



EWEB Climate Guidebook

Release v1.0 | April 2023



The McKenzie River. Adam Spencer, EWEB

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ACKNOWLEDGEMENTS

EWEB believes in a triple bottom line approach to sustainability that includes the economy, social impacts and equity, and the environment. EWEB's sustainability journey has been long, and it is expected to continue for years to come, building on a culture of continuous improvement as we learn and find new ways to apply that learning. The Climate Guidebook is an output of EWEB's sustainability efforts, focused on the ways the work of the utility intersects with climate issues.

Staff from many departments across the utility have contributed to the creation of this document and will be involved in providing future updates. Sincere thanks go out to all EWEB staff for their engagement in this process. Thanks also to YOU, the reader, for making the Climate Guidebook and its goal of providing useful information to a diverse set of audiences, into a reality.

For questions about the Climate Guidebook, to request new content, or if you have suggestions for future changes, please contact:

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A MESSAGE FROM EWEB'S GENERAL MANAGER, FRANK LAWSON

EWEB recognizes that climate change presents significant challenges and opportunities, and it is changing our physical, political, and social landscapes. Already, we're seeing more frequent and extreme heat waves, prolonged droughts, reduced snowpack, and more frequent and severe fires. This matches projections for Lane County, [according to the Oregon Climate Change Institute](#). Legislation, regulations, and customer expectations are also being modified in response to climate change.

To adapt to this changing landscape, the energy sector must take steps to reduce emissions of planet-warming greenhouse gases (GHGs). At EWEB, we believe that taking these actions is imperative.

In January 2022, EWEB's Board of Commissioners revised Climate Change Policy [SD 15](#), defining our commitment to reducing emissions associated with both the energy we provide and our operations. To guide our progress and share it with the community, we are creating this Climate Guidebook. Annually, we will update the Guidebook with new information about our initiatives and our progress.

In Oregon, electricity is [the second largest source](#) of greenhouse gas emissions, after transportation. And as electricity needs grow because of the electrification of transportation, the actions of electric utilities such as EWEB will only become more important.

Our commitment to addressing climate change is built on five pillars: climate policy, power supply and transmission, customer decarbonization, EWEB-owned asset resiliency and internal operations. These five pillars each make up a chapter in the Climate Guidebook.

- **Climate policy:** EWEB will participate in local, state, and regional efforts to encourage, develop, and enact measures to minimize and mitigate greenhouse gas emissions.
- **Power supply and transmission:** EWEB has committed to sourcing a low-carbon electric power portfolio that targets over 95% of annual energy from carbon-free resources by 2030, on a planning basis. Our energy is already approximately 90% carbon free.
- **Customer decarbonization:** EWEB has pledged to assist customers with achieving their GHG emission reduction goals. We do this by helping customers with energy efficiency, alternative fuels, electric and water conservation, and many other programs.
- **EWEB-owned asset resiliency:** EWEB will seek to minimize the effects of climate change, such as more severe wildfires and droughts, that could impact EWEB's water and electric supply and infrastructure.
- **Internal operations:** EWEB has promised to minimize and mitigate GHG emissions from EWEB's operations by achieving carbon neutrality by 2050. We will meet other intermediate benchmarks along the way.

The guidebook will serve as a comprehensive reference document for EWEB staff as well as community stakeholders who care about EWEB's climate programs and progress. By compiling all relevant information about EWEB's climate work and impacts in a document that is easy to access, we can raise community awareness about EWEB's progress and role as an environmental steward.

Thank you for browsing this guidebook. We look forward to partnering with our community to fulfill our mission and values.



Frank Lawson, CEO/General Manager



EXECUTIVE SUMMARY

INTRODUCTION TO THE CLIMATE GUIDEBOOK

EWEB's Climate Guidebook is a reference document that articulates how EWEB is implementing its Board-approved Climate Change Policy (SD15) and how EWEB's work intersects with climate issues. It is structured based on the five areas outlined in SD15, with a chapter for each:

1. Climate Policy
2. Power Supply & Transmission
3. Customer Decarbonization
4. Climate Impacts on EWEB – Resiliency & Adaptation
5. EWEB's Internal Operations.

The Guidebook seeks to serve the needs of a variety of internal audiences (EWEB staff) and external audiences (customer-owners and community members). It is a “living document” that will be updated periodically. Annually, readers can expect significant updates in April, in celebration of Earth Day.

EWEB staff have developed a public outreach plan to solicit and document public feedback and refine future content within the Guidebook to meet community needs.

The sections below contain the specific language from each of the five areas outlined in SD15, as well as their importance to the Guidebook and how they will be addressed in version 1.0 and future versions.



Restoration work on the McKenzie River. Courtesy of Brent Ross, McKenzie River Trust

CLIMATE POLICY

Strategic Importance & Connections with Other Guidebook Sections

Policy actions at the federal, state, and local levels influence EWEB's work on climate change and progress in meeting climate goals. Those policies connect to all the other areas of SD15 including power supply and transmission, customer decarbonization, climate impacts on EWEB, and even EWEB's internal operations.

EWEB Climate Change Policy SD15 – Climate Policy Section

The Board authorizes, delegates, and directs the General Manager to participate in local, state, and regional efforts to encourage, develop and enact measures to minimize and/or mitigate GHG emissions that contribute to climate change. Consistent with Board Policy (GP13), prior to legislative sessions the Board develops and guides EWEB's positions relative to legislation, including those related to climate and environmental policy supporting this directive.

Recent policies passed in Oregon and in neighboring states (especially in Washington and California) impact the types, costs, and quantities of available power supplies within regional power markets, as well as how we must account for power purchases to track progress towards policy goals. Regulatory and voluntary initiatives aimed at improving regional power adequacy/resiliency are also changing how Western power markets operate.

The Bipartisan Infrastructure Law (BIL) (sometimes known as the Infrastructure and Investment in Jobs Act, or the IIJA) and the Inflation Reduction Act (IRA), as well as state incentive programs, are offering significant new funding sources for energy efficiency, electrification, new technology solutions, and much more. These relate to the programs EWEB offers our customers and those that EWEB can take advantage of, to decarbonize our own operations. Many of these programs also seek to leverage opportunities to improve climate adaptation and climate resiliency while simultaneously addressing environmental justice issues in our communities.

Content currently included in v1.0:

- Policy summaries and links for climate initiatives at the federal, regional, state, and local levels
 - Global/Federal: The Paris Accord, BIL/IIJA, IRA
 - Regional: Western Energy Imbalance Market, Western Climate Initiative (WCI), Regional Greenhouse Gas Initiative (RGGI)
 - California: AB-32 Cap-and-trade; Low Carbon Fuels Standard; SB-100 100 Percent Clean Energy Act; Tailpipe Emissions Standards; California Independent System Operator (CAISO) and the Western Energy Imbalance Market
 - Washington: I 937 Energy Independence Act, Clean Energy Transformation Act (CETA),
 - Oregon: State GHG reduction goals; Clean Energy Standard; Executive Order 20-04; Clean Fuels Program; Clean Electricity and Coal Transition Plan; Renewable Portfolio Standard; Emissions Performance Standard
 - Eugene: Climate Recovery Ordinance; CAP 2.0; Ban on fossil fuel infrastructure in new low-rise residential construction.
- Principles to guide EWEB investment of staff time and financial resources:
 - Carbon Policy & GHG Reduction Principles
 - Distributed Generation Principles
 - Green Hydrogen Principles

Content planned for future Guidebook Versions:

- Additional details about federal funding opportunities under the BIL/IIJA and IRA
- Additional principles to guide EWEB investment of staff time and financial resources:
 - Rate Design Principles, and other topics to be determined

POWER SUPPLY & TRANSMISSION

Strategic Importance & Connections with Other Guidebook Sections

EWEB is unique in Oregon as a public utility that both owns generation resources and relies on the Bonneville Power Administration (BPA) for a share of the federal power system. EWEB is also an active participant in the regional energy market.

EWEB’s long-term power supply decisions must be made within the context of state and regional climate policy and changing regulations, rising energy demands via customer decarbonization / electrification efforts, and the physical realities of a changing climate on temperatures and hydro conditions. Additionally, EWEB must live our values and maintain a focus on affordability.

The climate benefits of electrification depend on both the cost and the carbon content of electric power. Keeping rates low is climate action. If the shift to low-carbon power supplies causes a material increase in electric rates, customers will feel less incentive to electrify, and the overall cost burden on average customers will increase.

Since power purchases represent the largest share of each customer dollar EWEB receives, this is especially important when thinking about how we source our power. Additionally, any carbon reduction benefit of electrification is directly related to the carbon emissions associated with generating electricity. EWEB’s Integrated Resource Plan (IRP) contains a requirement to meet the SD15 goal of getting to 95% carbon-free resources *on a planning basis*. Actual annual emissions will be influenced by real customer demand (driven by local weather patterns and customer behavior) and EWEB’s changing need to rely on market purchases to meet that demand.

Content currently included in v1.0:

- EWEB’s 2020 and 2021 Electrification Studies showing expected load growth through 2040
- EWEB’s 2022 IRP Initial Public Draft

Content planned for future Guidebook Versions:

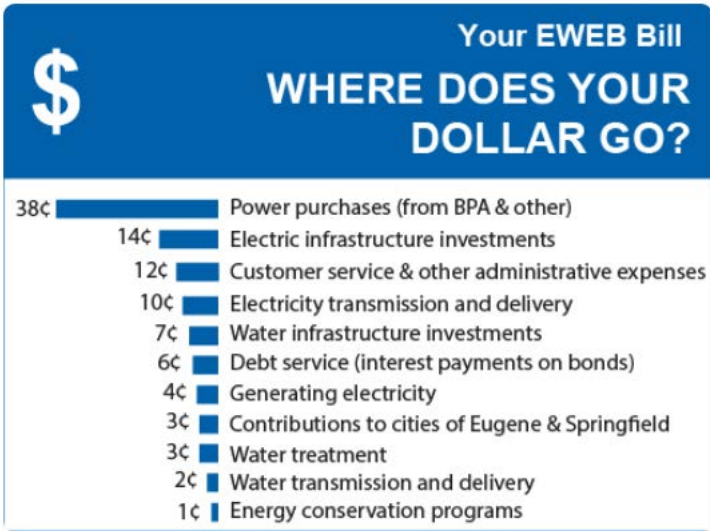
- Public feedback from community education and outreach on 2022 IRP Initial Public Draft
- 2022 IRP Sensitivity Analysis Results
- 2024 IRP Results
- 2026 IRP Results

EWEB Climate Change Policy SD15 – Power Supply & Transmission Section

*The Board is committed to supporting a low-carbon electric power portfolio that maintains, **on a planning basis, over 90% of annual energy from carbon-free resources and targets over 95% of annual energy from carbon-free resources by 2030 to the extent possible and practical without distinct adverse impacts to customer-owners.***

Using the Integrated Resource Plan (IRP) process including final adoption by resolution (GP7), the Board will work with the General Manager to establish the long-term (20-year) principles, priorities, approaches, definitions (including carbon-free, carbon intensity), measurements, and goals for the electric generation portfolio, demand response, conservation and energy efficiency, and customer impact limitations (including but not limited to reliability, cost, and equity) supporting this directive.

Figure 1: Your EWEB Bill - Where Does Your Dollar Go? (2023)



CUSTOMER DECARBONIZATION

Strategic Importance & Connections with Other Guidebook Sections

Since 2011, EWEB has worked to offset load growth (community electricity demand) with investments in conservation and energy efficiency. Current circumstances require a deeper look at how EWEB will move forward with initiatives to support community and customer decarbonization goals. New drivers are changing both the availability of low-carbon energy options and the timeline that such alternatives might be implemented within EWEB's customer base. These drivers include new regulations, new expectations from regulatory bodies (e.g., Securities and Exchange Commission) as well as end consumers, new ambitious corporate GHG reduction goals, federal and state incentive programs, and changing prices.

Connections also exist between EWEB's IRP power supply planning process and our approach to customer programs as EWEB seeks to define the relevant price thresholds for "cost-effective" energy efficiency and demand response programs. As society undergoes the largest energy transformation since the industrial revolution, there are additional opportunities to simultaneously understand and mitigate impacts to diverse community populations and increase our resilience to natural disasters.

Content currently included in v1.0:

- Information on existing Green Options customer programs and incentives that help customers decarbonize:
 - Live Green: Energy Conservation Programs for Residential Customers
 - Work Green: Energy Conservation for Commercial Customers (General Service)
 - Move Green: Programs to Support Electric Mobility
 - Lead Green: Advanced Solutions for Climate Innovators
- Appendix C – EWEB's Carbon Intensity Guidance for Customers
- Appendix D – EWEB's Role in City of Eugene's CAP2.0

Content planned for future Guidebook Versions:

- Board-approved Diversity, Equity, and Inclusion Policy
- Definitions and metrics regarding how EWEB programs reach and support diverse segments of our customer base
- EWEB Enterprise Solutions (EES) implementation: the technology and process transformation needed to enable EWEB's ability to deliver drinking water and electric services in a dynamic future
- Rate design analysis

EWEB Climate Change Policy SD15 – Customer Decarbonization Section

The Board further authorizes, delegates, and directs the General Manager to assist customers with achieving their GHG emission reduction goals through partnerships, technical assistance, resources, and programs that support, but are not limited to, energy efficiency, alternative fuels, electric and water conservation, electrification, and carbon offsets and sequestration.

Long-term conservation, energy efficiency, and demand-response goals are established as part of the IRP process. Additional program objectives, incentives and budgets will be established annually, as applicable, and/or through revisions to the strategic plan.

CLIMATE IMPACTS ON EWEB – RESILIENCY & ADAPTATION

Strategic Importance & Connections with Other Guidebook Sections

EWEB defines resiliency as the ability to reduce the magnitude and duration of disruptive events through risk mitigation, emergency response, and recovery strategies. More than 100 years ago, EWEB was created to enable local control of vital community resources in the face of a public health emergency when a typhoid epidemic struck Eugene in the early 1900s. Now, the Oregon Climate Change Research Institute (OCCRI) has identified a series of specific threats expected for Lane County based on best practices in climate modeling. These threats include heat waves, heavy rains, flooding, and wildfire. EWEB is planning for these threats in coordination with local partners through the Eugene-Springfield Natural Hazard Mitigation Plan, as well as through our Wildfire Mitigation Plan. EWEB also has a robust watershed protection program to reduce the threats to the McKenzie River, which is Eugene’s single source of drinking water, while simultaneously planning for a second drinking water source on the Willamette River.

These resiliency initiatives are influenced by climate policy and incentive programs and provide EWEB with an opportunity to adapt to climate change within our own operations and in ways that can provide us with knowledge that could support EWEB customers in their climate adaptation efforts as well.

Content currently included in v1.0:

- Expected physical changes for Lane County, via Oregon Climate Change Research Institute
- Eugene-Springfield Natural Hazard Mitigation Plan (NHMP) and other planning efforts at the State and County levels
- EWEB’s Wildfire Mitigation Plan
- EWEB’s Watershed Protection Program
- Second Source of Drinking Water Development on the Willamette River

Content planned for future Guidebook Versions:

- Board-approved Resiliency Policy
- Research results from EWEB’s Forest Carbon Lab investments in partnership with University of Oregon

EWEB Climate Change Policy SD15: Climate Impacts on EWEB – Resiliency & Adaptation Section

Consistent with resiliency initiatives included in EWEB’s approved strategic plan, the Board directs the General Manager to evaluate and enact measures, as necessary and appropriate, to prepare for and minimize the effects of climate change that could impact EWEB’s water and electric supply and infrastructure, damaging EWEB’s resiliency and reliability.

EWEB'S INTERNAL OPERATIONS

Strategic Importance & Connections with Other Guidebook Sections

EWEB has been tracking our internal GHG emissions annually since 2009, in accordance with industry best standards and the World Resources Institute Greenhouse Gas Protocol. EWEB's Climate Change Policy (SD15) set specific GHG reduction goals for EWEB's internal operations.

In 2020, EWEB not only met but exceeded its GHG reduction target of 25% reduction over 2010 baseline emissions, by achieving a 55% reduction in annual emissions. Some of this reduction can be attributed to the COVID-19 pandemic as some business travel in owned vehicles and some building energy use declined.

In 2021 and 2022, emissions rose slightly compared to the year prior, and EWEB achieved a 35% and 44% reduction in emissions over the 2010 baseline, respectively. EWEB is well on our way to meeting the ambitious goal of 50% reduction over baseline by 2030. Progress towards EWEB's internal GHG goals is calculated using a market-based approach to electricity emissions and using the EWEB-specific emissions factor as calculated by Oregon DEQ's GHG reporting program.

EWEB's goals align with goals set by the State of Oregon and the City of Eugene and EWEB seeks to be an active partner in these efforts to decarbonize our operations and our community. By developing a plan for carbon neutrality by 2050 and piloting various technologies in our operations, EWEB can gain the kind of firsthand knowledge that will be helpful as we support our customers in their decarbonization efforts. Additionally, since EWEB's internal electricity consumption makes the utility one of the largest electricity consumers in our community, we also have an opportunity to apply new rates, programs, policies to our own bills first – giving us insights from a customer perspective.

EWEB also seeks to stay aware of all relevant grant, tax, and incentive programs available from state and federal programs to maximize GHG reduction opportunities and simultaneously improve resilience and climate adaptation.

Content currently included in v1.0:

- Greenhouse gas emissions inventory for calendar years 2021 and 2022

Content planned for future Guidebook Versions:

- Internal Climate Action Plan and Roadmap to Carbon Neutrality by 2050

EWEB Climate Change Policy SD15: Internal Operations Section

The Board further authorizes, delegates, and directs the General Manager to continue efforts to minimize and/or mitigate GHG emissions from EWEB's operations that contribute to climate change. As initially established in 2010, EWEB adopted a goal to reduce the Scope 1 and 2 (direct GHG emissions and energy) greenhouse gas emissions associated with its operations and facility management activities.

Accordingly, and as formally established by this directive, EWEB plans to reduce our net Scope 1 and 2 GHG emissions from operations relative to 2010 levels by:

- ***25% by 2020,***
- ***50% by 2030,***
- ***Achieve carbon neutrality from our operations by 2050.***

1 INTRODUCTION

1.1 CLIMATE GUIDEBOOK PURPOSE, STRUCTURE AND RELEASE SCHEDULE

Welcome to EWEB's Climate Guidebook! The Climate Guidebook is a reference document to articulate how EWEB is addressing climate change throughout the utility and how EWEB's work intersects with climate issues generally. It is

EWEB Climate Guidebook Purpose

The Climate Guidebook is a reference document to articulate how EWEB is addressing climate change in accordance with EWEB's Board-approved Climate Change Policy (SD15). It also demonstrates how the work of the utility intersects with climate issues, broadly.

structured based on the five areas outlined in EWEB's Climate Change Policy (SD15) with a chapter for each area. See Appendix B, EWEB's Climate Change Policy SD15 for the full text of SD15. The Guidebook will provide a climate lens for the organization's goals, helping to make connections between EWEB's projects and initiatives and how they relate to climate change and SD15.

The Climate Guidebook is a living document and will be updated at regular intervals, to serve as a resource for internal and external stakeholders. It is not intended for cover-to-cover reading, but different sections will meet the needs of different audiences by providing guidance on EWEB's strategy, information on existing programs, education on current events, and tools to be used in ongoing work.

1.1.1 Background leading to the Development of the Climate Guidebook

EWEB's Board of Commissioners developed its Climate Change Policy (SD15) in 2007 with updates in 2018 and 2022. SD15 directs the General Manager to act on climate change in the following five areas: Power Generation, Climate Policy, EWEB Operations, Customer Decarbonization, and Impacts on EWEB. In this document, the order of the chapters was organized according to the scale of the impact of each category, with the areas with the largest impact first. Also in this document, the chapter related to what SD15 calls Power Generation has been broadened in its focus and renamed to Power Supply & Transmission. This change still reflects the intent from SD15 but expands beyond what power EWEB owns to reflect all decisions about EWEB's power supply and how it gets to EWEB customers via the transmission and distribution system.

In May 2022, EWEB hired our first Climate Policy Analyst & Advisor to provide strategic and technical insights and identify impacts to EWEB's business lines and strategic and operational plans. The development of the Climate Guidebook has come out of this work and engages with staff throughout the organization.

1.1.2 Timing for Future Updates

The first release, Version 1.0, was discussed at the March 2023 regular Board meeting and will be limited in scope, with additional content planned for future versions. Minor releases can occur throughout a calendar year. The first minor update will be indicated as version 1.1, second as 1.2, etc. Annually, readers can expect significant updates in April, in advance of Earth Day. These more significant updates will be indicated as version 2.0, 3.0, and so on.

1.2 WHO SHOULD USE THIS DOCUMENT

EWEB's Climate Guidebook is designed for a wide array of internal and external audiences. This document is not designed for cover-to-cover reading. Rather, it is set up to be more of an encyclopedia style, where readers can

look up key information provided in various sections. Some content is more general in nature. Other content is highly technical and designed for analysts or practitioners accustomed to using similar information or data.

If you have questions or suggestions about the content and/or the way it is presented, please see the Acknowledgements section for how to reach EWEB staff and provide your feedback about the Climate Guidebook.

1.3 PUBLIC OUTREACH PLAN

Our public outreach efforts for the Climate Guidebook will occur in two phases.

1.3.1 Phase 1: January 2023 – March 2024

Goals:

- Solicit feedback regarding Guidebook content and structure from key stakeholders who will use the Guidebook regularly to ensure usefulness of final deliverables.
- Teach key stakeholders, subject matter experts, and technical users how to navigate the Guidebook and use the content to support their work.

Audiences:

- EWEB Board of Commissioners
- EWEB employees, especially those directly involved in accounting for EWEB's own carbon emissions and those who assist EWEB customers in calculating their own emissions
- Key stakeholders, including representatives of local agencies such as the City of Eugene, who are responsible for reducing community-wide carbon emissions
- Local environmental groups who have an interest in helping our community reduce carbon emissions

Methods:

1. Build a public website on eweb.org containing the Guidebook document and supporting materials
2. Conduct one-on-one and small group meetings with identified audiences to share initial content and future planned content, educate key stakeholders on how existing content can support their work, and solicit direct feedback
3. Present updates on the Guidebook to EWEB's Board of Commissioners and staff groups
4. Publish Employee News stories sharing relevant updates

1.3.2 Phase 2: April 2024 – December 2024

Goals:

- Increase customer trust and confidence by demonstrating shared values and priorities relating to environment, public health, and affordability
- Raise public awareness of EWEB's efforts to reduce greenhouse gases contributing to climate change and protect natural resources
- Establish EWEB as a community and industry leader on carbon/climate action

Audiences:

- All customers
- Phase 1 audiences

Methods:

A robust communications campaign utilizing all EWEB's available communications channels, emphasizing EWEB's climate commitments and describing progress towards reducing carbon emissions including successes and challenges. Specific tactics to include:

- Media release(s) and interviews about the Guidebook publication, as well as progress on specific goals
- A social media campaign highlighting specific actions EWEB has taken to reduce carbon emissions
- Content in EWEB's email newsletter about progress on climate goals
- A bill insert (mailed to all residential and business customers) detailing EWEB's climate actions and how they can get involved and use the Guidebook
- Community events and presentations when possible and when invited, including neighborhood meetings, environmental group meetings, and the Chamber of Commerce

2 CLIMATE POLICY

2.1 CLIMATE POLICY INTRODUCTION AND POLICY LANGUAGE FROM SD15

Climate policy passed at the federal, regional, state, and local levels provides the setting for our work on climate change. Much is evolving at these various levels. EWEB actively engages in this area to meet and go beyond our compliance obligations, educate policymakers about the intricacies of the electric power sector, and partner with key stakeholders to build the future that we want to see based on the values of our customer-owners.

EWEB Climate Change Policy SD15 – Climate Policy Section

The Board authorizes, delegates, and directs the General Manager to participate in local, state, and regional efforts to encourage, develop and enact measures to minimize and/or mitigate GHG emissions that contribute to climate change. Consistent with Board Policy (GP13), prior to legislative sessions the Board develops and guides EWEB's positions relative to legislation, including those related to climate and environmental policy supporting this directive.

EWEB's Climate Change Policy SD15 highlights the importance of participating in policy discussions at various levels to minimize and mitigate GHG emissions. This chapter seeks to outline a high-level summary of the activities happening at various levels of government from the federal to the local level, while providing readers with relevant links and resources for additional reading.

Additionally, EWEB seeks to articulate guiding principles that staff aim to follow in their work. Principles can relate to any topic where EWEB invests effort, staff time, or resources. Principles on topics related to climate change will be included in this chapter of the Guidebook. Principle focus areas can range from policy advocacy work, program development, or even research and application of new technologies. The last section of this chapter seeks to publish these established principles for transparency and ease of reference.

