- **Ongoing climate coordination and public engagement**
  - Support ongoing regional coordination of climate action, through the continuation of the current Steering Committee or other governance body.
  - Keep the community informed about climate mitigation activities and provide additional opportunities for public involvement in climate mitigation actions.
  - Seek and support funding for climate mitigation priorities.

Individual Jurisdictions

Many of the actions identified in the plan can be taken on by individual jurisdictions. Partner jurisdictions commit to addressing the following areas through their various departments and work programs:

- **Municipal Operations.**
  - Look for ways to reduce emissions from government operations, including by increasing energy efficiency of lighting and water systems, installing solar or other renewables on public buildings, and transitioning to electric fleets. Consider and prioritize climate impacts in capital improvement decisions.

Intercity Transit is a key partner for reducing emissions from transportation. In addition to its fixed bus routes, Intercity Transit operates a vanpool program and provides outreach programs to reduce car trips by commuters and students. *Source: Intercity Transit*

    - Increase use of remote meetings, teleworking, and flexible work schedules to minimize emissions from employee travel.

- Code and Regulatory Changes. Review and update zoning and development codes and other regulatory programs to address priority climate actions, including solar-ready development, dense neighborhoods, electric vehicle infrastructure, and tree canopy preservation.

- Staff development. Dedicate resources to develop staff expertise to provide technical assistance to support climate mitigation actions like green building permitting.

Supporting Partner

Some actions identified in the plan would be best led by a different entity in the community, rather than a local government. Partner jurisdictions commit to support climate mitigation actions led by other organizations that include, but are not limited to:

- Intercity Transit
- Thurston Conservation District
- LOTT Clean Water Alliance
- Thurston Economic Development Council
- Puget Sound Energy

In addition, some actions assessed in the plan may be best achieved through public-private partnerships or other types of sponsorship or collaboration.

6.2 Levers and Mechanisms for Implementation

Local governments use different levers to change underlying conditions in a system and motivate individuals and organizations to change behaviors and investment to support climate actions. As shown in Figure 13, the strategies and actions included in the *Thurston Climate Mitigation Plan* employ a variety of levers. Often, local governments use different levers in sequence to achieve a strategy as a progression from voluntary action, to price signals and investments, and only turn to mandates as a last resort if other levers fail to achieve the desired outcome.

The project partners identified likely mechanisms to achieve each action, including through an existing program, new program, capital improvement, regulatory or code change, or support of a third-party partner. The type of mechanism helps determine the type of costs for an action (such as staff, one-time, or operating costs) as well as the potential timing. Details on the primary mechanism for each action are included in Appendix 10.6.

What We Heard...

""If you're going to recommend actions, there need to be financial resources to help implement actions to keep housing affordable for low-income people, especially.."

Interview with Trudy Soucoup, Homes First

"Give very thoughtful consideration of impacts to rural areas. We have low income people, higher vulnerability people with limited access and resources. People here have to drive long distances. The bus doesn't get you where you need to go."

Interview with Amy Loudermilk, Confederated Tribes of the Chehalis Reservation

LEVER: Voluntary Action

DEFINITION: Providing information, challenges, learning opportunities, technical assistance, examples, and other support can motivate people to try new behaviors.

PRIMARY MECHANISM: New or Existing Program / Support of a third-party

Example Actions from Thurston Climate Mitigation Plan			
Buildings & Energy	**Transportation & Land Use**	**Water & Waste**	**Agriculture & Forests**
B3.1 energy education B3.4 exemplary buildings B3.5 green building tracking B4.9 permit counter technical assistance B5.5 SolSmart B6.1 natural gas to electric conversions	T1.11 land use efficiency T2.4 vehicle efficiency outreach T2.17 teleworking T3.11 EV education T4.10 rider education/benefits T4.15 promote transit benefits T5.4 school drop-off alternative modes T5.11 mode shift targets	W4.4 waste audits W4.10 waste less food program W6.6 supply chain	A1.2 nutrient management A2.1 regenerative agriculture

LEVER: Price Signals

DEFINITION: Changing the economic impacts—the cost of consumption and other behaviors and the return on investment – through subsidies and incentives can motivate new behaviors and investment.