Content currently included in v1.0:

- Policy summaries and links for climate initiatives at the federal, regional, state, and local levels
 - Global/Federal: The Paris Accord, BIL/IIJA, IRA
 - Regional: Western Energy Imbalance Market, Western Climate Initiative (WCI), Regional Greenhouse Gas Initiative (RGGI)
 - California: AB-32 Cap-and-trade; Low Carbon Fuels Standard; SB-100 100 Percent Clean Energy Act; Tailpipe Emissions Standards; California Independent System Operator (CAISO) and the Western Energy Imbalance Market
 - Washington: I 937 Energy Independence Act, Clean Energy Transformation Act (CETA),
 - Oregon: State GHG reduction goals; Clean Energy Standard; Executive Order 20-04; Clean Fuels Program; Clean Electricity and Coal Transition Plan; Renewable Portfolio Standard; Emissions Performance Standard
 - Eugene: Climate Recovery Ordinance; CAP 2.0; Ban on fossil fuel infrastructure in low-rise new residential construction.
- Principles to guide EWEB investment of staff time and financial resources:
 - Carbon Policy & GHG Reduction Principles
 - Distributed Generation Principles
 - Green Hydrogen Principles

Content planned for future Guidebook Versions:

- Additional details about federal funding opportunities under the BIL/IIJA and IRA
- Additional principles to guide EWEB investment of staff time and financial resources:
 - Rate Design Principles
 - Additional future topics as determined by EWEB's Board of Commissioners and/or staff

DRAFT

2.2 GLOBAL / FEDERAL INITIATIVES

2.2.1 Global Efforts & the Paris Accord

The past three decades have produced a series of international multilateral treaties, agreements, and frameworks on climate change policy as part of a worldwide effort to reduce GHG emissions and the impacts of global climate change.

The first notable and binding of these targets was the Kyoto Protocol approved in 1992 and calling for 5% reduction from 1990 levels by 2008-2012.

Most recently, the Paris Agreement, an international treaty intended to keep the rise in mean global temperature to well below 2 °C (3.6 °F) above pre-industrial levels, and preferably limit the increase to 1.5 °C (2.7 °F), was approved in 2015. It is estimated that to stay below 1.5 °C of global warming, global emissions need to be cut by roughly 50% by 2030. The United States was party to the Paris Agreement, subsequently withdrew, and recently was readmitted to the treaty. Recently enacted federal GHG investments (see U.S. Federal Policy) have lent credibility to the U.S. readmission to the treaty and its leadership role in global efforts to address climate change.

While these international agreements are notable progress in an international response to global climate change, they are also generally viewed by experts as not binding with sufficient rigor and not always practicable (i.e., some countries lack sufficient financing capability to reach targets) to the extent required to ensure targets are reached. Further global coordination and commitment to GHG reduction efforts is essential.

Links and Relevant Resources:

- [United Nations Framework Convention on Climate Change, Information about the Paris Agreement](#)

2.2.2 U.S. Federal Policy

At a national level, the United States has recently made a major change in its approach to national climate policy a decade after the U.S. House of Representatives approved a national emissions trading program in American Clean Energy and Security Act of 2009, a bill that then languished in the U.S. Senate, failing to become law. After subsequent repeated failures of national market-based emissions trading programs in Congress, national climate policy efforts have pivoted away from market-based emission trading programs towards investment and regulatory efforts. In particular, a clean energy investment approach to national GHG reduction policy has been politically successful recently as evidenced by key climate provisions advanced in the recent passage into law of the Infrastructure Investment and Jobs Act (IIJA) and the Inflation Reduction Act (IRA).

National regulatory efforts to cap emissions may yet be forthcoming but face significant hurdles, given that such efforts would likely require 60 votes to overcome a filibuster in the U.S. Senate. In the meantime, using the national budget reconciliation process, which only requires a simple majority vote in Congress, the federal government has enacted provisions in IIJA and IRA that are estimated by Princeton University to reduce national GHG emissions by at least 40% relative to 2005 levels over the next decade.

Links and Relevant Resources:

- [United States Department of Energy, Inflation Reduction Act of 2022](#)
- [Congress.gov – Infrastructure Investment in Jobs Act](#)
- [IIJA Implementation Resources from Government Finance Officers Association](#)

2.3 REGIONAL INITIATIVES

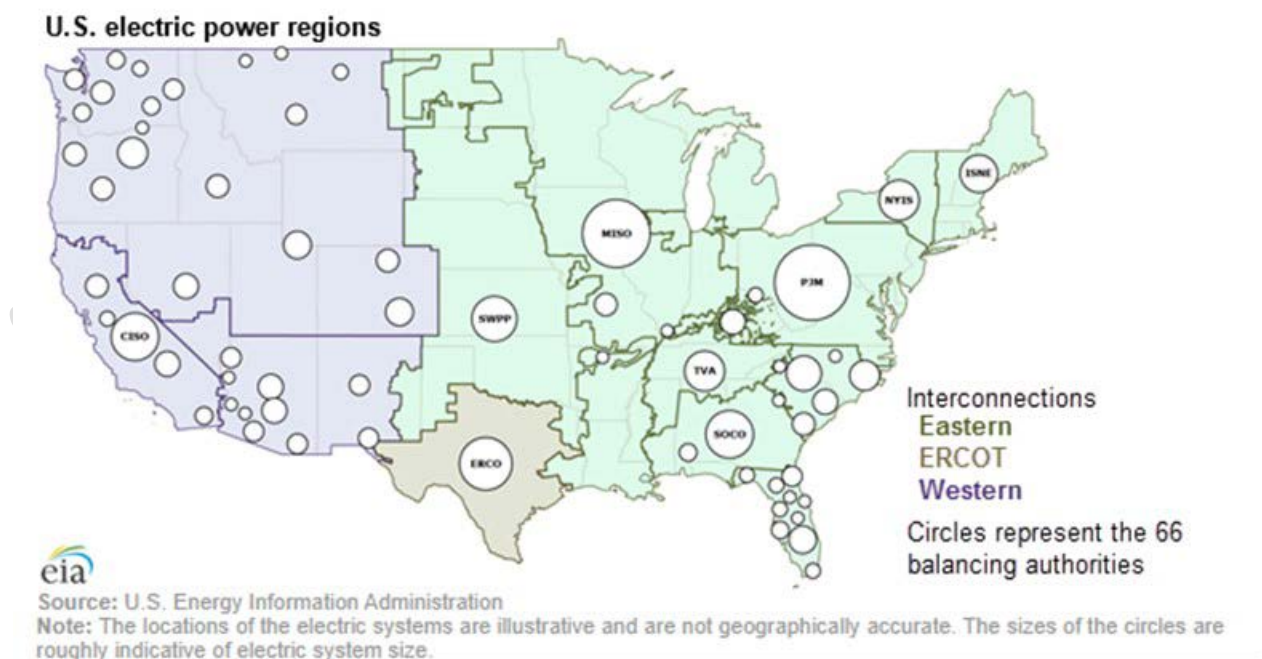
2.3.1 The U.S. Electricity Grids

The map from The U.S. Energy Information Administration (EIA) shows how the electricity grid for the continental United States is really three main grids with just a few points of interconnection.

- The Eastern Interconnection includes territory east of the Rocky Mountains and parts of northern Texas. There are 36 balancing authorities, of which five are in Canada and the rest are in the United States.
- ERCOT, or the Electric Reliability Council of Texas, contains one balancing authority.
- The Western Interconnection runs from the Rocky Mountains to the West Coast. There are 37 balancing authorities including two in Canada, one in Mexico and the remainder located in the U.S. EWEB is part of the Western Interconnection.

EIA describes a Balancing Authority as an entity that, “ensures, in real time, that power system demand and supply are finely balanced. This balance is needed to maintain the safe and reliable operation of the power system. If demand and supply fall out of balance, local or even wide-area blackouts can result.” All the regional transmission organizations (RTOs) or independent system operators (ISOs) in the U.S. also function as balancing authorities.

Figure 2: Map of US Electric Power Regions and Balancing Authorities, Courtesy of US Energy Information Administration (2023)



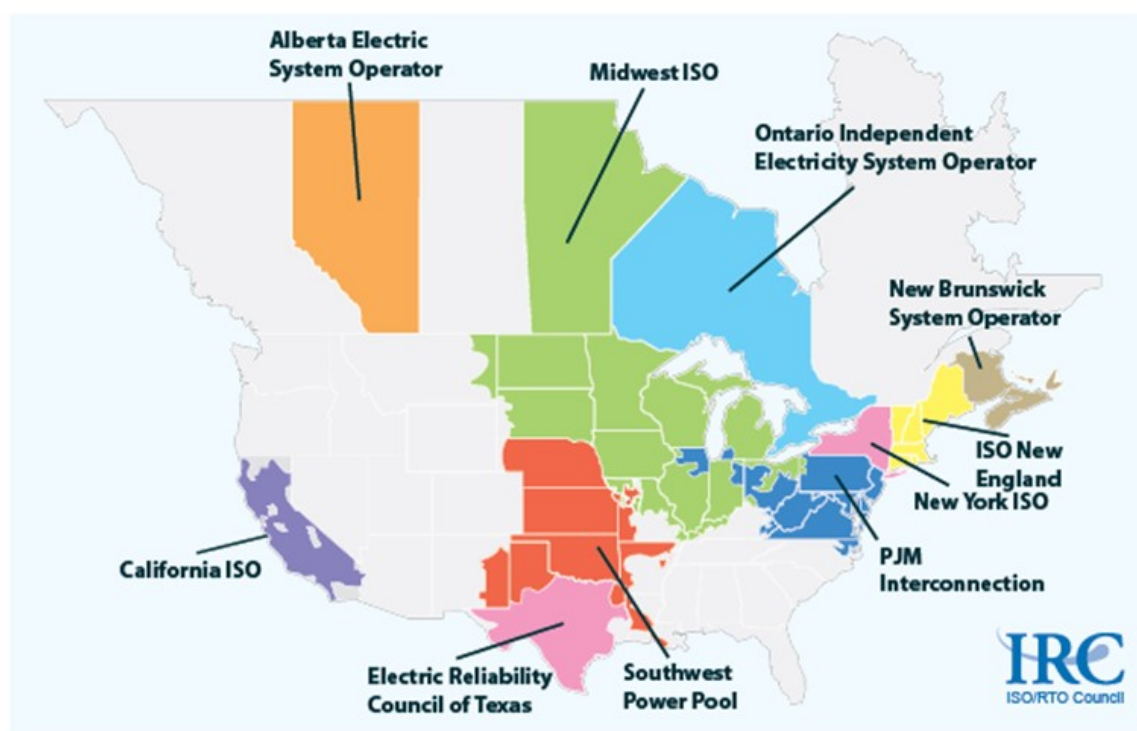
Links and Relevant Resources:

- [Energy Information Administration, U.S. Electric Power Regions](#)

2.3.2 Regionalization and Organized Markets

While approximately 60% of the U.S. electric supply is managed by an Independent System Operator (ISO) or a Regional Transmission Organization (RTO), Northwest utilities do not presently participate in an organized market, except for those utilities that voluntarily participate in the real-time Western Energy Imbalance Market (EIM).

Figure 3: Map of US Independent System Operator / Regional Transmission Organizations, Sourced from US Energy Information Administration (2023)



Source: ISO/RTO Council

Published By: U.S. Energy Information Administration

Currently, most electricity market transactions in the Pacific Northwest are conducted bilaterally between utilities, independent power producers, and marketers. Similarly, the Pacific Northwest's transmission system is operated by individual transmission owners, requiring projects to pay separate charges (often referred to as "wheeling" charges) to deliver power across each transmission system. There are approximately three dozen balancing authorities (BAs) currently operating across the Western United States, with each responsible for balancing supply and demand within their footprint. Over the last 25 years, the region has considered several utility-led initiatives to coordinate transmission planning and operations or to centralize electricity market functions. The only initiative that has been implemented to date is the Western EIM.

There are multiple regional efforts and initiatives underway past and present that endeavor to fulfill multiple functions that an organized/centralized market can provide:

- Shared transmission planning by a single entity
- Single transmission provider and tariff administrator
- Single transmission operator
- Single Balancing Authority
- Common Resource Adequacy Standard
- Market Operator: a single independent entity and centralized day ahead and/or within-hour optimization and dispatch with reliability

The Western EIM has achieved success with a low-cost, voluntary option using available and free transmission and leveraging the existing California Independent System Operator (CAISO) infrastructure. However, the Western EIM serves only a small portion of the functions that are offered by traditional ISOs and RTOs, and free transmission is not replicable in future approaches. Regional efforts to advance a Pacific Northwest organized

market have been hampered by the uniqueness of the Bonneville Power Administration, statutory preference power rights for publicly owned utilities in the region, and proper valuation of hydropower resources.

Agreement on governance models and the equitable allocation of costs and benefits in an organized market is a complicated task to successfully complete. However, utilities and stakeholders continue work on initiatives because of the significant societal and environmental benefits in grid efficiency, consumer savings, and decarbonization that will result from optimizing load and generation diversity over large geographical and climate footprints. Initiatives can also use the existing transmission system more efficiently and work on planning, investing, and building needed new transmission more effectively to move energy from where it is plentiful to where it is not, at any given time.

Links and Relevant Resources:

- [Western Energy Imbalance Market website](#)

2.3.3 Regional Climate Policies

In the absence of national direct and binding emissions cap and reduction targets, state efforts to accomplish regional equivalents have been established, including the Western Climate Initiative (California, Quebec, Nova Scotia, and Washington, which is pending) and the electric sector only Regional Greenhouse Gas Initiative (RGGI) including Maine, New Hampshire, Vermont, Connecticut, New York, New Jersey, Delaware, Massachusetts, Maryland, and Rhode Island.

Links and Relevant Resources:

- [Western Climate Initiative \(WCI\) website](#)
- [Regional Greenhouse Gas Initiative \(RGGI\) website](#)

2.3.4 Neighboring State Initiatives

2.3.4.1 California: AB 32 – Cap and Trade and Low Carbon Fuel Standard (LCFS)

The California legislature passed AB 32 in 2006 requiring the California Air Resources Board (CARB) to undertake a statewide effort to reduce global warming pollution. After extensive stakeholder input, research and analysis, CARB decided that cap-and-trade regulation should be the centerpiece of the 70 separate measures used to cut GHG emissions. Other measures included statewide regulations on building, vehicle, and appliance energy efficiency standards. AB 32's cap-and-trade rule became active Jan. 1, 2013. The sunset date of the cap-and-trade program was extended from 2020 to 2030 through the passage of AB 398 in 2017 and the program is now designed to meet a target of reducing emissions by at least 40% below 1990 levels by 2030.

The LCFS was also a key measure recommended through AB 32 that began implementation in 2011. Oregon's Clean Fuels Program is modeled after the California LCFS.

Links and Relevant Resources:

- [California Air Resources Board, AB-32 Global Warming Solutions Act of 2006](#)
- [California Air Resource Board, AB-32 Climate Change Scoping Plan](#)

2.3.4.2 California: SB 100 – 100 Percent Clean Energy Act

Passed in 2018, SB 100 marks California's firm commitment to developing renewable electricity infrastructure to replace fossil fuel-powered electricity. Its two main goals are: a) by 2030, 60% of all electricity generated will be from renewable sources; b) by 2045, 100% of electricity for the whole state will be renewable. Legacy hydropower is not eligible for the 60% target, but after 2030 hydropower may qualify for the remaining 40% of SB 100 compliance.

Links and Relevant Resources:

- [California Energy Commission SB 100 Joint Agency Report](#)

2.3.4.3 California: Tailpipe Emissions Standards

Under Section 209 of the Clean Air Act (CAA), California was given the ability to apply for special waivers to apply its own emission standards for new motor vehicles, rather than the federal standard. In 1967 the California Air Resources Board (CARB) was formed and enacted the nation's first stringent vehicle emission standards. Other states began to consider their own standards. Fearing a patchwork of differing state standards, automakers lobbied successfully for the passage of a National Emissions Standards Act that restricted states from enacting standards more restrictive than the new national standard. However, the existing stringent California standard was granted a permanent waiver; legal precedent has determined that other states may exceed federal standards if they adopt an equivalent facsimile of the California standard. Oregon is one of 16 states to adopt the California standard.

2.3.4.4 California: CAISO and Western Energy Imbalance Market (EIM)

In 1998, the California Legislature created the California Independent System Operator (CAISO), a nonprofit Independent System Operator (ISO) that oversees the majority of California's bulk electric system, transmission lines, electricity market, and infrastructure planning on behalf of members, instead of individual entities. CAISO forecasts electrical demand and dispatches the lowest cost generator to meet demand while ensuring enough transmission capacity for delivery of power.

In 2014 the Western Energy Imbalance Market (EIM) was launched by the CAISO, to establish lower cost and cleaner approaches to integrating fluctuations in intermittent renewable power generation into supply and demand by automatically finding lower-cost resources over broader geographical footprints to meet real-time power needs. While the CAISO was directed by the California legislature to participate in the EIM, non-CAISO entities may also join the Western EIM. PacifiCorp was the first initial volunteer, and today there are 19 EIM participants, with three pending participants to be added in 2023.

The Enhanced Day Ahead Market (EDAM) has been proposed and would use a framework similar to EIM in pursuit of additional market efficiency by integrating renewable resources using day-ahead unit commitment and scheduling across a larger area. The EDAM proposal is in an advanced stage of development through a public/stakeholder process as of November 2022.

Links and Relevant Resources:

- [California Independent System Operator \(CAISO\)](#)

2.3.4.5 Washington: 1997 Energy Independence Act (EIA)

The Energy Independence Act (EIA), approved by the voters in 2006 through the passage of Initiative 937, requires Washington electric utilities serving at least 25,000 retail customers to use renewable energy and energy conservation. There are 18 Washington utilities subject to the EIA. They provide 80% of the electricity sold to Washington retail customers.

The EIA established a renewable portfolio standard (RPS) with renewable energy targets as a percentage of customer load. The targets increased over time, from 3% in 2012, to 9% in 2016, to 15% in 2020. Eligible resources include water, wind, solar energy, geothermal energy, landfill gas, wave, ocean or tidal power, gas for sewage treatment plants and biodiesel fuel and biomass energy. Hydropower eligibility is limited to incremental generation due to efficiency improvements made after 1999, and the hydro project must be either owned by one of the 18 EIA-qualifying utilities or marketed by the Bonneville Power Administration.

Significantly, EIA requires that utilities must pursue all conservation that is cost-effective, reliable, and feasible. They need to identify the conservation potential over a 10-year period and set two-year targets.

Links and Relevant Resources:

- [Washington State Department of Commerce, Overview Energy Independence Act \(EIA or I-937\)](#)

2.3.4.6 Washington: Clean Energy Transformation Act (CETA)

SB 5116, the Clean Energy Transformation Act (CETA) was approved by the Washington Legislature in 2019, committing Washington to an electricity supply free of greenhouse gas emissions (all non-emitting electricity sources qualify) by 2045 via staged compliance:

- By 2025 utilities will remove coal-fired generation from Washington's allocation of electricity
- By 2030, Washington retail sales will be carbon-neutral (20% of compliance can be achieved using Renewable Energy Certificates, alternative compliance payments (\$100 per ton of carbon), or Energy Transformation Projects that decarbonize other sectors of the economy.
- By 2045, Washington retail sales will be 100% renewable and non-carbon-emitting

CETA has other notable provisions. It grants the Washington Utilities and Transportation Commission (UTC) the authority to shift investor-owned utilities from a return-on-capital model to a performance-based model. Rather than profit (and returns to shareholders) coming purely from investments in capital projects, utilities' returns could be determined based on their performance against metrics set by the UTC, such as carbon reduction or equity. The bill also requires utilities to consider equity in electric system benefits and increase customer bill assistance.

Links and Relevant Resources:

- [Washington State Department of Commerce, Clean Energy Transformation Act \(CETA\)](#)

2.4 STATE OF OREGON INITIATIVES

2.4.1 Climate Action Plan (CAP) – Executive Order 20-04

Gov. Kate Brown signed Executive Order 20-04 on March 10, 2020, directing multiple state agencies to take actions to reduce greenhouse gas emissions to avoid the worst effects of climate change. EO 20-04 outlines State of Oregon GHG reduction goals of at least 45% below 1990 emissions levels by 2035 and at least 80% below 1990 levels by 2050.

The centerpiece of EO 20-04 is the establishment of the Climate Protection Program (CPP). The Climate Protection Program sets a declining limit, or cap, on greenhouse gas emissions from fossil fuels used throughout Oregon, including diesel, gasoline, natural gas, and propane used in transportation, residential, commercial, and industrial settings. The program also regulates site-specific greenhouse gas emissions at manufacturing facilities, such as emissions from industrial processes, with a best available emissions reductions approach. Notably, the program does not apply to electricity, a decision made because the legal authority of the program did not extend to electricity imported from out of state and there would be complications from applying the program only to in-state electric generating units. The CPP requires that covered entities reduce greenhouse gas emissions and allows covered entities to comply in part with Community Climate Investments – contributing funds to authorized third-party entities to implement projects that reduce greenhouse gas emissions in Oregon.

Links and Relevant Resources:

- [State of Oregon, Executive Orders](#)
- [Oregon Department of Environmental Quality, Climate Protection Program, Background on Executive Order 20-04](#)
- [Oregon Public Utility Commission, Executive Order 20-04 Resources](#)
- [Oregon Department of Energy, Reducing Greenhouse Gas Emissions, State GHG reduction goals](#)

2.4.2 HB 2021 - Oregon Clean Electricity Standard

Oregon's Clean Electricity Standard (CES) was enacted in 2021 and sets targets requiring Oregon's two largest and investor-owned utilities, Portland General Electric and PacifiCorp, as well as assorted Electricity Service Suppliers (ESSs), to reduce the greenhouse gas emissions associated with their retail electricity sold in Oregon to:

- 80% below baseline emissions levels by 2030;
- 90% below baseline emissions levels by 2035; and
- 100% below baseline emissions levels by 2040

The CES also enacted a permanent moratorium on the siting of new natural gas power plants in Oregon and established an annual statewide Community Energy Grant Program.

Links and Relevant Resources:

- [HB 2021 Oregon Clean Electricity Standard](#)

2.4.3 Oregon Clean Fuels Program (CFP)

The Oregon CFP is a program designed to reduce the carbon intensity of transportation fuels used in Oregon.

The original CFP legislation set a target of a 10% reduction in carbon intensity by 2025. Under Executive Order 20-04, the program was expanded, and additional targets were set: a 20% reduction by 2030 and 37% reduction by 2035.

Regulated entities include transportation fuel producers and importers of fossil gasoline, fossil diesel, ethanol, biodiesel, and renewable diesel. They are required to meet the declining carbon intensity cap for the fuels they sell.

One way to meet the program requirements is to purchase credits from entities that generate credits by developing low-carbon transportation fuels. Credits are measured in metric tons of GHGs. Credits can be sold to regulated entities, which in turn produces revenue to pay for projects that lower GHGs.

For credit generators, the credits flow to the following entities¹:

- For compressed natural gas (CNG), liquified natural gas (LNG), and liquified petroleum gas (LPG), the credits flow to the owner of the dispenser.
- For renewable natural gas (RNG), propane, and jet fuel, the credits flow to the producer or importer.
- For electricity:
 - For fixed light rail, streetcars, aerial trams, buses, credits flow to the transit agency.
 - For forklifts, the credit flows to the forklift owner.
 - For residential EV charging, the credits flow to the electric utility.
 - For non-residential EV charging, credits flow to the charger owner or the operator if the owner does not register.
 - For transportation refrigeration units, credits flow to the owner of the refrigeration unit.
 - For cargo handling equipment, credits flow to the owner of the charging equipment.
 - For ocean-going vessels, credits flow to the owner of the equipment that provides electrical power from the shore.
 - For ground-support equipment, credits flow to the owner of the charging equipment.
- For hydrogen, credits flow to the owner of the fuel.
- For alternative or sustainable jet fuel (SAF), credits flow to the fuel producer or importer.

Under the Oregon CFP, EWEB is authorized to be an aggregator of CFP credits attributed to residential EV charging. EWEB may use the revenue from these credits to make investments in transportation electrification and transportation decarbonization. Additionally, EWEB owns EV charging infrastructure for our owned fleet vehicles at the Roosevelt Operations Center (for both our owned fleet vehicles and for public use in our

Figure 4: Oregon Clean Fuels Program Basic Structure, Sourced from Oregon Clean Fuels Program



¹ Oregon Clean Fuels Program Overview: [Department of Environmental Quality: Clean Fuels Program Overview : Oregon Clean Fuels Program : State of Oregon](#)

employee parking lot), at the former downtown riverfront headquarters building, and at our Carmen-Smith hydroelectric facility located along the McKenzie River. EWEB generates CFP credits from these charging stations.

Links and Relevant Resources:

- [Oregon Department of Environmental Quality, Oregon Clean Fuels Program website](#)

2.4.4 SB 1547, Clean Electricity and Coal Transition Plan

Enacted in 2016, SB 1547 requires Oregon's two largest investor-owned utilities, Portland General Electric and PacifiCorp, to phase out coal-fired electricity from their retail sales in Oregon by 2030 and double their original Oregon RPS targets from 25% to 50% by 2040.

Links and Relevant Resources:

- [Oregon State Legislature SB 1547 bill information and overview](#)
- [Oregon Public Utility Commission 2021 Report to the Oregon Legislatures on SB1547 \(2016\): Impact of Increased Renewable Portfolio Requirements](#)

2.4.5 Renewable Portfolio Standard (RPS)

The Oregon RPS requires large electric utilities (over 3% of Oregon electric load), including EWEB, to meet 25% of their electric load with qualifying renewable electricity. Two tiers of small electric utilities are required to meet 10% or 5% of electric load with qualifying renewable electricity respectively. Although legacy hydropower is not a qualifying renewable source of electricity under the RPS, legacy hydropower is exempt from displacement and carries no compliance/mitigation requirement.

Links and Relevant Resources:

- [Oregon Department of Energy, Renewable Portfolio Standard website](#)

2.4.6 Emissions Performance Standard (EPS)

The EPS sets a greenhouse gas emissions limit of 1,100 pounds (0.5 metric tons) of greenhouse gases per megawatt-hour (MWh) of electricity for the siting of any new electricity generation facility in Oregon, effectively prohibiting the construction of any new coal-fired electricity generating unit in Oregon. Though natural gas electric generating units would meet the 1,100 pounds threshold, they are now prohibited by the recently enacted Oregon Clean Electricity Standard (see above).

Links and Relevant Resources:

- [Oregon Department of Energy, Oregon Energy Facility Siting Council's Carbon Dioxide Emissions Standards \(March 2018\)](#)

2.5 LOCAL EUGENE INITIATIVES

2.5.1 Eugene Climate Recovery Ordinance (CRO) and Climate Action Plan (CAP) 2.0

Eugene has a long history of climate action within both city government operations and the community. The city conducted its first Community Climate and Energy Action Plan in 2010. In 2014, City Council passed the first version of its Climate Recovery Ordinance (CRO), which was updated to its current form in 2016. The CRO includes four bold goals – two focused on the community, including residents and businesses, and two focused on city operations (see box).

To implement the CRO and determine what actions are already planning and/or underway, and what actions are still needed to reach the goals of the CRO, Eugene launched its Climate Action Plan (CAP) 2.0 process beginning in 2018. EWEB was an active participant in the CAP 2.0 development process from 2018-2019 as a large-lever shareholder. Large-lever shareholders participating in the Eugene Climate Collaborative (ECC) were deliberately defined as “organizations who have significant oversight and impact on community-wide fossil fuel use and emissions or have the ability to affect or alter systems that will enable the community to adapt and prepare for climate change.”²

ECC partners include: the City of Eugene, Lane County, Bethel School District, Eugene 4J School District, Lane Community College (LCC), University of Oregon, Lane Transit District (LTD), **Eugene Water & Electric Board (EWEB)**, Metropolitan Wastewater Management Commission (MWMC), Northwest Natural, PeaceHealth, and the Eugene Area Chamber of Commerce.

CAP 2.0 was published in summer 2020 and includes many voluntary commitments within the document from Eugene Climate Collaborative partners, including 15 commitments from EWEB. Please see Appendix D for specific reporting on EWEB’s commitments in CAP2.0.

Links and Relevant Resources:

- [City of Eugene, Climate Recovery Ordinance](#)
- [City of Eugene, CAP2.0 Home](#)
- [City of Eugene, CAP2.0 Data Dashboard](#)

2.5.2 Natural Gas Ban in New Low-Rise Residential Buildings

On Feb. 6, 2023, the Eugene City Council passed an ordinance prohibiting fossil fuel infrastructure in new low-rise residential buildings; and adding sections 6.695 and 6.696 to the Eugene Code, 1971.

Eugene’s Climate Recovery Ordinance

Community goals:

- Reduce community fossil fuel use by 50% of 2010 levels by 2030.
- Reduce total community greenhouse gas emissions to an amount that is no more than the City of Eugene's average share of a global atmospheric greenhouse gas level of 350 ppm by 2100, which was estimated in 2016 to require an annual average emission reduction level of 7.6%.

City Operation goals:

- All City of Eugene owned facilities and operations shall be carbon neutral by 2020, meaning no net release of greenhouse gas emissions.
- Reduce the City of Eugene's use of fossil fuels by 50% compared to 2010 usage.

Source: [City of Eugene, Climate Recovery Ordinance](#)

² Eugene CAP2.0, page 15, Eugene Climate Collaborative Partners. Downloaded from <https://www.eugene-or.gov/4284/Climate-Action-Plan-20>.

This ordinance applies only to new buildings that have never been used or occupied for any purpose. It does not amend state building codes but does instruct Eugene to deny an application for a permit submitted on or after June 30, 2023, that does not comply with the ordinance. Low-rise residential buildings are defined as any building that has a height of three stories above grade or less, that includes one or more dwelling units. It does not include mixed occupancy buildings, as defined by Oregon building code, that include a commercial use. Fossil fuel infrastructure is defined as natural gas piping, fuel oil piping, or other fossil fuel piping or conveyance system within a building, that connects a source of supply to a fossil-fuel burning appliance.

However, it remains to be seen if the ban will hold. Opponents of the ban have collected signatures as part of an effort to send the ban to the ballot so that Eugene voters can decide the issue in the May or November 2023 election.

Links and Relevant Resources:

- [February 6, 2023: Eugene City Council Special Meeting and associated materials](#)

2.6 EWEB'S CLIMATE GUIDEBOOK PRINCIPLES TO GUIDE POLICY AND PROGRAMS

Within the Climate Guidebook, EWEB wishes to include a set of principles meant to define a general direction EWEB seeks to move towards on issues, mostly public policy, related to climate change. These principles are built on EWEB's values, which are set by the Board of Commissioners and in alignment with established best practices in the utility industry.

EWEB's organizational core values per Strategic Direction Board Policy SD1 include:

- **SAFE:** We value the safety, physical and psychological wellness, of our workforce and the public, the security and integrity of cyber assets and data, and the protection of our customers' assets
- **RELIABLE:** We value the ongoing continuous on-demand delivery of drinking water and electricity, and the dependability of our response to our customers.
- **AFFORDABLE:** We value and respect our customer-owners' financial resources by making wise investments and controlling costs and rates.
- **ENVIRONMENTAL:** We value the prudent and sustainable stewardship of the environment and natural resources, including preserving our watershed, and our role in reducing the greenhouse gases (GHGs) contributing to climate change.
- **COMMUNITY/CULTURE:** We value a culture of intentional actions and outcomes, continuous improvement, diverse perspectives, that is trustworthy, respectful, equitable, and inclusive to employees and community members. We are dedicated to our public service, professions, local governance, and commitment to serve our community honestly and with integrity.

As noted at the beginning of this chapter, within EWEB's Climate Change Policy (SD15), the Board "authorizes, delegates, and directs the General Manager to participate in local, state, and regional efforts to encourage, develop and enact measures to minimize and/or mitigate GHG emissions that contribute to climate change." Developing a set of principles will guide the General Manager, and thus the organization, in fulfilling this directive from the Board.

A "principle" is a North Star – a position towards which EWEB seeks to move, based on our values. A principle is not a rulebook. As EWEB seeks to make positive changes in our community, we must first define the nature of those positive changes. Clearly articulated and transparent principles help us get there by orienting us in a certain direction. Policy development, program implementation, investment of EWEB staff time and/or investment of financial resources is the mechanism by which we move towards these principles.

As we better define our principles on various topics, we may discover that some of EWEB's existing policies and programs do not currently meet all our aspirations. Recognizing that some policies and programs don't currently align with our principles may be the first step in eventually ensuring that they do. Identifying any areas of potential misalignment may also help us identify and articulate to our stakeholders what barriers might exist and must be overcome before alignment is possible.

As EWEB further articulates its principles on a variety of topics, they will be included here for transparency and ease of reference. The topics can span from providing guidance on how to advocate for policy in Salem or Washington D.C, to informing internal program development, to articulating how a new technology relates to EWEB's long-term interests. Topics submitted for inclusion could relate to climate change and the role the energy industry plays in decarbonizing society. Additional topics that merit development of their own set of principles will undoubtedly arise in the future and will be added over time. Context on the various topics and why / how the draft principles were developed is included here:

Carbon Policy & GHG Reduction Principles: Through the years, EWEB has worked with many regional partners on supporting climate and carbon policies at the state, regional, and federal levels. EWEB has been guided by a set of principles supported by previous Boards of Commissioners and in coordination with other public utility members of the Public Generating Pool. The principles included here are a refined version of the existing principles.

Distributed Generation Principles: EWEB's customers are increasingly interested in installing distributed energy generation and/or storage at their homes and businesses. How we compensate customers for the energy they produce and/or access through distributed technologies will become more important in the years ahead. The Distributed Generation Principles are in alignment with information staff has been providing verbally to the Board over time, are used to guide EWEB positions on relevant public policy, and are based on work done in coordination with best practices among comparable public utilities in the region.

Green Hydrogen Principles: Electric utilities are increasingly interested in how hydrogen can play a role in decarbonizing the economy. Here in Eugene, discussions have arisen about whether hydrogen should be blended into natural gas pipelines as a method of lowering the carbon content of the gas system. At the same time, regional coalitions are seeking funding for green hydrogen projects that may involve transportation fueling or other uses. A set of principles will help EWEB define and articulate our interest in hydrogen, as well as the types of projects we may pursue. The principles included here are based on alignment with principles advocated by U.S. Department of Energy, Oregon Department of Energy, and several regional partners.

2.6.1 EWEB's Carbon Policy & GHG Reduction Principles

Revision date: February 2023

Policies and laws to reduce greenhouse gas (GHG) emissions are a viable tool if society is to avoid the worst effects of climate change. Because electric utilities rely on an interconnected grid, policies that impact this grid also impact local electric utilities. Electric utilities rely on the grid to meet customer needs, sell surplus resources, and ultimately work together to keep rates as low as possible. Even with EWEB's ambitious voluntary internal climate policy goals for our owned and contracted resources, there are times when we buy power from the market. Getting to a fully decarbonized Western grid – the Western Interconnect (WECC) – and ultimately a fully decarbonized economy will require policies to reduce GHG emissions at the federal, regional, state, and/or local levels.

The most ambitious proposed federal policy on GHG reductions died in 2009 when Congress failed to pass a bill that would have instituted a nationwide plan to cap carbon emissions and allow emitters to trade pollution credits - a cap-and-trade system. Since then, only minor federal action occurred, until 2022 when Congress passed the Inflation Reduction Act (IRA). The IRA signaled a change in the federal approach to GHG emissions - rather than punish emitters, the IRA subsidizes emissions-free energy such as wind and solar.

In the absence of comprehensive federal legislation, Oregon has attempted to implement GHG policies. In 2019 and 2020, Republican legislators walked out of the Capitol to prevent votes on cap-and-trade legislation. So, Gov. Kate Brown implemented executive orders. In 2022, the Climate Protection Program took effect, setting a declining cap on emissions from fossil fuels - but it does not apply to electricity generation, which already must meet goals under the State's Renewable Portfolio Standard. At the same time, the state's Clean Electricity Standard, which was enacted in 2021, requires the state's two largest utilities - but not publicly owned utilities such as EWEB - to achieve net-zero GHG emissions by 2040. Additionally, the State's Clean Fuels Program addresses GHG emissions from transportation fuels and provides credits for entities that invest in transportation electrification among other low-carbon transportation fuel choices.

As EWEB advocates for comprehensive climate policies as directed in EWEB Board Policy SD15, we will be guided by the following principles.

Relating to climate policy, EWEB prefers and supports policies that:

- facilitate the reduction of GHG emissions most efficiently and at the least overall cost to society.
- are technology-neutral, economy-wide, and market-based.
- recognize the role of legacy hydropower in limiting GHG emissions, ensure that existing hydropower resources will not be disadvantaged relative to newer renewables, and are compatible with a variety of future physical climate and hydropower production conditions.
- measure carbon emissions as far upstream and nearest to the point of production as possible and are as resource specific as possible; in pursuit of more effective signals favoring the dispatch of cleaner resources and simpler and/or reduced administrative burden.
- preserve a path for load/resource growth and flexibility for utilities that pursue cross-sector decarbonization.
- are regionally consistent.
- consider the equity of the impacts on diverse segments of the population [consistent with EWEB's Diversity, Equity, and Inclusion Policy – in development].

2.6.2 EWEB's Distributed Generation Principles

Revision date: February 2023

Traditionally, power plants have been large and centralized structures such as hydroelectric, nuclear, coal, or natural gas plants, usually located far from where most of the power output will be consumed and connected to these load centers via a long-distance transmission and distribution system.

The U.S. EPA³ defines the term distributed generation to include a variety of technologies that are decentralized and often located close to where the power will be consumed. Due to the decentralized nature, these resources tend to be smaller in size than traditional centralized power sources. Distributed generation technologies may serve a single building such as a home or business or participate in a microgrid (a smaller grid that is connected into the larger electricity delivery system) that could serve a wider area such as an industrial facility, a college campus, a military base, or a downtown district for example.

Per EPA, in the residential sector, common distributed generation systems include:

- Solar photovoltaic panels
- Small wind turbines
- Fuel cells, usually fueled by natural gas
- Emergency backup generators, usually fueled by gasoline or diesel fuel

Per EPA, in the commercial and industrial sectors, distributed generation can include resources such as:

- Combined heat and power systems
- Solar photovoltaic panels
- Wind
- Biomass combustion or cofiring
- Municipal solid waste incineration
- Fuel cells fired by natural gas or biomass or hydrogen
- Emergency backup generators, usually fueled by diesel fuel

Local development of distributed generation technologies is allowing EWEB's customers to generate their own electricity and even generate surplus electricity that they can sell to EWEB via a process called net metering. These distributed generation technologies seek to make our community more resilient to disasters, reduce losses from the long-distance transmission system, and give customers choices about where to get their energy.

At the same time, customers with distributed energy resources are still connected to EWEB's grid. These customers rely on EWEB's grid for energy when their generators aren't producing and to distribute excess energy to other consumers connected to the grid. Solar homes, for instance, still need energy from EWEB's grid at night. And these customers also rely on EWEB's grid of distribution and transmission lines when they sell surplus energy to EWEB.

EWEB incurs significant costs maintaining a robust grid and procuring energy for all customers, even those with distributed generation technologies. EWEB believes that these costs should be equitably shared among all customers.

³ US Environmental Protection Agency, Energy, and the Environment: Distributed Generation of Electricity and its Environmental Impacts. [Distributed Generation of Electricity and its Environmental Impacts | US EPA](#)

With that goal in mind, EWEB has developed the following principles:

- EWEB supports and facilitates customer choice to install non-utility owned distributed generation equipment and infrastructure.
- EWEB recognizes that some distributed generation technologies are better at meeting the community's historical electricity demand (load) than others.
- EWEB supports pricing mechanisms that fairly compensate customers for electricity they supply to the grid and that do not transfer unpaid costs to other customers.
- EWEB strives for the equitable allocation of costs among all customers to maintain the electric grid.
- EWEB will need a rate design that fairly assigns the costs of procuring energy (including peak energy needs) and maintaining the electric grid to the customers who cause those costs.
- EWEB prioritizes the safety of utility workers and customers and will develop interconnection standards that ensure safety and reliability.
- EWEB supports policies and practices that consider the equity of the impacts on diverse segments of the population [consistent with EWEB's Diversity, Equity, and Inclusion Policy – in development].

2.6.3 EWEB's Green Hydrogen Principles

Revision Date: February 2023

The most abundant element in the universe – hydrogen – is evolving as a tool to decarbonize sectors of the economy that have few or no other low-carbon options. In 2021, the federal government set a goal of reducing the cost of hydrogen to one dollar for one kilogram within one decade (1 1 1)⁴. Also in 2021, the Oregon legislature passed SB 333 that directed the Oregon Department of Energy to conduct a study on the potential benefit of, and barriers to, production and use of renewable hydrogen in Oregon.⁵

The Oregon Department of Energy provides an overview of renewable hydrogen as follows:

*“Hydrogen is currently used in several industrial processes – it is a fundamental input for manufacturing ammonia, which is then used for fertilizer production; it is used to process crude oil into refined fuels, like gasoline and diesel; and it is also used in the metallurgic industry. However, most of the hydrogen produced today is derived from natural gas or coal, which is “grey” hydrogen. “Blue” hydrogen is also derived from fossil fuels but with the associated carbon emissions captured and stored. Most “green” or renewable hydrogen is produced using renewable electricity to power an electrolyzer that splits water into its component parts of oxygen and hydrogen. **SB 333 refers to renewable hydrogen as “hydrogen derived from energy sources that do not emit greenhouse gases.”** Renewable hydrogen could be used to replace grey hydrogen where it is currently used, as a transportation fuel, or as a replacement for natural gas in some applications.”*

Recently, the U.S. Department of Energy committed \$7 billion in competitive funding for entities and groups forming regional hubs to pursue research and deployment of clean hydrogen. And the 2022 Inflation Reduction Act contains tax credits for both investing in hydrogen projects and producing hydrogen using renewable energy.

The energy storage capabilities of hydrogen offer intriguing possibilities for utilities planning to incorporate more intermittent, renewable energy resources into their portfolios. Excess electricity from renewables such as wind and solar can be used to create hydrogen and that hydrogen can be converted back to electricity when it's needed later or sold for use in other secondary applications. Producing hydrogen, rather than curtailing resources during times of surplus, will reduce the overall cost and justify further investment in intermittent renewable energy sources. By storing energy, hydrogen can help balance fluctuations in renewable energy production, while also fostering a secondary market for abundant renewable energy.

The technology for hydrogen is advancing rapidly. While more than 95% of hydrogen used in the U.S. today is generated using fossil fuels, researchers are improving methods of creating clean, green, renewable hydrogen. And utilities are launching pilot projects to test hydrogen's energy storage potential.

⁴ US Department of Energy, Hydrogen Shot: [Hydrogen Shot | Department of Energy](#)

⁵ [Oregon Department of Energy, Renewable Hydrogen Study](#)

To guide us in proactively pursuing technologies to harness the power of hydrogen produced from non-emitting sources, EWEB supports policies that:

- support hydrogen production that results in the lowest possible lifecycle greenhouse gas emissions⁶ and facilitates the use of and/or investment in non-carbon emitting electricity generation resources.
- provide opportunities for electric utilities, or independent power producers, to use hydrogen production to capture value from otherwise curtailed intermittent renewable generating resources, further incentivizing investment in renewables.
- consider hydrogen and other non-emitting options as generic alternatives for energy storage applications.
- does not exclude hydrogen, including other non-emitting chemistries, fuel cells, and/or direct combustion, as a decarbonizing energy alternative in other sectors.
- provide options for utilities to use hydrogen or other storage alternatives to improve the reliability and/or performance of local and/or distributed portions of the grid.
- provide for diverse forms of clean energy storage to improve the resiliency of local communities.
- consider the equity of the impacts on diverse segments of the population [consistent with EWEB's Diversity, Equity, and Inclusion Policy – in development].

⁶ Lifecycle greenhouse gas emissions are the overall GHG impacts of the production of a particular fuel. Depending on the boundaries of the analysis, this could include the GHG impact of feedstock production and transportation, fuel production and distribution, and use of the finished fuel. There are different lifecycle GHG emissions associated with different hydrogen production methods. For example, using renewable power to split a water molecule via electrolysis has a different lifecycle GHG value compared to a process that uses fossil-based energy to crack fossil natural gas molecules via steam methane reformation technology. EWEB seeks to be technology agnostic and move towards ever-evolving technologies that result in the lowest climate impacts.

3 POWER SUPPLY & TRANSMISSION

3.1 POWER SUPPLY AND TRANSMISSION INTRODUCTION AND POLICY LANGUAGE FROM SD15

EWEB is unique in Oregon as a public utility that both owns generation resources and relies on the Bonneville Power Administration (BPA) for a share of the federal power system. EWEB is also an active participant in the regional energy market. EWEB is the third largest electric utility (behind Portland General Electric and PacifiCorp) and the largest consumer-owned municipal utility in the state.

EWEB's long-term power supply decisions must be made within the context of state and regional climate policy and changing regulations, rising energy demands via customer decarbonization / electrification efforts, and the physical realities of a changing climate on temperatures and hydro conditions.

Content currently included in v1.0:

- EWEB's 2020 and 2021 Electrification Studies showing expected load growth through 2042
- EWEB's 2022 IRP Initial Public Draft

Content planned for future Guidebook Versions:

- Public feedback from community education and outreach on 2022 IRP Initial Public Draft
- 2022 IRP Sensitivity Analysis Results
- 2024 IRP Results
- 2026 IRP Results

EWEB Climate Change Policy SD15 – Power Supply & Transmission Section

*The Board is committed to supporting a low-carbon electric power portfolio that maintains, **on a planning basis, over 90% of annual energy from carbon-free resources and targets over 95% of annual energy from carbon-free resources by 2030 to the extent possible and practical without distinct adverse impacts to customer-owners.***

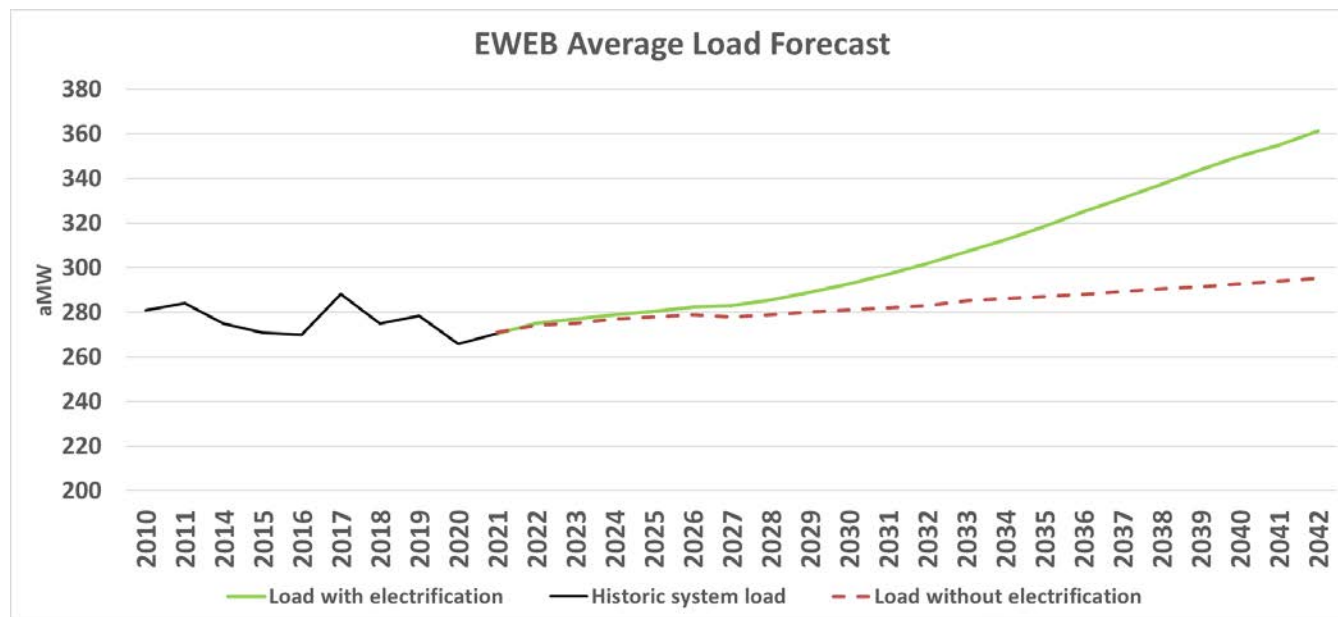
Using the Integrated Resource Plan (IRP) process including final adoption by resolution (GP7), the Board will work with the General Manager to establish the long-term (20-year) principles, priorities, approaches, definitions (including carbon-free, carbon intensity), measurements, and goals for the electric generation portfolio, demand response, conservation and energy efficiency, and customer impact limitations (including but not limited to reliability, cost, and equity) supporting this directive.

3.2 ELECTRIFICATION STUDY (PHASE 1 – 2020, PHASE 2 – 2021)

In early 2020, EWEB's management and Commissioners agreed to develop a better understanding of the impacts of electrification on EWEB's future planning efforts. EWEB's first report (released in November 2020), focused on the potential impacts of electrification without analyzing the costs to customers choosing to electrify. The Phase 2 report built on that initial analysis by considering the economics of electrification from multiple perspectives.