PRIMARY MECHANISM: New or Existing Program; Regulatory/code change

Example Actions from Thurston Climate Mitigation Plan			
Buildings & Energy	**Transportation & Land Use**	**Water & Waste**	**Agriculture & Forests**
B1.4 rental housing energy efficiency incentives B1.5 property tax credit B2.6 cool roofs B4.5 permitting incentives B4.6 energy efficiency tax exemptions B4.7 land use incentives B5.10 group purchasing	T3.2 free EV parking T3.14 EV mass purchase discounts T3.15 EV purchase incentives		A5.1 reforestation/ afforestation

LEVER: Public Investments

DEFINITION: Investing government funds, short- and long-term, can create conditions that stimulate others to behave in new ways, and also significantly change the government's own carbon footprint.

PRIMARY MECHANISM: Capital Improvement

Example Actions from Thurston Climate Mitigation Plan			
Buildings & Energy	**Transportation & Land Use**	**Water & Waste**	**Agriculture & Forests**
B2.3 LED lighting B4.4 green public buildings B5.3 public building solar	T1.4 20-minute neighborhoods T2.2 transportation network efficiency T5.13 telecommuting infrastructure T3.10 convert to EV fleets T4.1 increase transit T4.3 transit connections T4.4 fareless system T5.1 walk/bike infrastructure T5.2 barriers to active transportation	W1.1 municipal energy efficiency W2.2 water audits W3.1 nitrous oxide capture	

LEVER: Mandating Change

DEFINITION: Requiring behavior and enforcing the requirements can result in widespread compliance.

PRIMARY MECHANISM: Regulatory/Code Change

Example Actions from Thurston Climate Mitigation Plan			
Buildings & Energy	**Transportation & Land Use**	**Water & Waste**	**Agriculture & Forests**
B1.1 residential energy performance ratings B1.2 residential energy audits B1.6 rental housing energy efficiency baseline B2.1 commercial energy benchmarking B2.8 performance standard B4.11 grid-connected appliances B4.12 multifamily metering B5.8 solar-ready development code B6.2 electric appliances in new construction B6.4 natural gas transition	T1.1 coordinated planning-future infill T1.2 middle density housing T1.3 Eco districts T1.9 ADUs T3.1 EV parking new construction T3.5 EV-ready building code T3.7 EV integration		A6.5 municipal canopy A6.9 tree canopy preservation

Figure 13. Levers for Climate Action. Adapted from the Carbon Neutral Cities Alliance.

6.3 Funding the *Thurston Climate Mitigation Plan*

Funding the work necessary to address climate change and meet the adopted emission reduction targets will require leadership and creativity. This is especially true as local governments and partner agencies face lower revenues and difficult budget decisions as a result of the COVID-19 pandemic.

Many climate strategies and actions have the potential to create economic benefits for the Thurston region by supporting new industries and job growth. They may also lead to savings for individuals or businesses, such as through reduced transportation or energy costs. Climate mitigation actions also increase the region's resilience and ability to both avoid and bounce back from natural disasters.

Detailed cost estimates for specific actions—and for regional climate mitigation as a whole—will depend on how jurisdictions decide to proceed in implementation. There are many decisions about staffing, program structure, and outside partnerships that may affect the total price tag for an action. Such detail was beyond the scope of this planning effort. Costs and benefits for a subset of priority actions will be considered in a supplemental analysis that will be completed in mid-2021.

The consultant team developed high-level estimates of potential direct costs to the four partner jurisdictions to complete an action or get it substantially underway (ex. staff or other resources). The estimates do not include broader costs to community members, outside agencies, private businesses, or other potential partners.

The communitywide implementation strategy (Appendix 10.6) also includes a breakdown of potential sources of funding for climate mitigation actions. While these are good starting places, City and County budgets, sources of funding, and estimated costs may change substantially over the life of this plan.