In both studies, the sources of electrification analyzed within the transportation sector focused on light-duty vehicle electrification, while the building sector analysis focused on the electrification of space and water heating technologies for existing residential and small commercial buildings. Heavy-duty transportation electrification and industrial electrification were outside the scope of the analysis.

Figure 5: EWEB's Average Load Forecast with Electrification through 2042



These reports reflect EWEB's ongoing assessment of evolving electricity consumption patterns that will help guide decisions and investments associated with electricity generation, delivery infrastructure, utility rate design, and customer program development. These studies do not advocate a position, or necessarily fully align with other agency targets or assumptions but are an attempt to inform and prepare EWEB for a range of different future conditions.

Prior to 2028 when a new contract with the Bonneville Power Administration (BPA) will be put into place, EWEB will need to reassemble an electric supply portfolio for the long-term economic, environmental, and social benefit of our community. These electricity supply decisions can be improved by effectively aligning time-of-use consumption, distributed generation, demand response, and efficiency programs with the increasingly dynamic future of clean energy resources and evolving storage technologies.

Consistent with the values of our customer-owners, EWEB will need to align our electricity supply portfolio with the evolving energy needs of our community, considering the potential effects of climate change, economics, technology, customer behavior, industry variations, and policy changes. All these factors, including the likelihood, degree, and pace of electrification, will be used as planning criteria in EWEB's Integrated Resource Plan (IRP), which began in early 2022 and is scheduled for completion in mid-2023.

Links and Relevant Resources:

- EWEB Website: [EWEB is Exploring the Impacts of Widespread Electrification in our Community](#)
- [EWEB Electrification Study – Phase 1 Report \(Oct 2020\)](#)
- [EWEB Electrification Study – Phase 2 Report \(Nov 2021\)](#)

3.3 INTEGRATED RESOURCE PLANNING PROCESS

EWEB began a process to update its Integrated Resource Plan (IRP) in 2022. An IRP is a long-term planning document to assess EWEB's energy needs over the next 20 years and identify the best mix of resource options to meet those needs. Best resource options will be identified in accordance with EWEB's organizational values.

EWEB's long-term power supply decisions must be made within the context of state and regional climate policy and changing regulations, rising energy demands via customer decarbonization / electrification efforts, and the physical realities of a changing climate on temperatures and hydro conditions. Additionally, EWEB must live our values and maintain a focus on affordability. The climate benefits of electrification depend on both the cost and the carbon content of electric power. If the shift to low-carbon power supplies causes a material increase in electric rates, the incentive to electrify will be reduced, and the overall cost burden on average customers will increase. **Keeping EWEB rates low is climate action.**

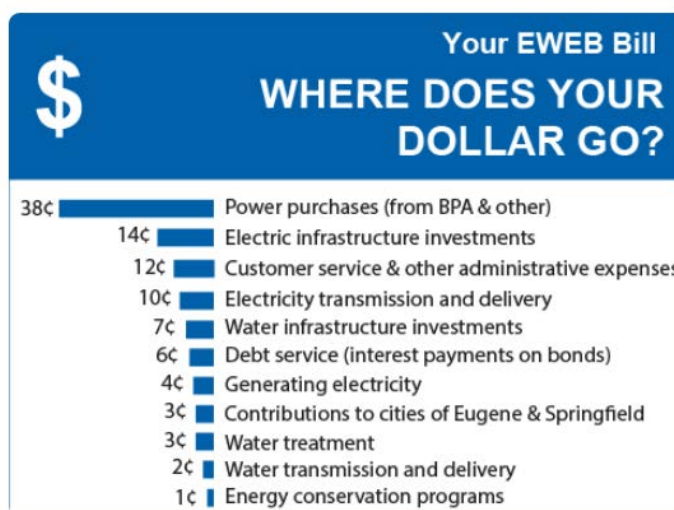
Power purchases represent the largest share of each customer dollar EWEB receives, so we must be especially cognizant of how we source our power. Additionally, any carbon reduction benefit of electrification is directly related to the carbon emissions associated with generating electricity.

Through EWEB's IRP, EWEB will be able to meet the SD15 goal for getting to 95% carbon-free resources *on a planning basis*. Actual annual emissions will be influenced by real customer demand (driven by local weather patterns and customer behavior) and EWEB's changing need to rely on market purchases to meet that demand. For example, EWEB's current portfolio is predominantly hydro power, so poor water years with low supply will likely cause EWEB to make additional market purchases to meet our needs.

What is an IRP?

An Integrated Resource Plan is a long-term planning document to identify EWEB's energy needs and the best resource options to meet those needs. The IRP relies on modeling, analysis, and public input to provide a 20-year look at future portfolio options and identify a nearer-term (2-5 year) action plan.

Figure 6: Your EWEB Bill - Where Does Your Dollar Go? (2023)



EWEB's Integrated Resource Planning process will be iterative with a new IRP being conducted in 2022, 2024 and 2026. The 2022 IRP is focused on using modeling software to determine a reference case, built on a set of assumptions. The reference case modeling results were published in December 2022 (see link below), and they will be tested under various sensitivities through the middle of 2023. The 2024 IRP will focus on the new power products that the Bonneville Power Administration is planning to offer when the existing regional contract expires in 2028. This second IRP will build off the reference case and the sensitivities completed as part of the

Figure 7: EWEB's IRP Process is Iterative on the Road to our 2028 Power Portfolio



Links and Relevant Resources:

- EWEB Website: [Integrated Resource Plan](#)
- Initial public draft of the 2022 Integrated Resource Plan
 - [Fact Sheet \(2 pages\)](#)
 - [Introduction and Executive Summary \(5 pages\)](#)
 - [Full Report \(25 pages\)](#)
 - [Full Report, including appendices \(79 pages\)](#)

4 CUSTOMER DECARBONIZATION

4.1 CUSTOMER DECARBONIZATION INTRODUCTION AND POLICY LANGUAGE FROM SD15

Since 2011, EWEB has worked to offset load growth (community electricity demand) with conservation and energy efficiency investments. Current circumstances require a deeper look at how EWEB will move forward with initiatives to support community and customer decarbonization goals. New drivers are changing both the availability of low-carbon energy options and the timeline that such alternatives might be implemented within EWEB's customer base. These drivers include new regulations, new expectations from regulatory bodies (e.g., Securities and Exchange Commission), new demands and behaviors from end consumers, federal and state incentive programs, and changing prices.

Connections also exist between EWEB's Integrated Resource Plan power supply planning process and our approach to customer programs as EWEB seeks to define the relevant price thresholds for "cost-effective" energy efficiency and demand response programs within these broader changing conditions. As society undergoes the largest energy transformation since the industrial revolution, there are additional opportunities to engage with our community, reduce harm to disadvantaged populations, and increase our resilience to natural disasters simultaneously.

Content currently included in v1.0:

- Information on existing Green Options customer programs and incentives
 - Live Green: Energy Conservation Programs for Residential Customers
 - Work Green: Energy Conservation for Commercial Customers (General Service)
 - Move Green: Programs to Support Electric Mobility
 - Lead Green: Advanced Solutions for Climate Innovators
- Appendix C – EWEB's Carbon Intensity Guidance for Customers
- Appendix D – EWEB's Role in City of Eugene's CAP2.0

Content planned for future Guidebook Versions:

- Board-approved Diversity, Equity, and Inclusion Policy
- Definitions and metrics regarding how EWEB programs reach and support diverse segments of our customer base
- EWEB Enterprise Solutions (EES) implementation: the technology and process transformation needed to enable EWEB's ability to deliver drinking water and electric services in a dynamic future
- Rate design analysis

EWEB Climate Change Policy SD15 – Customer Decarbonization Section

The Board further authorizes, delegates, and directs the General Manager to assist customers with achieving their GHG emission reduction goals through partnerships, technical assistance, resources, and programs that support, but are not limited to, energy efficiency, alternative fuels, electric and water conservation, electrification, and carbon offsets and sequestration.

Long-term conservation, energy efficiency, and demand-response goals are established as part of the IRP process. Additional program objectives, incentives and budgets will be established annually, as applicable, and/or through revisions to the strategic plan.

4.2 GREEN OPTIONS PROGRAMS



EWEB has a long history of offering robust conservation programs that support community, customer, and utility decarbonization efforts. Through EWEB's Climate Change Policy SD15, the Board directed staff to expand on options for customer decarbonization. Staff responded with the development and roll out of Green Options, which are voluntary programs designed to help customers reduce their carbon footprint in a variety of ways. The Green Options programs includes four areas of focus: Live Green, Work Green, Move Green, and Lead Green as described.

4.2.1 Live Green – Energy Conservation for Residential Customers

Incentives and zero interest loans for home investments that can save energy, reduce carbon emissions, and improve the safety and comfort in homes.

Links and Relevant Resources:

- EWEB Website: [Residential Energy Conservation Programs](#)

4.2.2 Work Green – Energy Conservation for General Service Customers

Incentives and loans for commercial investments that can save energy, reduce carbon emissions, and improve the operational efficiency of businesses. These may include standardized measures or custom projects specific to the facility.

Links and Relevant Resources:

- EWEB Website: [Commercial Energy Conservation Programs](#)

4.2.3 Move Green – Transportation Electrification

With support from the State of Oregon Clean Fuels Program, EWEB offers various incentives and efforts to support the switch from fossil fuel-based transportation options to electric options. According to the Oregon Department of Energy and its Oregon Electric Vehicle Dashboard, as of October 2022, there were 3,096 electric vehicles in EWEB service territory resulting in over 8,500 MT reduction in annual greenhouse gas emissions.

Links and Relevant Resources:

- EWEB Website: [Residential Transportation Electrification Programs](#)
- EWEB Website: [Commercial Transportation Electrification Programs](#)
- State of Oregon Website: [Clean Fuels Program](#)
- State of Oregon Website: [Oregon Electric Vehicle Dashboard](#)

4.2.4 Lead Green – Advanced Solutions for Climate Innovators

For customers that have done all they can to maximize energy efficiency at home and at work, or adopt electric transportation, EWEB offers programs for customers eager to do more. EWEB's Lead Green program includes a suite of additional product offerings including:

- Greenpower
- Cleanpower
- Carbon Offsets
- Carbon Forestry Lab

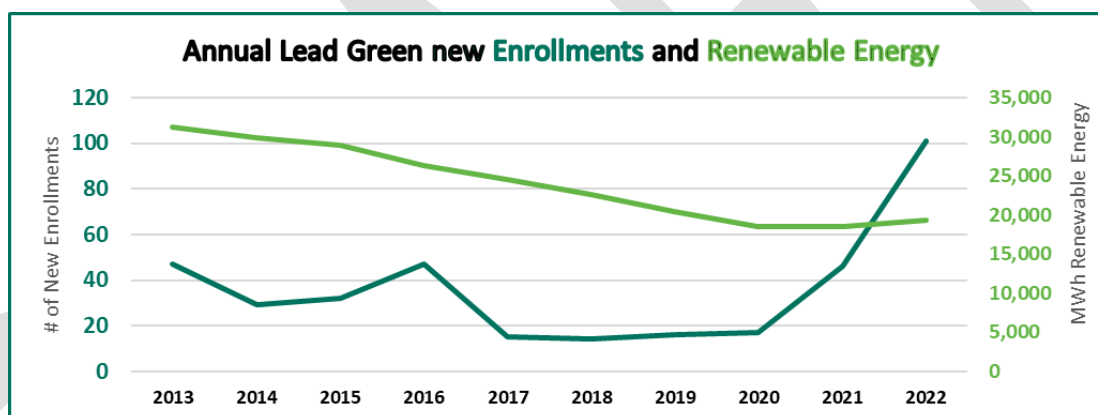
Figure 8: Annual Lead Green New Enrollments and Total RECs Retired on Behalf of EWEB Customers (MWh)

Lead Green - Participation and Carbon Impacts

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
New Lead Green Enrollments	47	29	32	47	15	14	16	17	46	101
Total Lead Green Participants	1,908	1,878	1,826	1,821	1,741	1,707	1,629	1,590	1,590	1,622
Renewable Energy Credits (MWh)	31,187	29,898	28,973	26,359	24,545	22,593	20,439	18,578	18,520	19,392
Carbon Offsets (MT CO₂e)	Carbon Offset program launched April 2022									16
EWEB Carbon Intensity* (MT CO₂e / MWh)	0.02	0.014	0.013	0.01	0.017	0.015	0.055	0.026	0.040	0.040
Total MT CO₂e	624	419	377	264	417	339	1124	483	741	791

* Oregon DEQ GHG Reporting Program published carbon intensity is currently available through 2021 only. 2021 value used as a placeholder for 2022 until new data is available.

Figure 9: Lead Green Program Information: New Enrollments by year (Participants) and REC purchases by year (MWh)



Cleanpower

EWEB Cleanpower invites customers to voluntarily match their energy usage with the purchase of Renewable Energy Certificates (RECs). Investing in RECs allows developers of wind, solar and other renewable energy resources to build more zero-emission generation, because they know they will be supported financially.

Cleanpower is EWEB's most cost-effective program for the bulk purchase of RECs to enable large customers to address the carbon emissions from electricity use through investment in new renewable electricity sources.

Cleanpower 2022 Program Details

- Participants: 9
- Consumption: 807 MWh
- Total carbon emissions reduction: 20 MT CO₂e

Links and Relevant Resources:

- [EWEB Lead Green Program Options](#)
- [EWEB Cleanpower Program Details](#)
- [US EPA – Offsets and RECs: What's the Difference?](#)

Greenpower

EWEB Greenpower is a voluntary program for customers who want to support the development of local renewable energy. Like Cleanpower, Greenpower customers also can match their electricity usage with the purchase of Renewable Energy Certificates (RECs) to address the carbon emissions from electricity use by investing in new renewable energy sources. But Greenpower goes beyond simply purchasing RECs by supporting the development of local solar projects and providing grants for community environmental projects.

Greenpower funds support EWEB's rooftop solar incentive program (see below). Greenpower funds have allowed 700 residents, businesses and community organizations to install rooftop solar since 2001.

Greenpower funds also provide annual \$50,000 Greenpower Grants to local non-profit organizations for renewable energy projects, clean energy education, the adoption of emerging technologies, or projects that increase carbon sequestration. Greenpower customers vote on which projects they want to fund. Greenpower is available to all EWEB customer categories.

For every one dollar invested in Greenpower:

- \$0.63 goes to local solar installations
- \$0.27 goes to grants to nonprofit agencies
- \$0.07 goes to REC retirement
- \$0.03 goes to program administration

Greenpower 2022 Program Details

Participants: 1,730

Consumption: 18,585 MWh

Total carbon emissions reduction: 457 MT CO₂e*

* The impact of local solar installations is provided separately from the Greenpower Total carbon emissions reductions reported here.

Links and Relevant Resources:

- [EWEB Lead Green Program Options](#)
- [EWEB Greenpower Program Details](#)
- [EWEB Greenpower Grant Recipients](#)

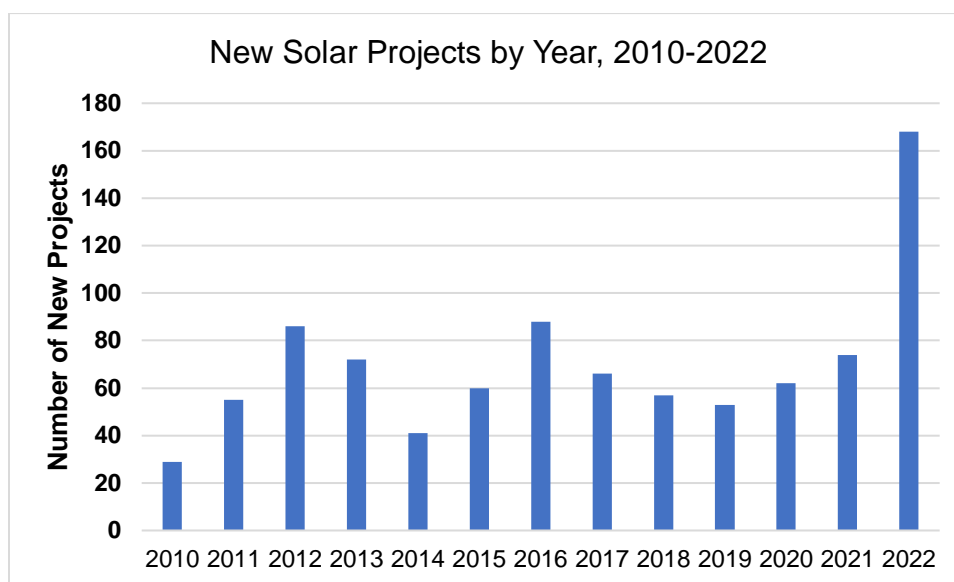
Solar Electric Program

Greenpower customers help support local solar installations by funding EWEB Solar Electric Program. Commercial and Residential customers can receive incentives for installation and may receive bill credits during periods where solar generation exceeds energy use.

Figure 10: Eugene Solar Installations, Residential and Commercial, 2001-2022

System Type	Total Projects	Total Capacity (MW)	Annual Energy (MWh)
Net Metered	1,084	6.8	6,991.0
Direct Generation	47	2.6	2,684.5
Total	1,131	9.5	9,675.5

Figure 11: EWEB Solar Electric Program New Installations by Year, 2010-2022



Links and Relevant Resources:

- [EWEB Solar Electric Program](#)
- [EWEB Commercial Solar Electric Program](#)
- [EWEB Residential Solar Electric Program](#)

Carbon Offsets

Customers can become carbon neutral with EWEB's voluntary carbon offset program. For customers who seek to reduce their full carbon footprint from sources such as energy, travel, and waste, EWEB offers a program to purchase carbon offsets, with the cost of the offsets simply added to customers' EWEB bill. A carbon offset broadly refers to a reduction in GHG emissions or an increase in carbon storage that wouldn't otherwise happen without customer investment.

EWEB offsets are currently sourced from a Carbon Forestry project in Alaska which, in addition to sequestering carbon in the atmosphere, promotes healthy wildlife habitat, enhances biodiversity, protects water quality, and supports the local indigenous community.

EWEB Carbon Offset 2022 Program Details

Participants: 10

Total carbon emissions reduction: 16 MT CO₂e

Links and Relevant Resources:

- [EWEB Lead Green Program Options](#)
- [EWEB Carbon Offsets Program](#)

Carbon Forestry Lab

The Carbon Forest Lab is an opportunity to invest in local carbon forestry projects aimed at expanding our understanding of natural climate solutions and enhancing the McKenzie Watershed, EWEB's sole source of drinking water. EWEB has partnered with cutting-edge researchers at the University of Oregon to explore ways to quantify and enhance natural climate solutions (NCS). The World Economic Forum defines natural climate solutions as, "actions that avoid greenhouse gas emissions and increase carbon storage in forests, grasslands, and wetlands."⁷

The project seeks to answer a few core questions:

- What kinds of plants and trees sequester the most carbon?
- How can we maximize carbon sequestration in the soil to ensure long term capture that is impervious to wildfire?
- What is the best planting method for long-term planting success?
- How do we balance the benefit of more trees with the risk of wildfire?

Customers can support the development of carbon forestry technologies, improve McKenzie Watershed habitat, and develop local jobs and research training, while protecting the watershed. Voluntary revenues augment and expand project capacity, leveraging existing funds from University of Oregon grants and EWEB watershed protection programs.

EWEB Carbon Forest Lab 2022 Program Details

Participants: 22

Direct Project Impact: 5,459 trees and 8,700 shrubs planted

Links and Relevant Resources:

- [EWEB Lead Green Program Options](#)
- [EWEB Carbon Forest Lab Program](#)
- [YouTube Video explaining EWEB High Banks Carbon Forest Lab project](#)
- [University of Oregon, Soil Plant Atmosphere Lab](#)

⁷ [What are natural climate solutions? | World Economic Forum \(weforum.org\)](#)

5 CLIMATE IMPACTS ON EWEB – RESILIENCY & ADAPTATION

5.1 CLIMATE IMPACTS ON EWEB INTRODUCTION AND POLICY LANGUAGE FROM SD15

What is resiliency? The ability to reduce the magnitude and duration of disruptive events through risk mitigation, emergency response, and recovery strategies. The U.S. EPA within its Regional Resilience

EWEB Climate Change Policy SD15:

Climate Impacts on EWEB - Resiliency & Adaptation Section

Consistent with resiliency initiatives included in EWEB's approved strategic plan, the Board directs the General Manager to evaluate and enact measures, as necessary and appropriate, to prepare for and minimize the effects of climate change that could impact EWEB's water and electric supply and infrastructure, damaging EWEB's resiliency and reliability.

Toolkit⁸, adds, "Resilience is about building the capacity of the community, at various scales, to prepare for, withstand, recover, and maintain its identity in the face of actual or anticipated hazard occurrences, allowing for continuity of community and quick recovery if a disaster occurs."

When thinking about resiliency to disruptive events, it's helpful to remember EWEB was created to enable local control of vital community resources in the face of a specific public health threat. When a typhoid epidemic struck Eugene in the early 1900s, the outbreak was traced to the privately owned water company. In response, outraged citizens voted in 1908 to buy the system and create a municipal, citizen-owned water utility. The Eugene City Council ordered the construction of a hydroelectric power plant that would power the pumps necessary to bring water to the people and then transferred control of the utility to a separate citizen board in early 1911. When the Walterville Power Plant (still in operation today) generated surplus electricity beyond what was needed for the water pumps, EWEB took the necessary steps to become the full-service electricity and water provider that it is today.

One hundred years later, EWEB continues to be forward-thinking in its long-range planning. The utility strives to continually serve our community with life-sustaining water and electricity every minute of every day. Flexibility and adaptability in our plans and operations will be necessary to remain resilient to a wide-variety of natural and human-caused threats if we are to maintain this level of reliability for the next 100 years.

While there are many threats the utility must prepare for and work to avoid that are *not* directly due to climate change (such as domestic terrorism and/or cyber security threats), we know that climate change is already impacting our physical environment, our human capital, our public health, our policy landscape, and our resource availability in new and challenging ways. Often, stresses from these new challenges are layered on top of one another, and deciphering cause and effect to determine effective responses is becoming more complicated. The layering of simultaneous challenges taxes the capacity of any organization's response. Never was this more apparent as our community struggled to respond to the intense stresses of the COVID-19 pandemic and the devastating Holiday Farm fire simultaneously in September 2020. While everyone in our community will be impacted by the physical effects of climate change in one way or another, EWEB also recognizes that the most vulnerable members of our community will be least able to prepare and adapt to this wide range of changing conditions. No matter where the challenges originate, EWEB must find new ways to increase redundancy and resiliency across the organization and throughout our infrastructure. In doing so, EWEB

⁸ EPA Regional Resilience Toolkit, July 2019: [Regional Resilience Toolkit: 5 Steps to Build Large-Scale Resilience to Natural Disasters \(epa.gov\)](https://www.epa.gov/resilience-toolkit)

must consider how to support members of our community who have been historically under-served and/or are most vulnerable to service disruption, bringing an equity focus to the work.

SD15 requires the General Manager to evaluate and enact measures to prepare for and minimize the effects of climate change on EWEB’s water and electric supply and infrastructure. Therefore, in initial versions of the Climate Guidebook, EWEB’s work and the reporting in this chapter will focus on resiliency initiatives related to expected changes to our physical environment in Lane County, our water quality and availability for both drinking water and hydropower production, and the ability of our EWEB-owned infrastructure to adapt to changing physical conditions. This section will be expanded over time in response to stakeholder needs and feedback and as our programs grow and change in response to where the need is greatest.

Content currently included in v1.0:

- Expected physical changes for Lane County, via the Oregon Climate Change Research Institute
- Eugene-Springfield Natural Hazard Mitigation Plan (NHMP)and other planning efforts at the State and County levels
- EWEB’s Wildfire Mitigation Plan
- EWEB’s Watershed Protection Program
- Second Source of Drinking Water Development on the Willamette River

Content planned for future Guidebook Versions:

- Board-approved Resiliency Policy
- Research results from EWEB’s Forest Carbon Lab investments in partnership with University of Oregon













5.2 EXPECTED PHYSICAL CHANGES FOR LANE COUNTY

In July 2022, the Oregon Climate Change Research Institute (OCCRI) finished a report for the Oregon Department of Land Conservation and Development called, “Future Climate Projections: Lane County, OR.” The study evaluated 12 natural hazards and related climate metrics to determine if the risk from those hazards was increasing, remaining unchanged, or decreasing and the confidence level of each. The Executive Summary of this report states:

“Climate change is expected to increase the occurrence of many climate-related natural hazards. Confidence that the risk of heat waves will increase is very high (Table 1) given strong evidence in the peer-reviewed literature, consistency among the projections of different global climate models, and robust theoretical principles underlying increasing temperatures in response to ongoing emissions of greenhouse gases. Confidence that the risk of many other natural hazards will increase as climate

Figure 12: Image from Oregon Climate Change Research Institute July 2022 Report, “Future Climate Projections: Lane County, OR”. Introduction Table 2.