6.4 Implementation Timeline

The *Thurston Climate Mitigation Plan* identifies strategies and actions for reducing contributions to climate change over the next thirty years, based on our understanding today. Some of these actions will need to begin in the near term to realize impacts within that timeframe, others can have immediate impacts, and others are dependent on some enabling action. Some actions are one-time changes while others will require an ongoing effort to keep running. Not all actions assessed for the plan will be implemented in Year 1; some are sequential. For example, actions focused on fuel switching and encouraging adoption of electric vehicles are likely to be timed to kick in when our electrical grid uses cleaner sources of energy than it does currently.

Additional details on the communitywide implementation strategy, including leads, partners, timeframe and potential funding sources, is available in Appendix 10.6.

What Can YOU DO to Take Climate Action?

Dramatic and lasting change comes from countless small shifts throughout society. Governments, business, families, and individuals all have a role to play. While this plan focuses on actions Thurston County, and the cities of Lacey, Olympia, and Tumwater can take to reduce local contributions to climate change, there are many things you can do to support that goal. Here are some ways to get started:

- **Start a conversation.** National surveys have shown that while most Americans believe global warming is happening and are worried about its impacts, the majority say they rarely or never hear it discussed among their friends and family. Researchers call this the "climate change spiral of silence" —people concerned about climate change avoid talking about their concerns because they don't hear other people talking about it.[12] That silence can leave us feeling isolated and overwhelmed. You don't need to be an expert on the science to let others know your hopes, fears, experiences, and actions when it comes to climate change—you might find out you share more common ground than you thought.

- **Rethink your ride.** Try increasing the number of trips you make by transit, carpooling, walking, or biking. Check out your options on Thurston Here to There. Support your city in development that creates high density and mixed-use areas to reduce the need for driving. Buying a new car? Test drive an electric vehicle to see if it makes sense for you.

- **Reduce energy use.** Take an online home energy assessment from Puget Sound Energy, and consider upgrading to higher efficiency appliances and fixtures. If you rely on natural gas for heat, consider switching to a ductless heat pump or other electric heat source. Investigate options for using more renewable energy at your home, place of worship, or business.

- **Buy smart, buy local.** Buying smart and buying less can lower your greenhouse gas footprint. Measure the food that you throw away and take the Waste Less Food Challenge. Try a meat-free meal once a week. Choose items with less packaging and buy local to reduce emissions from shipping and packaging.

- **Advocate for change.** Tell your elected officials that addressing climate change is important to you, so they know to prioritize it when making work plans and budget decisions. If you have found it difficult to take a climate action, let them know what would make it easier or less expensive. Get together with your friends, neighbors, co-workers, or a local community organization to talk about what to do next.

[12] Maibach, E.et al, 2016.

The Reserve - Senior Housing Development in the City of Lacey.
Source: City of Lacey