Table 2. Selected natural hazards and related climate metrics.













	Heat Waves Hottest Day, Warmest Night Hot Days, Warm Nights		Cold Waves Coldest Day, Coldest Night Cold Days, Cold Nights
	Heavy Rains Wettest Day, Wettest Five Days Wet Days, Landslide Risk Days		River Flooding Annual Maximum Daily Flows Atmospheric Rivers Rain-on-Snow Events
	Drought Summer Flow, Spring Snow Summer Soil Moisture Summer Precipitation		Wildfire Fire Danger Days Extremely Dry Air Days
	Reduced Air Quality Days with Unhealthy Smoke Levels		Coastal Erosion and Flooding Sea Level Rise Waves
	Changes in Ocean Temperature and Chemistry		Loss of Wetlands
	Windstorms		Expansion of Non-native Invasive Species

changes is high or medium (Table 1), reflecting moderate to strong evidence and consistency among models, yet these risks are influenced by multiple secondary factors in addition to increasing temperatures. Confidence in changes in risks is indicated as low if projections suggest relatively few to no changes or evidence is limited.

This report presents future climate projections for Lane County relevant to specified natural hazards for the 2020s (2010–2039) and 2050s (2040–2069) relative to the 1971–2000 historical baseline. The projections are presented for a lower greenhouse gas emissions scenario and a higher greenhouse gas emissions scenario and are based on multiple global climate models. All projections in this executive summary refer to the 2050s, relative to the historical baseline, under the higher emissions scenario. Projections for both time periods and emissions scenarios are included in the main report.”

Figure 13: Image from Oregon Climate Change Research Institute July 2022 Report, “Future Climate Projections: Lane County, OR” Executive Summary Table 1.

Table 1. Projected direction and level of confidence in changes in the risks of climate-related natural hazards. Very high confidence means that the direction of change is consistent among nearly all global climate models and there is robust evidence in the peer-reviewed literature. High confidence means that the direction of change is consistent among more than half of models and there is moderate to robust evidence in the peer-reviewed literature. Medium confidence means that the direction of change is consistent among more than half of models and there is moderate evidence in the peer-reviewed literature. Low confidence means that the direction of change is small compared to the range of model responses or there is limited evidence in the peer-reviewed literature.

	Low Confidence	Medium Confidence	High Confidence	Very High Confidence
<div>Risk Increasing</div> <div>↑</div>		<div>  Drought  Expansion of Non-native Invasive Plants  Reduced Air Quality  Loss of Wetlands </div>	<div>  Heavy Rains  Flooding  Wildfire  Changes in Ocean Temperature and Chemistry  Coastal Hazards </div>	<div>  Heat Waves </div>
<div>Risk Unchanging</div> <div>=</div>	<div>  Windstorms </div>			
<div>Risk Decreasing</div> <div>↓</div>				<div>  Cold Waves </div>

Links and Relevant Resources:

- [Oregon Climate Change Research Institute \(OCCRI\): Future Climate Projections for Lane County, Oregon](#)
- [Oregon Climate Change Research Institute \(OCCRI\): Future Climate Projections for Oregon Counties](#)
- [Oregon Climate Change Research Institute \(OCCRI\): Oregon Climate Assessments](#)

5.3 NATURAL HAZARDS MITIGATION PLAN

The Eugene- Springfield Area Multi-jurisdictional Natural Hazard Mitigation Plan (NHMP) serves as a comprehensive natural hazard mitigation framework for the Cities of Eugene and Springfield, as well as the Sub-Plan Holders including EWEB, the Springfield Utility Board and Rainbow Water District. Natural hazard mitigation is defined as permanently reducing or alleviating the losses of life, property, and injury resulting from natural hazards through long and short-term strategies. The NHMP was most recently updated in 2020 and is due for revision and subsequent EWEB Board adoption in 2025.

The NHMP examines and prioritizes hazards to help focus risk reduction activities to protect critical infrastructure and public safety. Once approved by the Federal Emergency Management Agency, plan holders can qualify for federal and state funds appropriated specifically for NHMP mitigation projects.

EWEB has evaluated the probability of potential natural disasters occurring and its response capabilities to develop a natural hazard risk rating. Highest on this list are the threat of:

- Earthquake
- Windstorm
- Winter storm
- Wildfire

While climate change is not defined as a natural hazard it is a contributing factor that elevates the probability and severity of different natural hazards. Risk mitigation action items identified in the NHMP include seismic upgrades to existing infrastructure, emergency water distribution equipment, and watershed recovery activities to mitigate future wildfires. These activities are typically reflected and funded through EWEB's ten-year electric and water capital improvement plans.

Links and Relevant Resources:

- [City of Eugene Emergency Plans: Eugene Springfield Multi-Jurisdictional Emergency Operations Plan, Eugene Springfield 2020 Natural Hazards Mitigation Plan, Oregon Resiliency Plan, and Neighborhood Radio Communications Response Guide](#)
- [Lane County, Oregon's Office of Emergency Management](#)
- [Natural Hazard Mitigation Plan for Lane County, 2018-2023](#)
- [Natural Hazard Mitigation Plan for Oregon, 2020-2025 - Oregon Department of Land Conservation and Development](#)

5.4 EWEB'S WILDFIRE MITIGATION PLAN AND ASSOCIATED POLICIES

EWEB's first Wildfire Mitigation Plan (WMP) was adopted in July 2022. The purpose of the plan is to: *"meet the legislative intent of SB 762 and related PUC rules to protect public safety, reduce risk to utility customers and promote electric system resilience to wildfire damage. The risk-based plan, developed in coordination with key stakeholders, will provide a basis for continuous improvement to evolve our operational practices, communication plans and mitigation efforts as best practices and regulations are updated."*

Understanding areas of high wildfire potential across the electric system is critical to effectively target the location and types of mitigation investments. Most of EWEB's electric infrastructure is in urban areas with relatively low risk for wildfire. Areas initially deemed to have heightened risk include the McKenzie River Valley and a portion of southeast Eugene.

This plan's comprehensive approach to wildfire risk reduction includes:

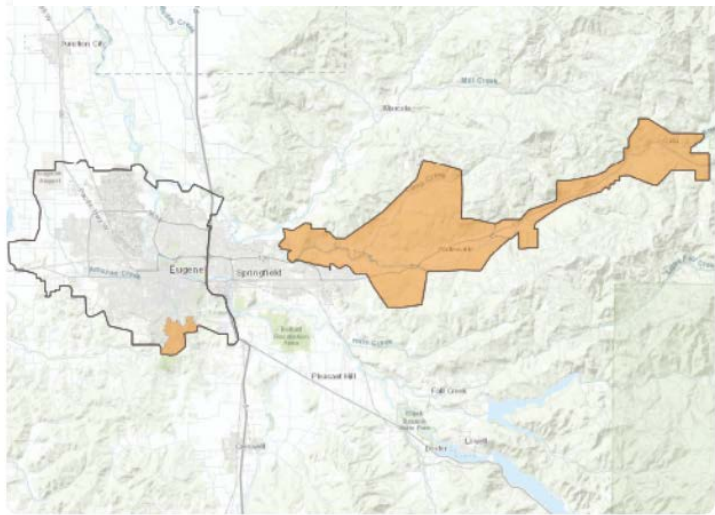
- More frequent equipment inspections and prioritized maintenance.
- Enhanced vegetation management, including fuel reduction projects.
- Targeted equipment upgrades and grid-hardening investments.
- Technology, tools, and modified field practices for wildfire season preparedness.
- Changes to electric system operational settings, including Public Safety Power Shutoffs (PSPS) as a last resort to reduce the risk of an ignition event during extreme fire risk conditions.

In response to weather forecasts for severe fire risk, and in coordination with stakeholders such as Lane County Emergency Management, EWEB enacted its first PSPS September 11, 2022, affecting about 3,000 upriver customers for over 36 hours. The WMP will be updated annually and include metrics to review progress and/or identify gaps in meeting the plan's risk reduction objectives.

Links and Relevant Resources:

- [EWEB website: Wildfire Safety and Prevention](#)
- [EWEB Wildfire Mitigation Plan, 2022](#)

Figure 14: EWEB Wildfire Risk Map. Orange sections are intended to show areas in EWEB service territory where electric lines and equipment are sited in terrain with higher potential for wildfire.



5.5 WATERSHED PROTECTION PROGRAMS

The overarching goal of EWEB's Drinking Water Source Protection (DWSP) program is to measure the balance between watershed health and human use over time and implement actions that maximize the benefits EWEB receives through its investments in the McKenzie River Watershed. The primary objectives to accomplish this goal include:

- Plan and implement actions that maintain source water quality in a way that balances risks with benefits in partnership with others

- Prioritize source protection efforts that provide the greatest benefit to water treatment and electric generation in the McKenzie Watershed
- Promote public awareness and stewardship of a healthy watershed through targeted actions and programs

Activities included in the DWSP include:

1. Water Quality Monitoring
 - a. EWEB has developed a Continuous Monitoring Network that operates year-round to measure a variety of parameters and alert EWEB staff of upstream water quality issues that could impact watershed health and/or impacts at the drinking water intake.
 - b. Harmful Algal Bloom Monitoring from April to October.
 - c. Baseline Water Quality Monitoring quarterly to track spatial and temporal watershed trends.
 - d. Storm Data Monitoring during first fall flush, large winter events, and spring rain on snow events in the watershed and from urban outflows.
2. Hazardous Materials and Spill Releases
 - a. Tracking Hazardous Spills to respond for mitigation, assess watershed impacts, and notify water treatment operations of potential impacts.
 - b. Conduct Annual Spill Drill with a wide array of partners.
3. Illegal Camping
 - a. Conduct Illegal Camp Surveys in coordination with Willamalane, City of Springfield, and Lane County to remove trash and waste from riparian areas immediately upstream of the intake.
4. Pure Water Partners
 - a. Working with landowners to restore and protect riparian areas as well as those impacted by the Holiday Farm Fire in the McKenzie Watershed through watershed stewardship agreements.
 - b. Private land-owner treatments include riparian planting, invasive vegetation removal, fire fuels reduction, and erosion control.
5. Septic System Assistance Program
 - a. EWEB offers a rebate program for maintenance, and a loan program for septic repair or replacement within the Holiday Farm Fire footprint, and a zero-interest loan program for septic systems outside of that footprint.

Links and Relevant Resources:

- [EWEB Watershed Restoration Dashboard](#)
- [EWEB Website: Fire Recovery and Watershed Restoration](#)
- [EWEB State of the Watershed Report](#)

5.6 SECOND SOURCE OF DRINKING WATER DEVELOPMENT

For nearly 90 years, the community of Eugene has relied on the McKenzie River as our only source of drinking water. Some other cities in the valley get their drinking water from the Willamette River. After years of careful planning for the future, EWEB will join Corvallis, Wilsonville, Hillsboro, Beaverton, and other communities by tapping into this high-quality water source.

Of the 20 largest cities in the Northwest, Eugene is the only one with a single source of drinking water. While the McKenzie River will continue to be Eugene's primary water source, EWEB is in the early stages of developing an additional water supply on the Willamette River.

EWEB has made numerous attempts to build a second water treatment plant over the last several decades. In 2017, Commissioners directed staff to postpone planning and funding for the project, and instead focus short-term efforts on developing Emergency Water Stations. Since then, EWEB has worked with community partners to construct five emergency water distribution sites throughout the community.

Accessing the Willamette River as a redundant source is an important next step to ensure we can provide drinking water to our customers in case an emergency impacts the Hayden Bridge Filtration Plant or McKenzie River supply.

Links and Relevant Resources:

- [EWEB Website: Willamette Water Treatment Plant](#)
- [EWEB's emergency water distribution sites](#)

6 EWEB INTERNAL OPERATIONS GHG REDUCTIONS

6.1 EWEB INTERNAL OPERATIONS INTRODUCTION AND POLICY LANGUAGE FROM SD15

EWEB seeks to lead by example. By developing and implementing strategies for reducing internal emissions, EWEB can share lessons learned with customers that seek to decarbonize, take advantage of federal or state incentive programs, and/or add resiliency measures and best practices to internal operations.

EWEB has been measuring and reducing its internal GHG emissions since 2009.

The Climate Guidebook will house the most up-to-date results of EWEB's internal greenhouse gas inventory. Included here are the results from both calendar years 2021 and 2022.

Content currently included in v1.0:

- Greenhouse gas emissions inventory for calendar years 2021, and 2022

Content planned for future Guidebook Versions:

- Internal Climate Action Plan and Roadmap to Carbon Neutrality by 2050

EWEB Climate Change Policy SD15: Internal Operations Section

The Board further authorizes, delegates, and directs the General Manager to continue efforts to minimize and/or mitigate GHG emissions from EWEB's operations that contribute to climate change. As initially established in 2010, EWEB adopted a goal to reduce the Scope 1 and 2 (direct GHG emissions and energy) greenhouse gas emissions associated with its operations and facility management activities.

Accordingly, and as formally established by this directive, EWEB plans to reduce our net Scope 1 and 2 GHG emissions from operations relative to 2010 levels by:

- ***25% by 2020,***
- ***50% by 2030,***
- ***Achieve carbon neutrality from our operations by 2050.***

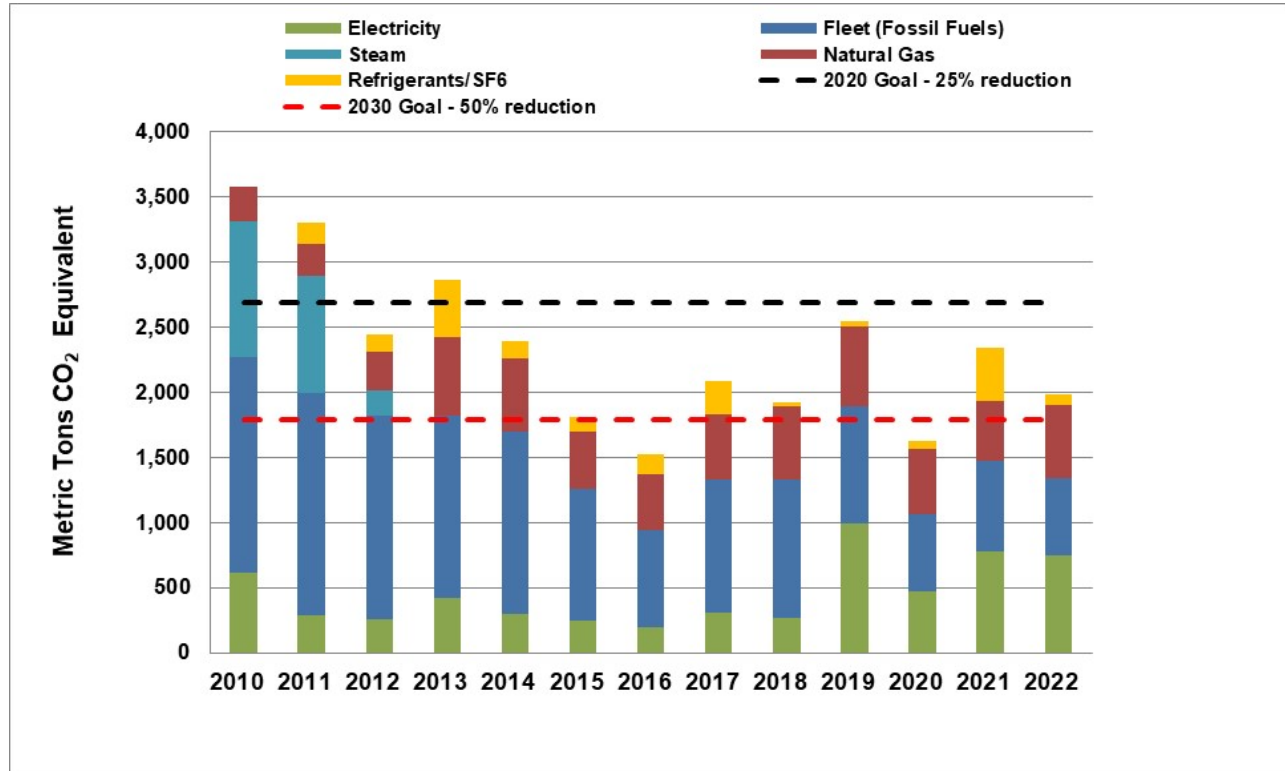
6.2 EWEB'S INTERNAL GREENHOUSE GAS INVENTORY, 2021 AND 2022

EWEB has been tracking our internal greenhouse gas emissions annually since 2009, in accordance with industry best standards and the World Resources Institute Greenhouse Gas Protocol. EWEB's Climate Change Policy (SD15) set specific GHG reduction goals for EWEB's internal operations (see box). EWEB's goals are in alignment with goals set by the State of Oregon and the City of Eugene (see Chapter 2) and EWEB seeks to be an active partner in these efforts to decarbonize our operations and our community.

In 2020, EWEB not only met but exceeded both its 2020 and 2030 GHG reduction targets by achieving a 55% reduction in annual emissions. Some of this reduction can be attributed to the COVID-19 pandemic as some business travel in owned vehicles and some building energy use was reduced.

In 2021 and 2022, EWEB achieved a 35% and 44% reduction in emissions over the 2010 baseline respectively. EWEB is well on its way to meeting the ambitious goal of 50% reduction over baseline by 2030. Progress towards EWEB's internal GHG goals is calculated using a market-based approach to electricity emissions that uses the EWEB-specific emissions factor for purchased electricity as calculated by Oregon DEQ's GHG reporting program.

Figure 15: EWEB Greenhouse Gas Emissions from Internal Operations and progress towards climate goals (MT CO₂e), 2010-2022



EWEB's electricity consumption (MWh) declined by 8% between 2010 and 2022. The annual changes in GHG emissions from EWEB's electricity consumption as shown above comes from both changes in the electricity emissions factor as well as changes from electricity consumption. Changes in the emissions factor are especially significant in 2019 and 2021.

Figure 16: EWEB Electricity Consumption for All Facilities (MWh), 2010-2022

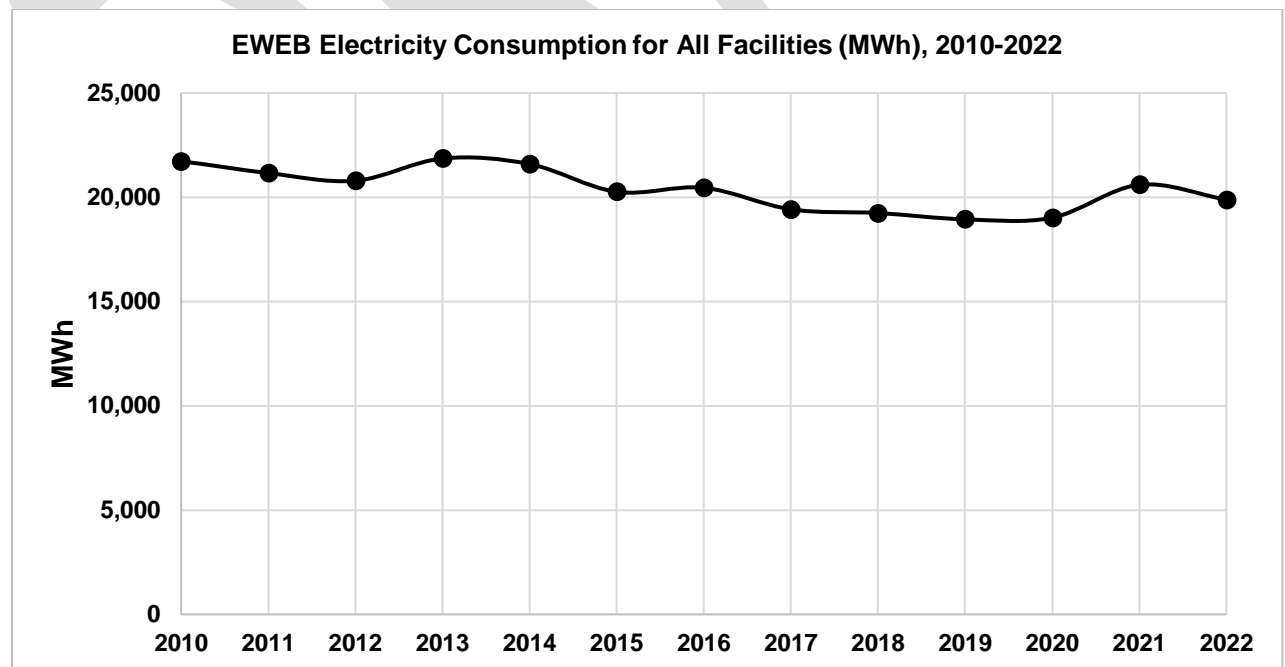
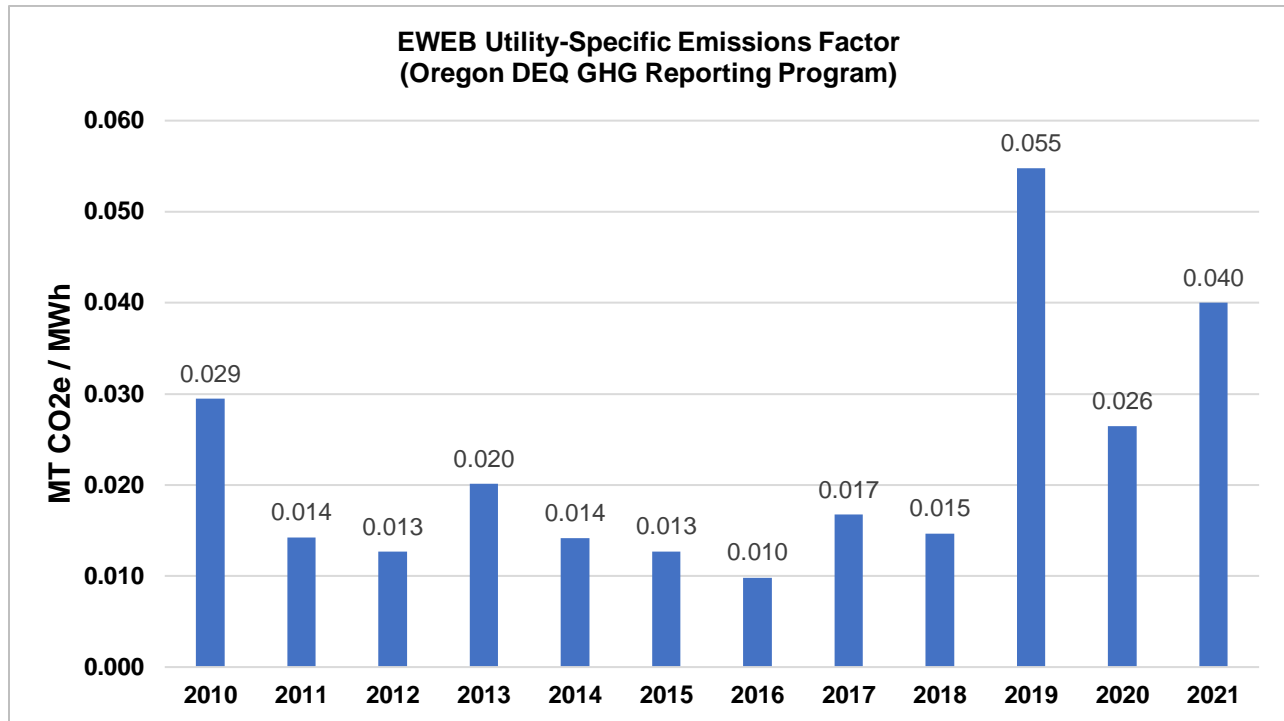


Figure 17: EWEB Utility-Specific Emissions Factor, Oregon DEQ GHG Reporting Program, 2010-2022



As explained in Chapter 3, EWEB expects to meet the SD15 goal for getting to 95% carbon-free resources *on a planning basis*. Actual annual emissions are influenced by real customer demand (driven by local weather patterns and customer behavior) and EWEB's changing need to rely on market purchases to meet that demand. The high emissions factor in 2019 as shown above was reflected throughout the west as there was decreased water availability in the western hydro system.

EWEB sees an opportunity to lay out a plan to achieve carbon neutrality by mid-century and pilot various technologies and opportunities within our own operations so that we gain firsthand knowledge that can be helpful as we support customers in their decarbonization efforts. Additionally, as EWEB's internal electricity consumption is at a scale to make it one of the largest electric utility customers in our community, EWEB also has an opportunity to apply any new rates, programs, policies to our own bills first, so we can gain insights from a customer perspective.

EWEB also seeks to stay aware of all relevant grant, tax, and incentive programs available from state and federal programs to maximize GHG reduction opportunities and simultaneously improve resilience and climate adaptation for key resources and infrastructure.

Links and Relevant Resources:

- [EWEB's website: Our Commitment to the Environment](#)
- [EWEB's Internal GHG Inventory Results, 2021 and 2022 \(to be linked to EWEB's website once posted\).](#)

APPENDIX A: GLOSSARY

aMW	Average megawatt is calculated by totaling the annual power consumed in a year (in this case megawatts or MW) and dividing that total annual consumption by the number of hours in given year (typically 8,760 during non-leap years). In Electricity Supply Planning, the average megawatt can provide useful context for understanding the average energy required to meet demand on an annualized basis.
Advanced Metering Infrastructure (AMI)	Advanced metering infrastructure (AMI) is an integrated system of meters, communications networks, and data management systems that enables two-way communications between utilities and customer meters.
Balancing	Balancing or matching load with resources to meet demand. Commonly referred to as load/resource balance.
Annualized Fuel Utilization Efficiency (AFUE)	Annualized Fuel Utilization Efficiency (AFUE) Furnaces are rated by the Annual Fuel Utilization Efficiency (AFUE) ratio, which is the percent of heat produced for every dollar of fuel consumed. Any furnace with an efficiency of 90% or higher is considered high efficiency.
Benefit/Cost Ratio (BCR)	A ratio used to summarize a benefit-cost analysis to determine if a proposed project's benefits outweigh the costs. If the BCR is greater than one, the net present value of acting is expected to be positive. If the BCR is less than one, the costs outweigh the benefits.
BTU and BTUH	British Thermal Unit (BTU) is a measure of heat energy. BTUH is British Thermal Unit per hour. One BTU is the amount of energy needed to raise 1 pound of water by one degree Fahrenheit.
Capacity Utilization	Capacity utilization measures the maximum rate of potential output used over a set period.
Carbon	Short for carbon dioxide, a greenhouse gas produced by burning fossil-based fuels and other sources.
Carbon Intensity	The amount of carbon emitted per unit of energy consumed.
Capacity	The maximum output or electrical rating, commonly expressed in megawatts (MW).
Capacity Factor	The ratio of the net electricity generated, for the time considered, to the energy that could have been generated at continuous full-power operation during the same period. ⁹
Climate Change	The rise in average surface temperatures on Earth due primarily to the human use of fossil-based fuels, which releases carbon dioxide and other greenhouse gases into the air.
CEJST	The Climate and Economic Justice Screening Tool (CEJST) is a geospatial mapping tool to identify disadvantaged communities.
Coefficient of Performance (COP)	An efficiency ratio that measures useful heating or cooling provided relative to the work required. In electric heat pumps, this is the relationship between the energy that is delivered from the heat pump as cooling or heat (BTUh is converted to equivalent power kW), and the power (kW) that is supplied to the compressor.
Coincident Demand	The sum of two or more demands that occur in the same time interval ¹⁰ .
Cold Climate Heat Technology	The most efficient type of air source heat pump designed for cold climates using variable speed drive compressor technology.

⁹ [Capacity Factor \(net\) | NRC.gov](#)

¹⁰ <https://www.eia.gov/tools/glossary>

Commodity	An economic good that can be bought and sold and interchangeable with other goods of the same type.
Controlled Charging	Controlled or managed EV charging enables the utility and customer to align charging behavior that will potentially mitigate higher costs and carbon impacts during peak demand hours.
Cost-parity	Same price for product that is equivalent in value.
Critical Peak Pricing	Critical peak pricing is a price-responsive mechanism designed to incentivize customers to reduce or shift electricity usage during a critical event.
Demand	The rate at which energy is being used by the customer.
Demand Response (DR)	Demand response is a measure to reduce or shift electricity usage during peak periods or as a response to supply constraints.
Demand Side Management (DSM)	An action to effectively reduce or modify the demand for energy. DSM is often used to reduce load during peak demand and/or in times of supply constraint.
Direct Air Capture	A technology to capture CO ₂ from the atmosphere.
Direct Load Control (DLC)	The consumer load that can be interrupted at the time of peak load by direct control of the utility ¹¹ .
Discounted Cash Flow	A method to estimate the present value of an investment based on the expected future cash flows.
Discount Rate	The interest rate used to determine the present value of future cash flows.
Dispatchable	The operating control of an integrated electric system involving operations such as the assignment of load to specific generating stations and other sources of supply to affect the most economical supply as the total or the significant area loads rise or fall ¹² .
Distributed Generation (DG)	Distributed generation (sometimes call Distributed Energy Resources – DER) refers to systems that generate electricity at or near the load it is intended to serve (thereby reducing transmission needs/costs) and connected to the distribution system.
Distribution Assets	The portion of the electric system’s poles, transformers, and other equipment dedicated to delivering electricity at the required voltage for the end-user.
Distribution Capacity	The installed capacity and capable load of individual circuits within the distribution asset system.
Diurnal	Diurnal variation refers to daily fluctuations.
Disadvantaged Communities (DAC)	By the Justice 40 Federal definition , disadvantaged communities are those that are marginalized, underserved, and overburdened by pollution.
Duct System	A system of tubes and pipes used for heating, ventilation, and air conditioning
Electric Panel	The electric service panel or circuit breaker box connects the main power line and distributes electrical currents to circuits within a home or building.
Electric Vehicle (EV)	<p>A vehicle that derives all or part of its power from electricity supplied by the electric grid. Primary EV options include battery, plug-in hybrid, or fuel cell.</p> <ul style="list-style-type: none"> • Battery Electric Vehicles (BEV) typically do not have an internal combustible engine (ICE) or fuel tank and rely solely on its battery charged by electricity to operate the vehicle. Typical driving ranges are less ICE vehicle options but newer models with advanced battery technology support higher ranges. • Plug-in Hybrid Electric Vehicles (PHEV) are powered by an on-board battery and gasoline with the ability to operate solely on its battery, ICE, or a combination of both. When the battery is fully charged and gasoline tank full, the PHEV driving range is comparable to a conventional ICE vehicle.

¹¹<https://www.eia.gov/tools/glossary>

¹²<https://www.eia.gov/tools/glossary>

	<ul style="list-style-type: none"> Fuel Cell Electric Vehicles (FCEV) run on compressed liquid hydrogen. Combining hydrogen with oxygen generates the electrical energy that either flows to the motor or to the battery to store until it's needed. FCEVs have a driving range comparable to a conventional ICE vehicle.
Electric Vehicle (EV) Charging Stations	<p>EV charging stations typically fall under three primary categories: Level 1, Level 2, and Level 3 also referred to as DC Fast Chargers¹³.</p> <ul style="list-style-type: none"> Level 1: Provides charging through a 120 V AC plug and does not require installation of additional charging equipment. Can deliver 2 to 5 miles of range per hour of charging. Most often used in homes, but sometimes used at workplaces. Level 2: Provides charging through a 240 V (for residential) or 208 V (for commercial) plug and requires installation of additional charging equipment. Can deliver 10 to 20 miles of range per hour of charging. Used in homes, workplaces, and for public charging. DC Fast Charge: Provides charging through 480 V AC input and requires highly specialized, high-powered equipment as well as special equipment in the vehicle itself. (Plug-in hybrid electric vehicles typically do not have fast charging capabilities.) Can deliver 60 to 80 miles of range in 20 minutes of charging. Used most often in public charging stations, especially along heavy traffic corridors.
End Use	The use of energy for a specific purpose where electricity is converted into useful work. Examples include transportation, heating, or cooling.
Energy Efficiency (EE)	Refers to programs that are aimed at reducing the amount energy used in homes and other buildings. Examples include high-efficiency appliances, lighting, and heating systems.
Energy Efficiency Ratio (EER)	The Energy Efficiency Ratio (EER) of an HVAC cooling device is the ratio of output cooling energy (in BTU) to input electrical energy (in watts) at a given operating point.
Energy Factor (EF)	The energy factor (EF) indicates a water heater's overall energy efficiency based on the amount of hot water produced per unit of fuel consumed over a typical day.
Fossil Fuel	An energy source formed in the Earth's crust from decayed organic material. The common fossil fuels are petroleum, coal, and natural gas ¹⁴ .
Generation	The process of producing electricity from water, wind, solar, fossil-based fuels, and other sources.
Generation Capacity	The maximum output, commonly expressed in megawatts (MW), that generating equipment can supply to system load ¹⁵
Green	Green or clean electricity produced with little-to-no environmental impact or contributes to global warming caused by greenhouse gas emissions.
Greenhouse Gas (GHG) Emissions	GHG emissions are gases, such as carbon dioxide, that trap heat in the atmosphere. The largest source of GHG emissions from human activities in the U.S. is from burning fossil-based fuels for electricity, heat, and transportation ¹⁶ .
Grid	The electricity grid, or grid, refers to the system that moves electricity from its source through transformers, transmission lines, and distribution lines to deliver the product to its end-user, the consumer.
Heat Pump	Heating and/or cooling equipment that, during the heating season, draws heat into a building from outside and, during the cooling season, ejects heat from the building to the outside. Heat pumps are vapor-compression refrigeration systems whose

¹³ <https://www.energy.gov/eere/electricvehicles/charging-home>

¹⁴ <https://www.eia.gov/tools/glossary>

¹⁵ <https://www.eia.gov/tools/glossary>

¹⁶ <https://www.epa.gov/ghgemissions/sources-greenhouse-gas-emissions>

	indoor/outdoor coils are used reversibly as condensers or evaporators, depending on the need for heating or cooling ¹⁷ .
Heating seasonal performance factor (HSPF)	Heating seasonal performance factor (HSPF) is a term used in the heating and cooling industry. HSPF is specifically used to measure the efficiency of air source heat pumps. HSPF is defined as the ratio of heat output (measured in BTUs) over the heating season to electricity used (measured in watt-hours).
HVAC	HVAC is an acronym for heating, ventilation, and air conditioning.
Incremental Cost	See Marginal Cost
Inflation	The growth rate of a price index. Inflation occurs when the purchasing power of your dollars decreases due to rising prices.
Integrated Resource Plan (IRP)	An IRP is a plan that outlines how a utility will meet its future electricity needs over a long-term planning horizon.
Interval Metering	Interval metering data is a series of measurements of energy consumption, taken at pre-defined intervals, typically sub-hourly. In end-use studies, energy consumption is measured in 15-minute or 1-minute granularity.
Intra-day Net Load Ramping	Net load ramping occurs within the day when renewable generation decreases at the same time load rises.
Light-duty Vehicles	Light duty refers to gross vehicle weight rating and includes passenger cars, SUVs, trucks, and vans that weigh up to 10,000 pounds.
Line-loss	The amount of electricity lost during the transmission and distribution phases as it travels across the grid.
Load	The amount of electricity on the grid at any given time, as it makes its journey from the power source to all the homes, businesses.
Load Shape	A method of describing peak load demand and the relationship of power supplied to the time of occurrence ¹⁸ . Interval metering of end-uses is one method used to develop a load shape.
Marginal Cost	The change in cost associated with a unit change in quantity supplied or produced ¹⁹ .
Marginalized Communities	Communities that experience discrimination and exclusion from social, economic, and/or cultural life.
Market-based pricing	Prices of electric power or other forms of energy determined in an open market system of supply and demand under which prices are set solely by agreement as to what buyers will pay and sellers will accept. Such prices could recover less or more than full costs, depending upon what the buyers and sellers see as their relevant opportunities and risks ²⁰ .
Market Liquidity	Market liquidity refers to the extent a market, such as the wholesale electricity market or real estate market, allows assets to be bought and sold with price transparency.
Megawatt (MW)	The standard term of measurement for bulk electricity. One megawatt is 1 million watts. One million watts delivered continuously 24 hours a day for a year (8,760 hours) is called an average megawatt.
Mini-Split Ductless System	A ductless heating and cooling system for use in smaller spaces or individual rooms. Mini-split systems have two main components: an outdoor compressor/condenser and an indoor air-handling unit(s).
MPGe	Miles per gallon of gasoline equivalent. Think of this as being like MPG, but instead of presenting miles per gallon of the vehicle's fuel type, it represents the number of miles

¹⁷ <https://www.eia.gov/tools/glossary>

¹⁸ <https://www.eia.gov/tools/glossary>

¹⁹ <https://www.eia.gov/tools/glossary>

²⁰ <https://www.eia.gov/tools/glossary>

	the vehicle can go using a quantity of fuel with the same energy content as a gallon of gasoline. This allows a reasonable comparison between vehicles using different fuels ²¹ .
MSRP	MSRP is the acronym for manufacturer's suggested retail price.
MTCO₂e	Metric tons of carbon dioxide equivalent are a unit of measurement. The unit "CO ₂ e" represents an amount of a GHG whose atmospheric impact has been standardized to that of one unit mass of carbon dioxide (CO ₂), based on the global warming potential (GWP) based on the global warming potential (GWP) of the gas.
NESC	National Electric Safety Code
Nominal Dollar	Nominal or current dollars have not been adjusted for inflation.
Noncoincident Demand	Sum of two or more demands on individual systems that do not occur in the same demand interval ²² .
1-in-2 or 1-in-10	A statistical measure used for risk analysis. The probability or chance of something occurring one year such as a one-hour peak in year 2, 1-in-2 year, is 1 / 2 or 50%. A 1-in-10 year has 1/10 or 10% chance of occurring in any one year.
Peak Demand	The largest instance of power usage in a given time frame.
Peak Diversity Factor	Peak Diversity Factor is the ratio of coincident peak demand to the non-coincident peak demand over a given period. This ratio illustrates the relationship between the peak electricity use of a population relative to the sum of all individual peak electricity use within the population. A high peak diversity factor (100%) indicates that the individual units within the population peak simultaneously, whereas a low peak diversity factor illustrates that individual units within the population peak at different times.
Peak Time Rebate	A pricing mechanism designed to incentivize reducing energy during peak time events by offering a rebate.
Peaker Plant	Peaker plant, also known as a peaking power plant or simply peaker, is a power plant that generally runs during times when demand for electricity is high or at its peak time. Peaker plants are typically gas turbines that burn natural gas.
Photovoltaic (PV)	PV is the process of converting sunlight into electrical energy using semiconducting materials.
Power	The rate of producing, transferring, or using energy, most associated with electricity. Power is measured in watts and often expressed in kilowatts (kW) or megawatts (MW) ²³ .
PUC	Public Utility Commission
Quad	Quadrillion Btu 10 ¹⁵ Btu. The quantity 1,000,000,000,000,000(10 to the 15th power). ²⁴
Qualitative	Qualitative data is descriptive, conceptual, and is non-numerical.
Quantitative	Quantitative data is anything that can be counted, measured, or quantified using a numerical value.
Real-time	Actual time of occurrence.
Real-time Pricing	Real-time Pricing is designed to charge each kWh delivered based on fluctuating wholesale prices or production costs.
Renewable Natural Gas (RNG)	RNG is derived from the decomposition of organic waste and has lower carbon emissions than conventional natural gas.
Residential Building Stock Assessment (RBSA)	An assessment developed to capture the residential building sector that considers building practices, fuel choices, and diversity of climate across the region.
Resource Adequacy	Ensuring there are sufficient generating resources when and where they are needed to serve the demands of electrical load in "real time" (i.e., instantaneously). An adequate

²¹ <https://www.epa.gov/fueleconomy/text-version-electric-vehicle-label>

²² <https://www.eia.gov/tools/glossary>

²³ <https://www.eia.gov/tools/glossary>

²⁴ <https://www.eia.gov/tools/glossary>

	physical generating capacity dedicated to serving all load requirements to meet peak demand and planning and operating reserves, at or deliverable to locations and at all times.
Resource Portfolio	All the sources of electricity provided by the utility.
Scenario	A projection or forecast that provides a framework to explore plausible outcomes. Scenario analysis is the process of analyzing plausible outcomes and typically includes base-case, expected-case, and worst-case scenario analysis.
Sector	Group of major energy consumers developed to analyze energy use. Commonly referred to as residential, commercial, industrial, and transportation sectors.
Segment	Customer segmentation or segment means separating the diverse population of end-use customers in groups based on similarities in customer needs and preferences.
Sensitivity	Sensitivity analysis is a method to determine how changes in methods, models, values of variable or assumptions may lead to different interpretations or conclusions by assessing the impact, effect or influence of key assumptions or variable.
Social Cost of Carbon	The estimated economic damage in dollars from emitting one ton of carbon dioxide.
Therms	A measurement of heat energy in natural gas. One unit of heat is equal to 100,000 British thermal units (BTU).
Time of Use (TOU) Rate	Time of use rates are rate structures which incent a customer to change their electric usage patterns, because they typically charge higher prices for consumption during peak periods.
Total Lifecycle	Lifecycle of a targeted measure refers to the expected life from the time the product is introduced in the market until it's removed.
Transformer	An electrical device for changing the voltage of alternating current ²⁵ .
Transmission	An interconnected group of lines and associated equipment for the movement or transfer of bulk energy products from where they are generated to distribution lines that carry the electricity to consumers.
Transmission Capacity	The maximum line and associated equipment available to move or transfer bulk energy across a transmission system.
Uncontrolled Charging	Uncontrolled charging allows for charging at any time of time without restraints including differences in price to charge. Also known as unmanaged charging.
Uniform Energy Factor (UEF)	A water heater's UEF rating is a measure of its energy efficiency, with higher numbers denoting more efficient units. The UEF calculation is based off how much energy the water heater uses and how much energy is used to power the water heater itself.
Upstream Emissions	Upstream typically refers to accounting for the all the emissions associated with extracting and processing resources used to create energy.
Variable Generation	Variable generation is produced using renewable resources (e.g., solar, wind, or run-of-river hydro) that is intermittently available.
Voltage	The difference in electrical potential between any two conductors or between a conductor and ground. It is a measure of the electric energy per electron that electrons can acquire and/or give up as they move between the two conductors. ²⁶ .
Wholesale Market	The market for buying and selling of electricity before it is sold to the end-user.

²⁵ <https://www.eia.gov/tools/glossary>

²⁶ <https://www.eia.gov/tools/glossary>

APPENDIX B: EWEB’S CLIMATE CHANGE POLICY (SD15)

Strategic Direction Policies (SD Policies)

SD15 Climate Change Policy

Effective Date January 3, 2023

The Board recognizes that climate change presents ongoing environmental, economic, and social risk to EWEB, our customers, community, and the world. Greenhouse gas (GHG) emissions from human activity are known to be the primary cause of climate change, with the energy, industrial, construction, agricultural and transportation sectors generally identified as the primary sources of greenhouse gas emissions in the United States.

The primary direct impacts to EWEB operations from climate change include changes in streamflow –quantity and timing– affecting hydroelectric generation, impacts to water quality and watershed health, increased risk of wildfires, changes in consumption patterns, and increasing threats from extreme weather events. The Board also recognizes that EWEB, as a water and electric utility, impacts our climate through electric generation resource choices, business practices, and the operation and maintenance of our assets, lands, buildings, and transportation fleet.

Consistent with EWEB’s Vision, Mission, and Values (SD1), the Board supports EWEB taking an active role in combating and mitigating the impacts of climate change, within the context of and while executing our strategy and ongoing operations.

Accordingly, the following primary directives are adopted,

- **POWER GENERATION:** The Board is committed to supporting a low-carbon electric power portfolio that maintains, on a planning basis, over 90% of annual energy from carbon-free resources and targets over 95% of annual energy from carbon-free resources by 2030 to the extent possible and practical without distinct adverse impacts to customer-owners. Using the Integrated Resource Plan (IRP) process including final adoption by resolution (GP7), the Board will work with the General Manager to establish the long-term (20-year) principles, priorities, approaches, definitions (including carbon-free, carbon intensity), measurements, and goals for the electric generation portfolio, demand response, conservation and energy efficiency, and customer impact limitations (including but not limited to reliability, cost, and equity) supporting this directive.
- **CLIMATE POLICY:** The Board authorizes, delegates, and directs the General Manager to participate in local, state, and regional efforts to encourage, develop and enact measures to minimize and/or mitigate GHG emissions that contribute to climate change. Consistent with Board Policy (GP13), prior to legislative sessions the Board develops and guides EWEB’s positions relative to legislation, including those related to climate and environmental policy supporting this directive.
- **EWEB OPERATIONS:** The Board further authorizes, delegates, and directs the General Manager to continue efforts to minimize and/or mitigate GHG emissions from EWEB’s operations that contribute to climate change. As initially established in 2010, EWEB adopted a goal to reduce the Scope 1 and 2 (direct GHG emissions and energy) greenhouse gas emissions associated with its operations and facility management activities. Accordingly, and as formally established by this directive, EWEB plans to reduce our net Scope 1 and 2 GHG emissions from operations relative to 2010 levels by 25% by 2020, 50% by 2030, and achieve carbon neutrality from our operations by 2050.

- **CUSTOMER DECARBONIZATION:** The Board further authorizes, delegates, and directs the General Manager to assist customers with achieving their GHG emission reduction goals through partnerships, technical assistance, resources, and programs that support, but are not limited to, energy efficiency, alternative fuels, electric and water conservation, electrification, and carbon offsets and sequestration. Long-term conservation, energy efficiency, and demand-response goals are established as part of the IRP process. Additional program objectives, incentives and budgets will be established annually, as applicable, and/or through revisions to the strategic plan.
- **IMPACTS ON EWEB:** Consistent with resiliency initiatives included in EWEB's approved strategic plan, the Board directs the General Manager to evaluate and enact measures, as necessary and appropriate, to prepare for and minimize the effects of climate change that could impact EWEB's water and electric supply and infrastructure, damaging EWEB's resiliency and reliability.

IMPLEMENTATION:

In support of the primary directives identified above, major decisions and actions, including those related to this policy, will be evaluated based on a triple-bottom-line methodology, including assessments of consistency with the organization's values, including safety, reliability, affordability, environmental stewardship, transparency, and equity.

The Board and General Manager will work together to develop annual goals, consistent with Board Policy BL4 and BL5, related to the primary directives, as applicable, including milestones and measurements, and reporting frequency.

So that EWEB's actions are visible to our community, at least annually EWEB will compile and report GHG emission reduction and/or mitigation activity, including a greenhouse gas inventory (Scope 1 and 2, along with Scope 3 where impactful, applicable, and practical), and will calculate and publish the carbon intensity of our energy portfolio. Definitions, GHG emission reduction and/or mitigation details (e.g., fuel mix, use of offsets, etc.) and carbon accounting methods will be published, consistent with industry standards and/or official reporting requirements where applicable.

Source: Steve Newcomb, Environmental Manager, Approved 09/18/07; Revised 07/10/18, Resolution No. 1820; Revised 01/04/22, Resolution No. 2204; Revised 01/03/23, Resolution No. 2303.

Links and Relevant Resources

- [EWEB Board Policies](#)

APPENDIX C: EWEB'S CARBON INTENSITY GUIDANCE

THE CHALLENGES OF THE EXISTING POLICY CONTEXT FOR GHG REPORTING

This section to be written before the draft is finalized in April 2023.

EXISTING PROTOCOLS FOR GHG REPORTING

This section to be written before the draft is finalized in April 2023.

Protocols to be referenced here include:

- World Resources Institute Corporate GHG Inventory Protocol
- World Resource Institute GHG Inventory Protocol – Scope 2 Guidance
- World Resources Institute Project Accounting GHG Protocol
- The Climate Registry's Electric Power Sector Protocol
- CDP (formerly known as the Carbon Disclosure Project)

RELEVANT EMISSIONS FACTORS

This section to be written before the draft is finalized in April 2023.

Emissions factors to be published in this section include:

- EPA eGRID output emissions rate for EWEB's subregion, formerly known as the Northwest Power Pool (NWPP), now known as the Western Power Pool.
- EPA eGRID output emissions rate for the western US grid known as the Western Electricity Coordinating Council (WECC). See Section 2.3.1 above for a map of the electricity grids in the United States.
- EPA eGRID non-baseload emissions rate for EWEB's subregion, formerly known as the Northwest Power Pool (NWPP), now known as the Western Power Pool.
- Oregon Department of Environmental Quality GHG Reporting Program, EWEB utility-specific emissions factors.
- Oregon Department of Environmental Quality Clean Fuels Program, EWEB utility-specific lifecycle emissions factor used for estimating clean fuels credits.

APPENDIX D: EWEB'S ROLE IN CITY OF EUGENE'S CAP2.0

HISTORY AND IMPLEMENTATION OF EUGENE'S CLIMATE ACTION PLAN (CAP) 2.0

Eugene has a long history of climate action within both city government operations and the community. The city conducted its first Community Climate and Energy Action Plan in 2010. In 2014, City Council passed the first version of its Climate Recovery Ordinance (CRO), which was updated to its current form in 2016. The CRO includes 4 bold goals – two focused on the community including residents and businesses and two focused on city operations (see box).