7. Next Steps

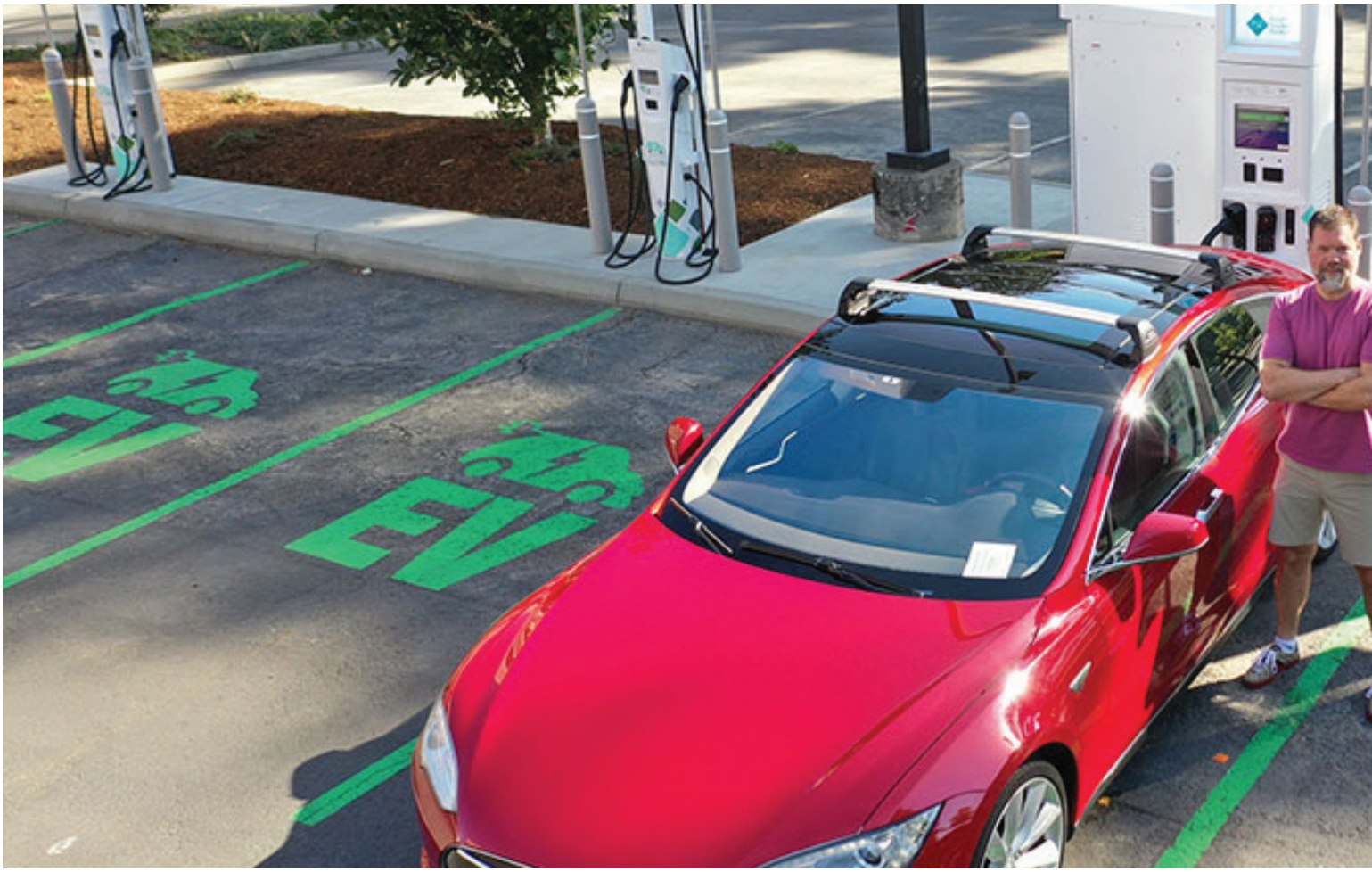
"The urgency to reduce emissions and prepare for global warming's inevitable impacts has never been greater. The window of time for limiting warming to 1.5°C and 2°C continues to narrow. At the same time, additional emissions commit us to increasingly severe global and local impacts."

- Climate Impacts Group

Plans are only as good the work they spark—the *Thurston Climate Mitigation Plan* is no exception. With the close of this planning process, focus can shift to carrying out the strategies and actions identified in the plan. Knowing the threat climate change poses to current and future generations of the Thurston region's residents, there is no time to lose. While the breadth of work and extent of change needed can feel daunting, this challenge presents many opportunities to build a future for our community that is innovative, resilient, and more equitable. The good news is that our region has incredible resources and spirit to make that change happen.

Following a public review period, this plan will be finalized and put forward for acceptance by the four partner jurisdictions. Supporting pieces of this plan will include:

- A monitoring framework to gauge accountability and track progress toward achieving the regional greenhouse gas emission targets. A description of the monitoring framework is included in Appendix 10.7.
- A resolution for accepting of the *Thurston Climate Mitigation Plan* to be considered by the four partner jurisdictions of Thurston County and the cities of Lacey, Olympia, and Tumwater. Appendix 10.9



In 2020, Puget Sound Energy installed its first public electric vehicle charging station at the Hub at Lacey. A network of fast, convenient EV charging stations will help support a transition to greener transportation in the region. *Source: Puget Sound Energy*

- An interlocal agreement that outlines commitments among the four partner jurisdictions for implementation of the *Thurston Climate Mitigation Plan* and continued collaboration on regional climate action. Appendix 10.10
- A supplementary assessment of the costs and benefits of priority actions, and ways to address social equity in implementation of the *Thurston Climate Mitigation Plan*. This assessment has been awarded funding through a grant from the Washington State Department of Commerce and is scheduled to be completed by mid-2021.