In 2017-2018, Eugene updated its climate action plan for city operations and kicked off the process to engage the broader community to develop an update to their 2010 Climate and Energy Action Plan 1.0.

In summer of 2020, Eugene published CAP2.0. This was the culmination of a two-year process to engage with a broad coalition of stakeholders to identify and quantify opportunities and commitments to move towards reduced fossil fuel use, carbon neutrality, and climate change adaptation.

EUGENE CLIMATE COLLABORATIVE (ECC), LARGE-LEVER SHAREHOLDERS

As part of the CAP2.0 coalition building process, the City of Eugene explains on its website, “the project team focused its engagement on systems-level actors across the community, creating the Eugene Climate Collaborative Partners (ECC). ECC Partners were deliberately defined as organizations who have significant oversight and impact on community-wide fossil fuel use and emissions or can affect or alter systems that will enable the community to adapt and prepare for climate change.”²⁷

ECC partners include City of Eugene, Lane County, Bethel School District, Eugene 4J School District, Lane Community College (LCC), University of Oregon, Lane Transit District (LTD), **Eugene Water & Electric Board (EWEB)**, Metropolitan Wastewater Management Commission (MWMC), NW Natural, PeaceHealth, Eugene Area Chamber of Commerce.

Eugene's Climate Recovery Ordinance

Community goals:

- Reduce community fossil fuel use by 50% of 2010 levels by 2030.
- Reduce total community greenhouse gas emissions to an amount that is no more than the city of Eugene's average share of a global atmospheric greenhouse gas level of 350 ppm by 2100, which was estimated in 2016 to require an annual average emission reduction level of 7.6%.

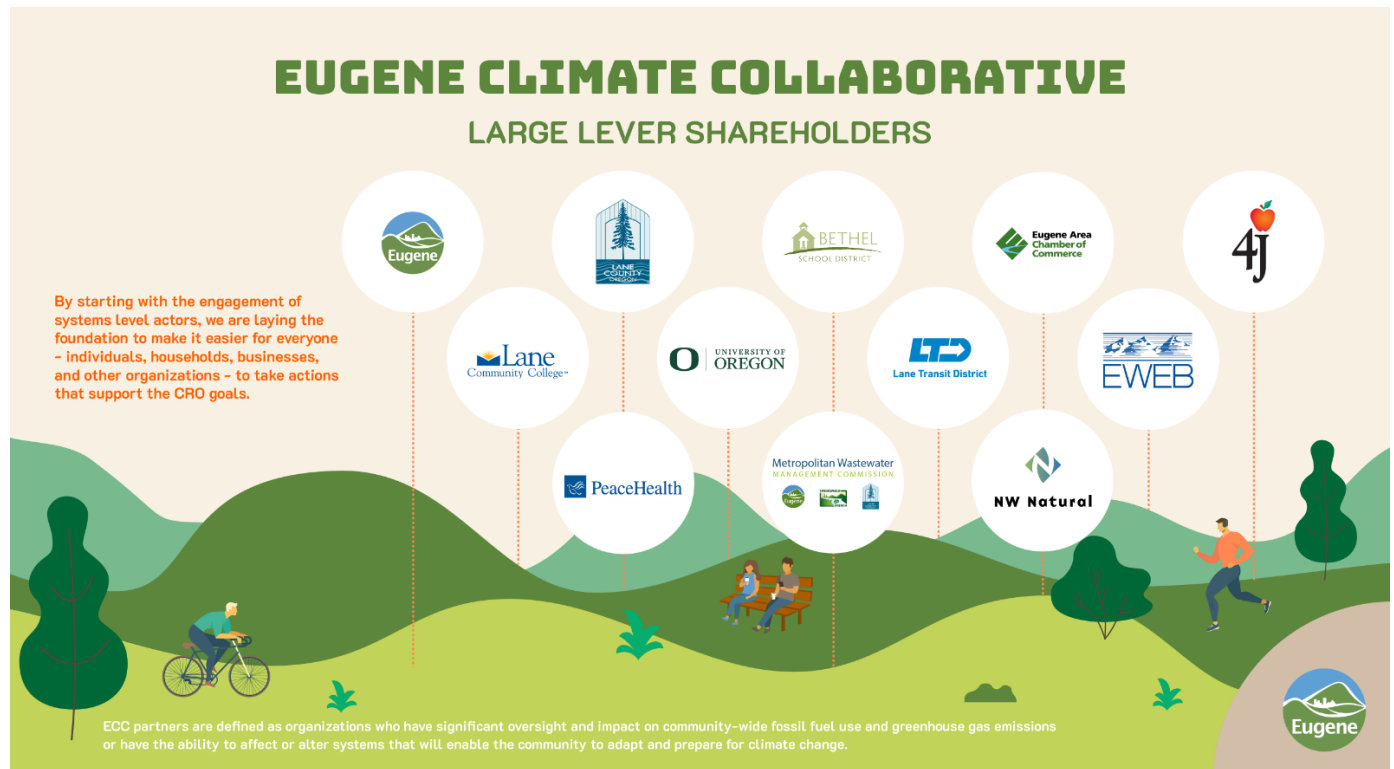
City Operation goals:

- All City of Eugene owned facilities and operations shall be carbon neutral by 2020, meaning no net release of greenhouse gas emissions.
- Reduce the City of Eugene's use of fossil fuels by 50% compared to 2010 usage.

Source: [City of Eugene, Climate Recovery Ordinance](#)

²⁷ Eugene CAP2.0, page 15, Eugene Climate Collaborative Partners. Downloaded from <https://www.eugene.gov/4284/Climate-Action-Plan-20>.

Figure 18: City of Eugene CAP2.0 List of Eugene Climate Collaborative Large-Lever Shareholders



EWEB'S COMMITMENTS IN CAP2.0

One of the guiding principles of the CAP2.0 is to “start with a foundation of commitments”. The plan records a set of voluntary commitments from participating ECC members. By documenting and quantifying the impact of these action items and commitments, our community can identify leaders and create accountability for follow-through.

EWEB submitted a series of commitments in CAP2.0 throughout the categories of Transportation, Building Energy, and Resiliency. These are summarized below with their CAP2.0 assigned action item numbering (example T38 is the 38th action item within the Transportation section). The text in *italics* is directly from the CAP2.0 document. In the time since publication in summer of 2020, some items have changed and notes to that effect are listed for each section.

Transportation

The table below provides a summary of EWEB's Transportation commitments in CAP2.0.

Transportation Action Items		
Action Item #	Topic	Description Details from CAP2.0
T24	EV marketing & awareness	<i>COE and EWEB to increase the number of EV-centered ride and drive consumer education events. This action is scheduled to be completed between 2023 and 2025.</i>
T36	EV market transformation	<i>EWEB will focus on an evolution of targeted market transformation programs and efforts to increase EVs in the community, including dealership engagements and incentives, education campaigns, and ride and drive events. Funding for this action primarily comes from the Clean Fuels Program (CFP).</i>
T37	EV infrastructure incentives	<i>EWEB to incentivize commercial and residential charging infrastructure and to support regional efforts to expand available charging network, including EWEB-owned stations at its properties. Funding for this action primarily comes from the Oregon Clean Fuels Program (CFP).</i>
T38	EV support to underserved communities	<i>EWEB to explore ways to increase EV use in underserved populations through efforts and programs including partnerships with key agencies, grants, culturally appropriate outreach and education, and non-ownership models like multi-family car sharing. Funding for this action primarily comes from the Clean Fuels Program (CFP).</i>
T40	EWEB owned fleet GHG reduction goals	<i>LCC, Lane County, and EWEB continue to invest in fuel efficient motor pools. Public agencies are focused on purchasing electric vehicles when practical and high efficiency hybrids or diesels when necessary. These vehicles require less maintenance and have lower operating costs than the vehicles they are replacing.</i>

T24 and T36: EV Market Support Initiatives

Under the Oregon Clean Fuels Program, credits associated with residential vehicle electrification are calculated by the Oregon Department of Environmental Quality (DEQ). For EWEB, credit calculations are based on:

- The number of EVs registered in a EWEB's service area, using vehicle registration data from Department of Motor Vehicle (DMV).
- An estimate of the amount of electricity used per EV, derived from direct and non-direct metered data.
- The carbon-intensity of the EWEB's utility-specific average.

This has provided EWEB with a new source of funding, separate from ratepayer funds, that EWEB can use to support and advance electric mobility within our service territory. These programs are supported via funding from the Oregon Clean Fuels Program and are not supported using ratepayer dollars. **Per the Oregon Department of Energy, as of October 2022, EWEB has 3,096 registered electric vehicles within its service territory.**

EWEB supports electric mobility education and market transformation in several ways (T24/32, T37, and T38 below). Key 2022 EV market support initiatives included:

- **rEV Up! Eugene Workshops:** EWEB and our community partners, such as the Emerald Valley Electric Vehicle Association, host events to provide customers the opportunity to ask questions and experience electric transportation firsthand. Support for rEV Up electric vehicle education workshops
- **Electric vehicle test-drive events:** Through Electric Car Guest Drive events, community members can test drive an electric vehicle and learn about the benefits of switching to an EV from existing EV owners. EWEB held two events in 2022 in May and August, reaching 231 drivers.
- **Free charging stations:** EWEB has installed free public level 2 electric vehicle charging stations at its headquarters building at 5th near the Willamette River in downtown Eugene, at its Roosevelt Operations Center in West Eugene, and at its Leaburg facility up the McKenzie River. They are available for community and employee use.

Links and Relevant Resources:

- [EWEB Oregon Clean Fuels 2021 Clean Fuels Credits Revenue Spending Report](#)
- [Oregon Clean Fuels Program: Electric Utilities and the Clean Fuels Program](#)
- [Oregon Clean Fuels Program: Electricity Guidance Documents](#)

T24: EV Marketing & Awareness

COE and EWEB to increase the number of EV-centered ride and drive consumer education events. This action is scheduled to be completed between 2023 and 2025.

T36: EV Market Transformation

EWEB will focus on an evolution of targeted market transformation programs and efforts to increase EVs in the community, including dealership engagements and incentives, education campaigns, and ride and drive events. Funding for this action primarily comes from the Clean Fuels Program (CFP).

T37: EV Infrastructure Incentives

Replacing a fossil fuel-burning car with an all-electric model is a great way to lower a household's carbon footprint. But to achieve the greatest environmental benefit, it is important to charge your EV at the right time. Charging an EV right after work, when power consumption is highest, increases use of fossil fuel-burning generators, and leads to higher power prices and infrastructure costs.

T37: EV Infrastructure Incentives

EWEB to incentivize commercial and residential charging infrastructure and to support regional efforts to expand available charging network, including EWEB-owned stations at its properties. Funding for this action primarily comes from the Oregon Clean Fuels Program (CFP).

For the cleanest power, charge your car between 10 p.m. and 6 a.m. Charging during off-peak times, such as late evening, helps avoid or delay costly infrastructure investments and reduce market purchases at peak energy use times. Off-peak hours also coincide with the time when some renewable power sources are at their strongest—at night when the wind blows hardest and during the day when the sun shines brightest.

Most electric cars and Level 2 home chargers allow users to program the charge time, making it easy to fuel up with the cleanest possible power. It is for these reasons that EWEB offers incentives on electric vehicle charging infrastructure that allows users to program their charge times.

EWEB offers electric vehicle supply equipment (EVSE) incentives for residential and commercial applications. These programs are supported via funding from the Oregon Clean Fuels Program and are not supported using ratepayer dollars. Incentives offered and the 2022 incentive adoption rates include:

- \$500 Residential EVSE Rebates (Level 2): 228 installations completed in 2022
- \$1,500 Commercial EVSE Rebates (Level 2): 3 installations completed in 2022
- \$2,000 Commercial EVSE Rebates (Level 2) - Affordable Housing: 1 installation completed in 2022
- \$10,000 Commercial EVSE Rebates (Direct Current Fast Charging) - Single Port: 0 installations in 2022
- \$15,000 Commercial EVSE Rebates (Direct Current Fast Charging) - Multi Port: 0 installations in 2022

Figure 19: 2022 Residential EV Incentive Adoption by Month

2022 Residential EVSE Incentive Adoption by Month													Totals
Month	1	2	3	4	5	6	7	8	9	10	11	12	
Rebates	18	13	17	20	15	24	13	29	13	22	25	19	228

Figure 20: Residential EV Incentive Adoption by Year 2020-2022

2020-2022 Residential EVSE Projects	
Year	Projects
2020	92
2021	175
2022	228

For the Cleanest Power:

Charge your car between 10 p.m. and 6 a.m.

Links and Relevant Resources:

- [Oregon Electric Vehicle Dashboard](#)
- [EWEB Website: EV Incentives](#)
- [US Department of Energy: Alternative Fuels Data Center Information about Federal and State Incentives](#)

T38: EV Support to Underserved Communities
 EWEB recognizes that not everyone has equal opportunity to purchase a new or used electric vehicle, either due to upfront cost of the vehicle or due to charging challenges, among other barriers. EWEB seeks to offer electric mobility and transportation programs that help bring equitable access to the technology.

T38: EV Support to Underserved Communities

EWEB to explore ways to increase EV use in underserved populations through efforts and programs including partnerships with key agencies, grants, culturally appropriate outreach and education, and non-ownership models like multi-family car sharing. Funding for this action primarily comes from the Clean Fuels Program (CFP).

These programs are supported via funding from the Oregon Clean Fuels Program and are not supported using ratepayer dollars. Current equity-focused initiatives include:

- **GoForth Car Share:** EWEB has partnered with Forth, a non-profit organization supporting vehicle electrification to implement an electric car sharing program in Eugene. Forth offers similar programs throughout Oregon. The goal of the GoForth program is to provide access to affordable all-electric cars to test drive and use for errands, shopping, or appointments. Working in connection with St. Vincent de Paul and Lane Transit District, EWEB and Forth have placed car share vehicles near affordable housing and the Santa Clara Transit Station to provide low-cost electric mobility and charging. A third vehicle will be added in downtown Eugene in 2023. The first 4-hour ride with GoForth is free. Recurring rentals are \$4/hour. See table for 2022 usage information.
- **Electric Mobility Community Grants:** EWEB offered its first round of electric mobility community grants. The grants can be up to a maximum of \$25,000 and can be awarded to tax-exempt, academic, or public institutions in the Eugene community. In 2022, six grants were awarded – see table for selected entities. Special consideration was given to projects that advanced electric mobility in underserved communities or with a defined equity component to their program, including areas without ample access to public charging.
- **Electric Bicycle Rebates:** EWEB offers a \$300 e-bike incentive to increase access to more affordable, zero-emission electric bikes and support our community's commitment to transportation electrification, and active transportation options.

Figure 21: Eugene GoForth Car Share User Information, 2022

2022 GoForth Car Share User Data			
Car Share Location	Miles Driven	Trips	Users
Saint Vincent de Paul Affordable Housing: Iris Place	2,529	109	10
Lane Transit District: Santa Clara LTD Station	1,360	93	11

Figure 22: EWEB Transportation Electrification Community Grant Recipients, 2022

2022 Transportation Electrification Community Grant Winners	
Community Entity	Project
McKenzie School District	McKenzie Students Ride the E-Bus
Lane County Public Works	EV Charging at the Public Service Building Parking Structure
University of Oregon	E-Bike Lending Program
Shift Community Cycles	E-Cargo Bike Loan & Education Program
Lane Community College	EVSE Installation for LCC's Main Campus East Side
Cascadia Mobility	Electric Trikes to support Bike Share Maintenance and Operations

Figure 23: EWEB e-Bike Rebate Program Participation by Month, 2022

2022 EWEB E-Bike Program Adoption by Month (Program Started in April)										Totals
Month	4	5	6	7	8	9	10	11	12	
Incentives	0	47	109	74	168	144	231	105	93	971

Links and Relevant Resources:

- [Forth Website: GoForth Car Share Information](#)
- [EWEB Electric Mobility Grants](#)
- [EWEB E-Bike Rebates](#)

T40: EWEB Owned Fleet GHG Reduction Goals
Between 2010 and 2022, EWEB has reduced its greenhouse gas emissions from owned fleet vehicles by 64%.

In 2022, EWEB had a fleet of 392 active pieces of equipment. Of that, 224 were vehicles, there were 64 units of power operated equipment, and 104 trailers. The fleet size increased nearly 6% in 2022 over 2021. EWEB's GHG reductions have been driven by a switch from fossil to renewable biofuels. The biggest impact has come from switching from fossil diesel to renewable diesel (R99) since 2015. Other gains in recent years have come from increased use of E85 ethanol vehicles. While EWEB has invested in electric passenger vehicles, the COVID-19 pandemic depressed EWEB's use-case for passenger vehicles and electric technology is not as mature for the other heavy-duty vehicle applications that make up the remainder of EWEB's fleet.

T40: EWEB-Owned Fleet GHG Reduction Goals

LCC, Lane County, and EWEB continue to invest in fuel efficient motor pools. Public agencies are focused on purchasing electric vehicles when practical and high efficiency hybrids or diesels when necessary. These vehicles require less maintenance and have lower operating costs than the vehicles they are replacing.

Figure 24: EWEB Fleet GHG Emissions, 2010-2022 (MT CO₂e)

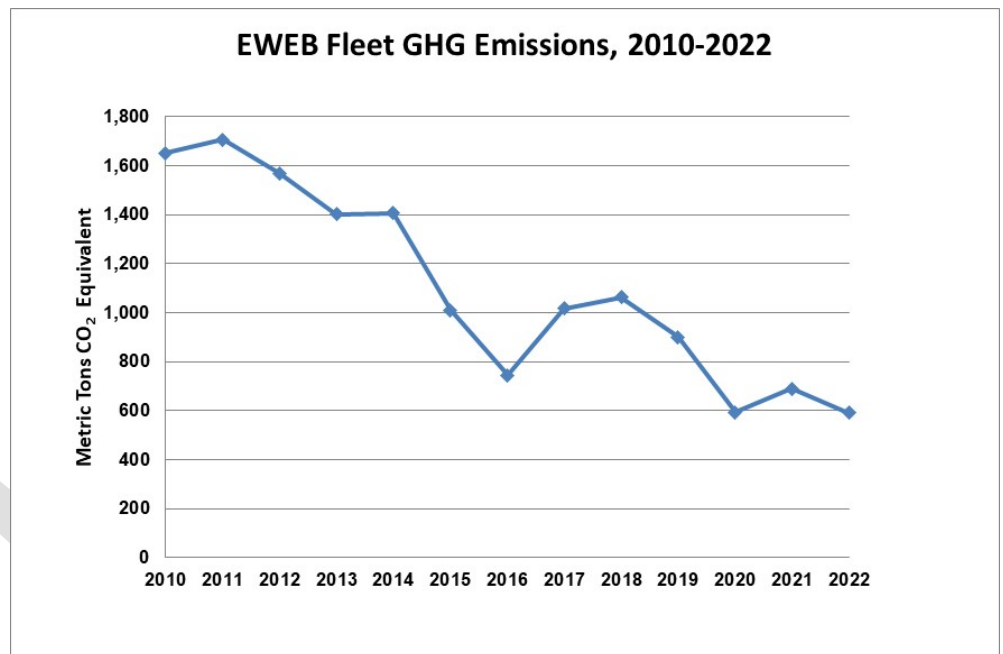


Figure 25: EWEB Fleet Fuel Consumption by Fuel Type, 2010-2022 (Gallons)

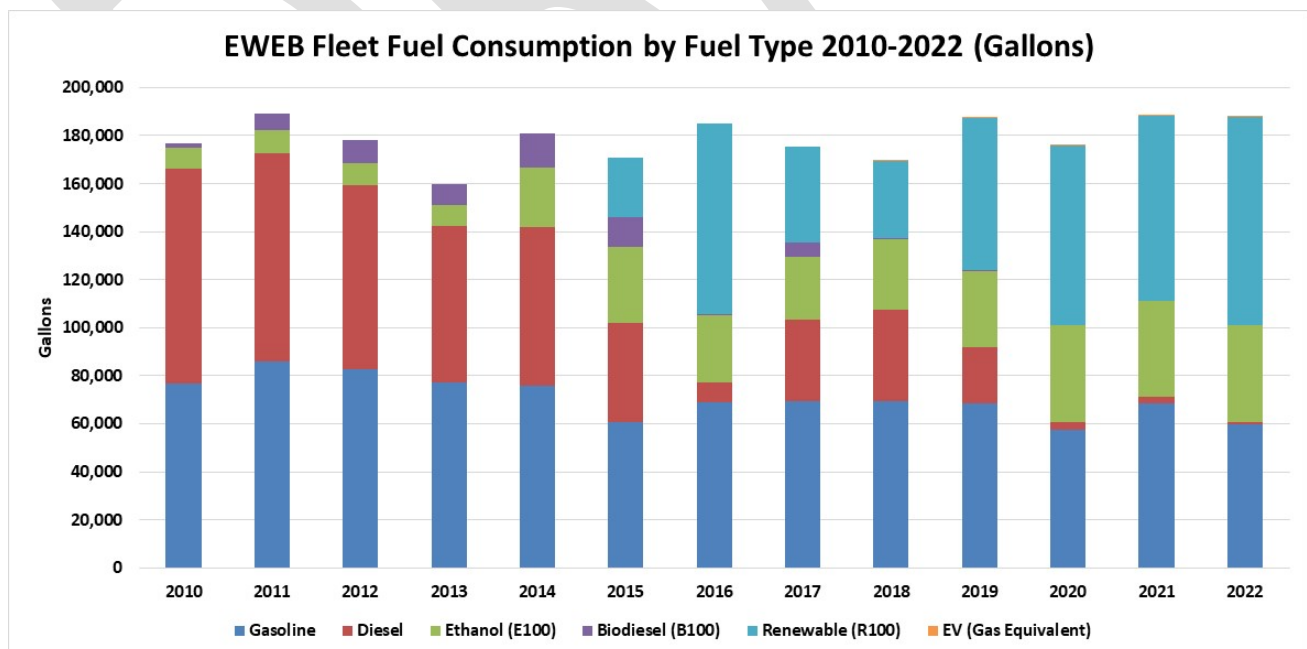


Figure 26: EWEB Fleet Fuel Consumption 2010-2022 (Gallons)

Gallons							
Year	Fossil Gasoline	Fossil Diesel	Ethanol (E100)	Biodiesel (B100)	Renewable Diesel (R100)	EV (Gas Equivalent)	Total
2010	76,670	89,684	8,518	1,830	0	0	176,702
2011	86,149	86,565	9,573	6,835	0	0	189,122
2012	82,760	76,435	9,196	9,580	0	0	177,971
2013	77,127	65,201	8,569	9,002	0	0	159,899
2014	75,897	66,159	24,596	14,331	0	0	180,983
2015	60,740	41,374	31,741	12,026	25,024	0	170,905
2016	68,883	8,462	27,974	403	79,492	0	185,214
2017	69,651	33,837	25,842	6,136	39,917	0	175,383
2018	69,311	38,394	29,184	496	32,023	25	169,433
2019	68,617	23,468	31,284	587	63,353	25	187,334
2020	57,718	3,164	40,218	127	74,529	15	175,770
2021	68,556	2,660	39,789	99	77,132	48	188,284
2022	59,782	1,136	40,128	51	86,480	103	187,680
% Change 2010-2022	-22%	-99%	371%	-97%	n/a	n/a	6%

Building Energy

The table below provides a summary of EWEB's Building Energy commitments in CAP2.0.

Building Energy		
Action Item #	High Level Description	Details from CAP2.0
Guiding Policy	EWEB's Integrated Resource Plan (IRP)	<i>EWEB's IRP helps EWEB understand the resources, technology, and infrastructure that will be needed to meet customers' future electricity needs. EWEB's ongoing electricity supply planning effort is aimed at optimizing power resources, assets, infrastructure, and customer products and services so that EWEB can continue to serve the community with clean, affordable, and reliable power, consistent with the values of EWEB's customer-owners.</i>
B8	EWEB owned facility GHG reduction goal*	<i>EWEB is implementing adopted GHG reduction goals, which call for EWEB to reduce our net Scope 1 and 2 GHG emissions from operations relative to 2010 levels by:</i> <ul style="list-style-type: none"> <i>25% by 2020</i> <i>50% by 2030</i> <i>Achieve carbon neutrality from our operations by 2050</i>
B9	Electrification Study	<i>EWEB to complete an Electrification Impact Study in 2020-2021. The study will explore the impacts of widespread electrification on our community. In this study, EWEB will hypothesize various electrification scenarios and assess potential impacts to power supply, demand, local infrastructure, and community greenhouse gas (GHG) emissions.</i>
B10	Energy Efficiency	<i>EWEB working with community partners to support building upgrades with incentives for smart electrification and energy efficiency.</i>
B11	Limited Income Programs	<i>EWEB and NWN limited income assistance programs and energy conservation education programs, which provide eligible customers with rebates and incentives to lower and pay their bills.</i>
B12	Load Growth via Conservation	<i>EWEB's commitment to conservation includes meeting all new base load growth through acquiring conservation rather than new energy resources. Each year, the utility targets between 1.4 and 1.6 MW for acquisition, dedicating appropriate budget and human resources to those targets.</i>
B13	Advanced Metering Infrastructure	<i>Once fully deployed, EWEB's advanced metering program will facilitate demand side management programs with customers to reduce energy use during peak periods. EWEB has begun consumer education on the value of reducing energy use during peak periods and plans to develop programs to help consumers shift energy use off-peak through a combination of technology and pricing signals.</i>

*Text for B8 has been updated since CAP2.0 was published to reflect EWEB's current goals for GHG reduction from internal operations per EWEB's Board-approved Climate Change Policy, SD15.