While the focus of this planning process has been on what Thurston County, and the cities of Lacey, Olympia, and Tumwater can do to reduce greenhouse gas emissions and mitigate impacts from climate change, the project partners encourage all community members—individuals, neighborhoods, businesses, service organizations, and agencies—to use the information gathered here to inform your own plans and commitments to address climate change. Many adaptation and mitigation actions—large and small—are needed to help our region and planet remain resilient in the face of climate change. To succeed, each of us will need to do our part, so let's get to work.

What We Heard...

"While local governments are the primary implementor, secondary ones will be builders, and you'll need them to translate those actions on the ground. Make sure to liaise with the building community to understand best practices, so when it comes time to put ideas into code, things will go smoothly."

Interview with Erin Hall, Olympia Master Builders

"Identify credible performance measures that are meaningful to the public and policy makers that can show if we are making progress."

Response to community questionnaire

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8. Glossary and Acronyms

8.1 Glossary

Action—a specific service, program, incentive, regulation or other mechanism that local governments or other partners uses to implement a strategy.

Equity—a measure of how costs and benefits of action will be distributed fairly across communities or whether actions will avoid disproportionately affecting the most vulnerable in our communities. A 2014 report by the Urban Sustainability Directors Network defined equity in the following way: "Equity in sustainability incorporates procedures, the distribution of benefits and burdens, structural accountability, and generational impact. This includes:

- **Procedural Equity**—inclusive, accessible, authentic engagement and representation in processes to develop or implement sustainability programs and policies.
- **Distributional Equity**—sustainability programs and policies result in fair distributions of benefits and burdens across all segments of a community, prioritizing those with highest need.
- **Structural Equity**—sustainability decision-makers institutionalize accountability; decisions are made with a recognition of the historical, cultural, and institutional dynamics and structures that have routinely advantaged privileged groups in society and resulted in chronic, cumulative disadvantage for subordinated groups.
- **Transgenerational Equity**—sustainability decisions consider generational impacts and don't result in unfair burdens on future generations."

Sector—a grouping of sources of greenhouse gas emissions (such as, Buildings and energy), and related strategies and actions that address those sources.

Sequestration or Carbon Sequestration—a natural or artificial process by which carbon dioxide is removed from the atmosphere and held in sold or liquid form. Atmospheric carbon dioxide may be taken up by trees, grasses, and other plants through photosynthesis and stored as carbon in biomass (trunks, branches, foliage, and roots) and soils.

Strategy—a method or general approach to achieve a desired goal; in this case, a reduction in greenhouse gas emissions from a particular sector.

8.2 Acronyms

ADU—Accessory Dwelling Unit

CAFE—Corporate Average Fuel Economy

CARB—California Air Resources Board

CETA—Clean Energy Transformation Act

CO_2—Carbon dioxide

COPD—Chronic obstructive pulmonary disease

CR2—Carbon Reduction and Resiliency Plan (City of Lacey)

EV—Electric Vehicle

ICLEI—International Council of Local Environmental Initiatives

IPCC—United Nations Intergovernmental Panel on Climate Change

LPG—Liquid petroleum gas

CH_2—Methane

$MTCO_2e$—Metric tons of carbon dioxide (CO2) equivalent

N_2O—Nitrous oxide

RNG—Renewable natural gas

STEDI—South Thurston Economic Development Initiative

TCAT—Thurston Climate Action Team

TRPC—Thurston Regional Planning Council

VMT—Vehicle miles traveled

ZEV—Zero emission vehicle

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10. Appendices

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