Guiding Policy: EWEB's Integrated Resource Plan

EWEB began a process to update its Integrated Resource Plan (IRP) in 2022. An IRP is a long-term planning document to identify EWEB's energy needs over the next 20 years and the best resource options to meet those needs.

For more information about EWEB's 2022 IRP base-case results and additional analysis, please see Section 3.3 in the Climate Guidebook above or see the links below.

Guiding Policy: EWEB's Integrated Resource Plan

EWEB's IRP helps EWEB understand the resources, technology, and infrastructure that will be needed to meet customers' future electricity needs. EWEB's ongoing electricity supply planning effort is aimed at optimizing power resources, assets, infrastructure, and customer products and services so that EWEB can continue to serve the community with clean, affordable, and reliable power, consistent with the values of EWEB's customer-owners.

Links and Relevant Resources:

- EWEB Website: [Integrated Resource Plan](#)
- Initial public draft of the 2022 Integrated Resource Plan
 - [Fact Sheet \(2 pages\)](#)
 - [Introduction and Executive Summary \(5 pages\)](#)
 - [Full Report \(25 pages\)](#)
 - [Full Report, including appendices \(79 pages\)](#)

B8: EWEB-owned facility GHG Reduction Goal

EWEB has been tracking our internal greenhouse gas emissions annually since 2009, in accordance with industry best standards and the World Resources Institute Greenhouse Gas Protocol. EWEB's Climate Change Policy (SD15) set specific GHG reduction goals for EWEB's internal operations (see box).

B8: EWEB-Owned Facility GHG Reduction Goal

EWEB is implementing adopted GHG reduction goals, which call for a reduction of Scope 1 and 2 GHG emissions from operations relative to 2010 levels by:

- *25% by 2020*
- *50% by 2030*
- *Achieve carbon neutrality from our operations by 2050*

In 2020, EWEB not only met but exceeded both its 2020 and 2030 GHG reduction targets by achieving a 55% reduction in annual emissions. Some of this reduction can be attributed to the COVID-19 pandemic as some business travel in owned vehicles and some building energy use was reduced.

In 2021 and 2022, EWEB achieved a 35% and 44% reduction in emissions over the 2010 baseline respectively. EWEB is well on its way to meeting the ambitious goal of 50% reduction over baseline by 2030. Progress towards EWEB's internal GHG goals is calculated using a market-based approach to electricity emissions that uses the EWEB-specific emissions factor for purchased electricity as calculated by Oregon DEQ's GHG reporting program.

For more information about EWEB's internal GHG inventory results, please see section 6.2 above.

Links and Relevant Resources:

- [EWEB's website: Our Commitment to the Environment](#)
- EWEB's Internal GHG Inventory Results, 2021 and 2022 (to be turned into a link once posted on the website)

B9: EWEB Electrification Study

In early 2020, EWEB's management and Commissioners agreed to develop a better understanding of the impacts of electrification on EWEB's future planning efforts. EWEB's first electrification study (November 2020), focused on the potential impacts of electrification without analyzing the costs to customers choosing to electrify. The Phase 2 report built on that initial analysis by considering the economics of electrification from multiple perspectives.

For more information about EWEB's Phase 1 and Phase 2 Electrification Studies, please see Section 3.2 in the Climate Guidebook above or see the links below.

Links and Relevant Resources:

- EWEB Website: [EWEB is Exploring the Impacts of Widespread Electrification in our Community](#)
- [EWEB Electrification Study – Phase 1 Report \(Oct 2020\)](#)
- [EWEB Electrification Study – Phase 2 Report \(Nov 2021\)](#)

B9: EWEB Electrification Study

EWEB to complete an Electrification Impact Study in 2020-2021. The study will explore the impacts of widespread electrification on our community. In this study, EWEB will hypothesize various electrification scenarios and assess potential impacts to power supply, demand, local infrastructure, and community greenhouse gas (GHG) emissions.

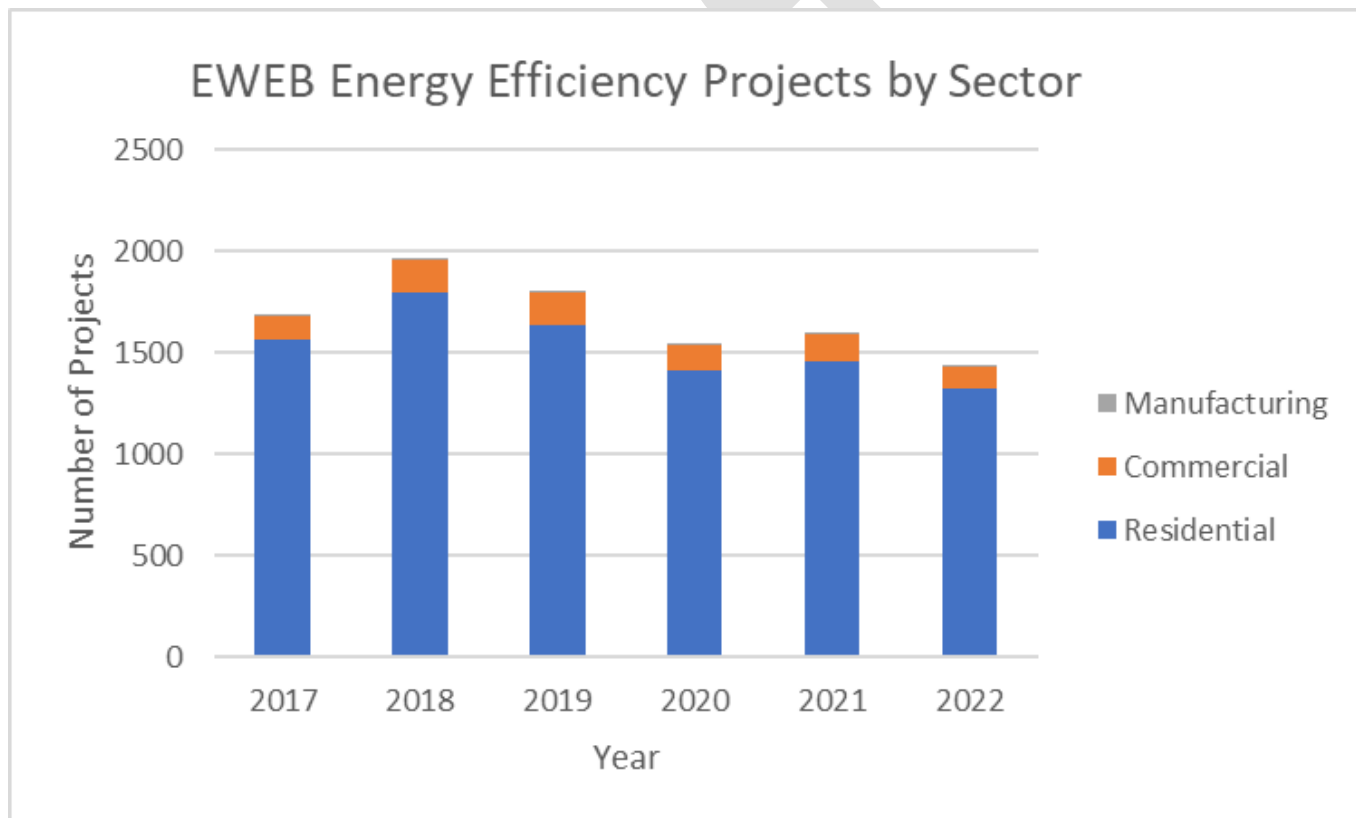
B10: EWEB Energy Efficiency Initiatives

One way to reduce greenhouse gas emissions from energy use is to improve energy efficiency within buildings. This is especially true for energy that uses fossil fuels. EWEB works with customers to complete over 1,000 energy efficiency projects per year. The majority are in the residential sector, due to the proportionally higher number of customers. The graph below shows number of EWEB energy efficiency projects by sector over the past six years.

B10: EWEB Energy Efficiency Initiatives

EWEB working with community partners to support building upgrades with incentives for smart electrification and energy efficiency.

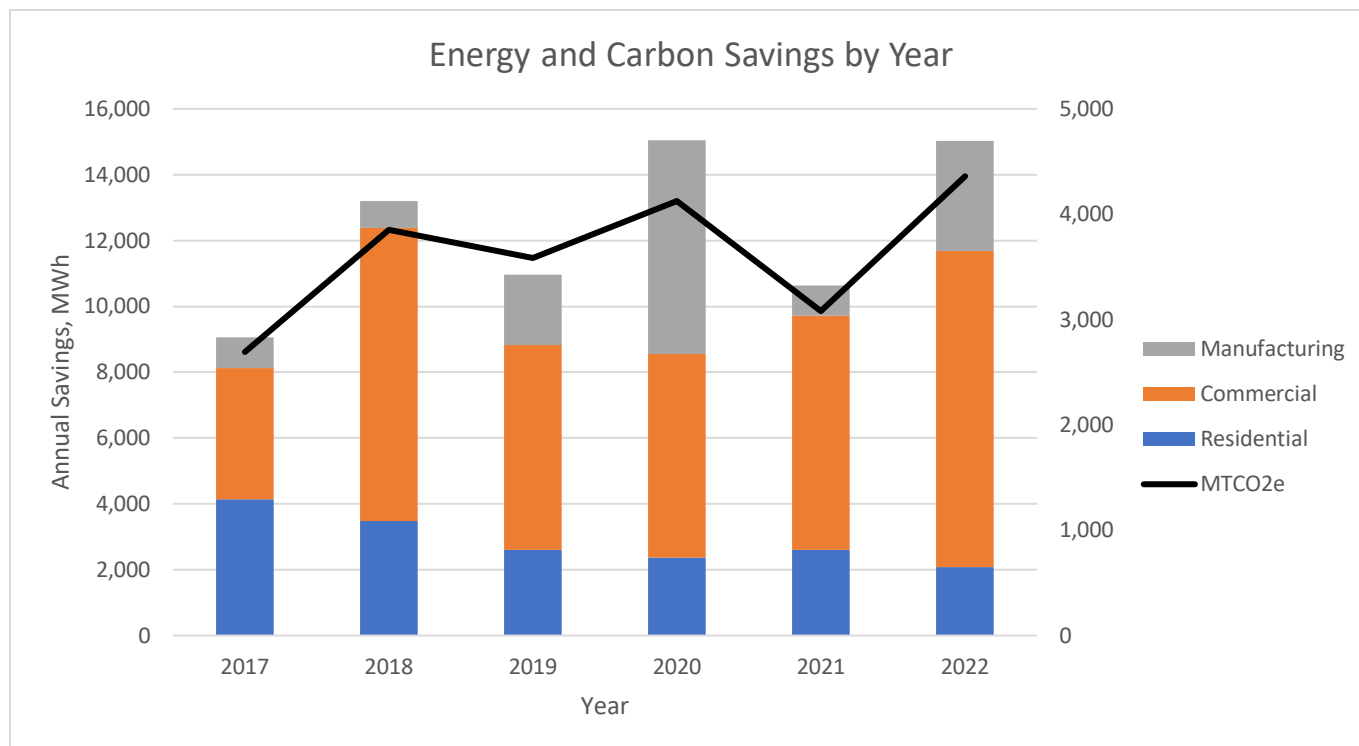
Figure 27: EWEB Energy Efficiency Projects by Customer Type, 2017-2022



The impact of energy savings from projects in the commercial and manufacturing sectors is typically higher than that the residential sector, due to the proportionally higher energy usage. These projects are much larger and involve much more intense energy use than residential projects. This is true for both electricity and natural gas.

GHG emissions are measured in Metric Tons (MT CO₂e). The below line graph shows CO₂ savings from electric energy efficiency projects completed between 2017-2022. The overlaid bar graph comparatively demonstrates savings in kWh from efficiency projects in each sector. Note that carbon savings is proportional to energy savings but also varies due to the estimated emissions factor per kWh of energy savings, which is based on carbon intensity of energy production and may vary from year to year. EWEB uses the Northwest Power Pool (NWPP) estimate.

Figure 28: Energy and Carbon Savings from EWEB Efficiency Projects, 2017-2022



Since 2010 (the baseline year for the City of Eugene CAP 2.0) through 2022, EWEB conservation and efficiency programs have achieved a cumulative energy savings of about 1,208,000 MWhs, representing about 378,000 metric tons of avoided carbon emissions during that period. That's enough energy to power over 73,000 typical all-electric single-family homes for a year.²⁸

²⁸ [Greenhouse Gas Equivalencies Calculator | US EPA](#)

B11: EWEB Limited Income Programs

This section to be written before the draft is finalized in April 2023.

B11: EWEB Limited Income Programs

EWEB and NWN limited income assistance programs and energy conservation education programs, which provide eligible customers with rebates and incentives to lower and pay their bills.

DRAFT

B12: Load Growth via Conservation

Over the last 13 years, EWEB's load has remained constant, with a peak in 2017 at 2.454 million MWh and a low in 2020, presumably due to consequences of the COVID-19 pandemic of 2.261 million MWh.

The Commercial and Industrial category includes all three sizes of General Service customers, contract customers, street, and private lighting accounts, and EWEB's internal electricity consumption as the electric utility.

B12: Load Growth via Conservation

EWEB's commitment to conservation includes meeting all new base load growth through acquiring conservation rather than new energy resources. Each year, the utility targets between 1.1 and 1.6 aMW for acquisition, dedicating appropriate budget and human resources to those targets.

Figure 29: Chart - EWEB Annual Retail Electric Sales (MWh) by Customer Category, 2010-2022

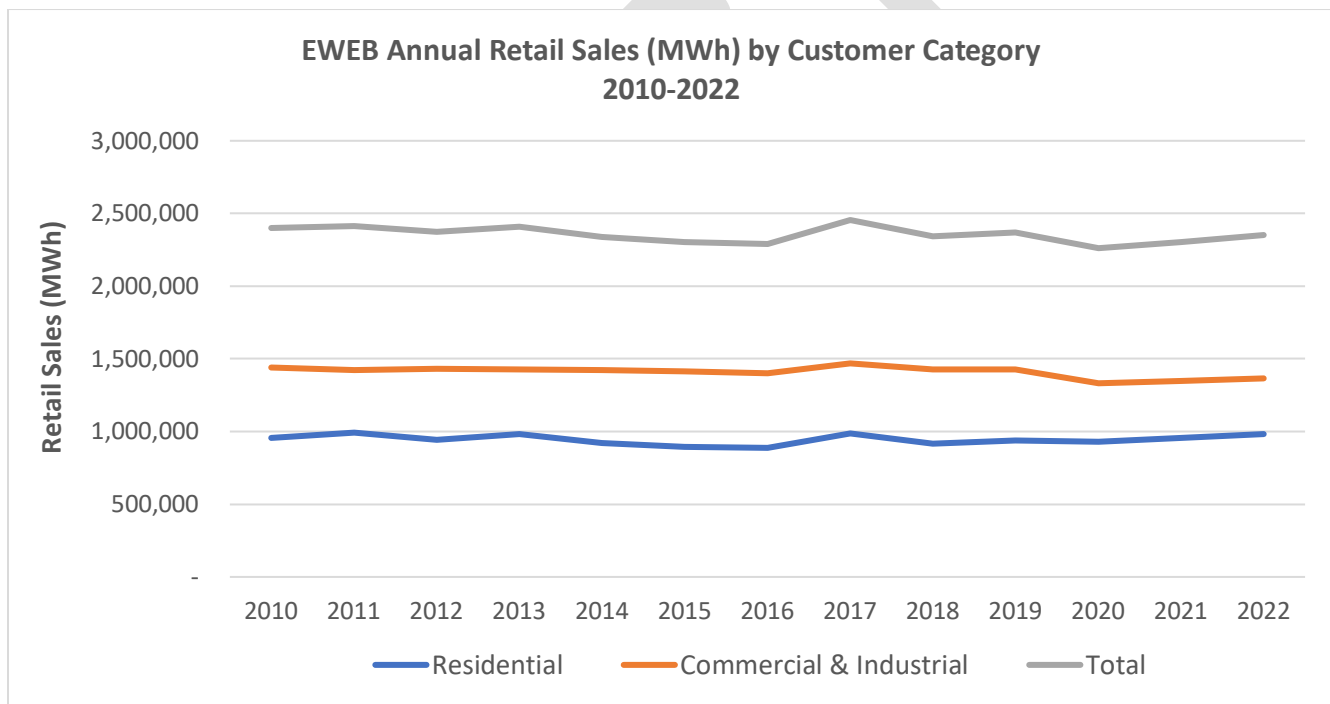


Figure 30: Table - EWEB Annual Retail Electric Sales (MWh) by Customer Category, 2010-2022

		2022	2021	2020	2019	2018	2017	2016
Residential	Residential	984,715	955,353	929,317	938,625	914,754	986,093	887,738
	General Service Small	180,869	172,150	158,630	166,770	174,198	180,823	171,944
	General Service Medium	489,778	484,653	458,948	494,513	490,980	496,949	490,114
	General Service Large	205,957	203,099	211,172	215,024	218,900	221,787	212,457
Commercial & Industrial	Contract	476,155	472,941	490,079	540,316	530,237	555,286	513,293
	Street Lighting	8,587	8,861	8,891	8,257	9,141	9,118	7,927
	Private Lighting	974	878	906	887	781	786	666
	Electric Utility	3,307	3,295	3,352	3,275	3,645	4,059	3,916
	Commercial & Industrial Subtotal	1,365,627	1,345,876	1,331,978	1,429,042	1,427,882	1,468,808	1,400,317
Total	Retail Sales (MWh)	2,350,341	2,301,228	2,261,295	2,367,667	2,342,636	2,454,901	2,288,055

		2015	2014	2013	2012	2011	2010
Residential	Residential	893,001	919,175	980,515	941,922	992,547	957,844
	General Service Small	167,836	166,663	163,554	157,391	151,896	150,842
	General Service Medium	486,307	492,310	494,981	493,357	491,413	490,357
	General Service Large	202,285	204,684	205,474	218,392	203,521	212,233
Commercial & Industrial	Contract	542,581	544,791	550,904	550,270	561,034	573,671
	Street Lighting	8,519	7,884	8,260	8,982	8,991	9,083
	Private Lighting	724	788	835	641	699	723
	Electric Utility	3,767	4,030	3,872	4,115	4,376	5,048
	Commercial & Industrial Subtotal	1,412,019	1,421,150	1,427,880	1,433,148	1,421,929	1,441,957
Total	Retail Sales (MWh)	2,305,020	2,340,325	2,408,395	2,375,070	2,414,476	2,399,801

B13: Advanced Metering Infrastructure

EWEB seeks to provide customers with better service, build a more resilient community, and create a cleaner energy future. Achieving these goals requires modernizing our community's power grid and water distribution network. As a part of this effort, we are upgrading our electric and water meters to smart meters (also known as advanced metering infrastructure or AMI).

AMI can deliver better service to EWEB customers through the delivery of four core benefits:

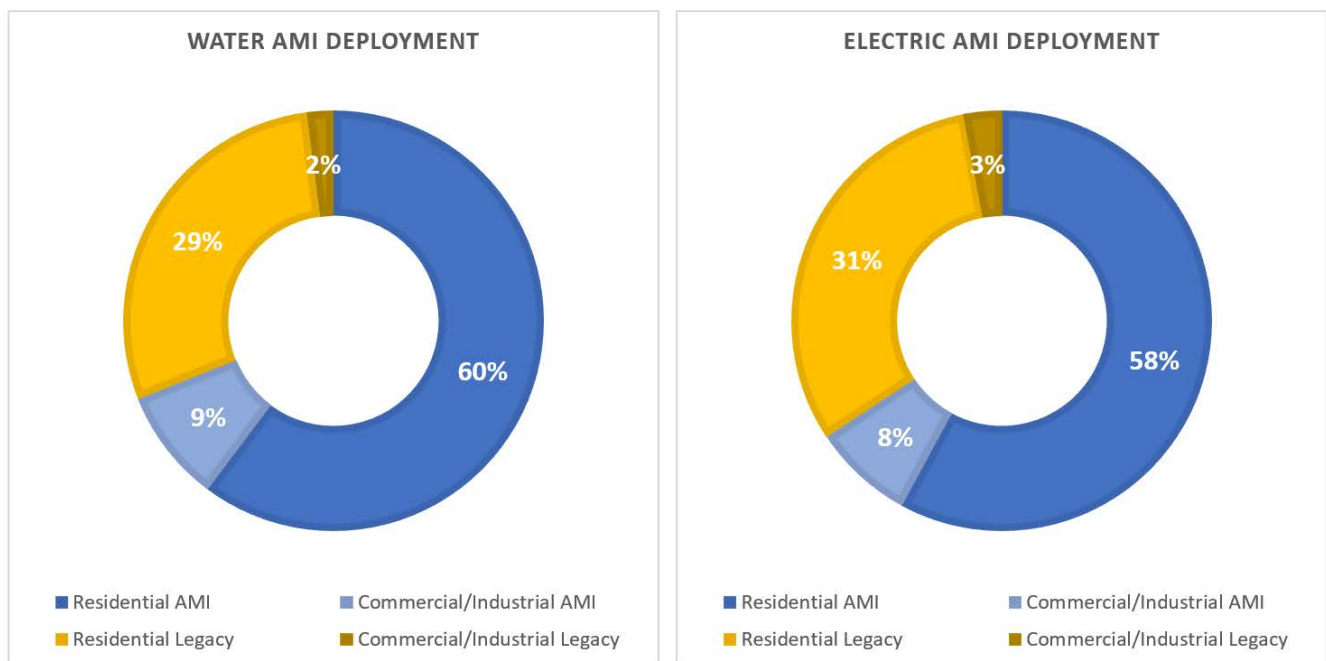
1. Smart meters help protect property by **detecting water leaks**. EWEB can notify customers about a potential water leak long before they would otherwise become aware.
2. Smart meters help EWEB **respond faster to restore power** during an outage and can help prevent future outages by giving the utility better insight into system performance and health.
3. With smart meters, customers don't need to wait for an EWEB representative to come to their home or business to **start, stop or transfer service**. Many of these services can be done remotely.
4. Customers with smart meters no longer need to provide a **meter reader access** to their property each month. Smart meters greatly reduce the need for billing estimates that are occasionally needed when a meter reader cannot manually read a meter due to weather or other unforeseen events.

EWEB launched the leak notification program in fall 2021 with an estimated 16 million gallons saved in the last two months of 2022 and with an average 4.3 out of 5 customer service rating from customers.

B13: Advanced Metering Infrastructure

Once fully deployed, EWEB's advanced metering program will facilitate demand side management programs with customers to reduce energy use during peak periods. EWEB has begun consumer education on the value of reducing energy use during peak periods and plans to develop programs to help consumers shift energy use off-peak through a combination of technology and pricing signals.

Figure 31: Advanced Metering Infrastructure Deployment by Utility, as of Feb 2023



Since October of 2021 supply chain constraints have caused EWEB's smart meter installations to be reduced for Water and halted for Electric. As of February 2023, AMI has been deployed to a total of 69% of Water Utility customers, and 66% of Electric Utility customers. EWEB continues to evaluate our meter population and monitor

the market. Several new, less constrained smart meter models are being evaluated to overcome the supply chain issues that have limited our installation progress.

Despite the challenge with infrastructure installation, Customer Solutions staff have been assigned to evaluate the opportunities for energy and water savings (also known as demand side program options) using AMI technology in 2023. Staff will assess feasibility and applicability to EWEB's customer base and provide recommendations for implementation of these products in the future.



Resiliency

The table below provides a summary of EWEB's Resiliency commitments in CAP2.0.

Resiliency Action Items		
Action Item #	High Level Description	Details from CAP2.0
Guiding Policy	Natural Hazards Mitigation Plan	<i>The Eugene-Springfield Natural Hazard Mitigation Plan (NHMP) in partnership with the City of Springfield, Oregon, EWEB, Rainbow Water District, and the Springfield Utility Board (SUB). An update to the NHMP is expected to be completed in 2020 and is scheduled to be updated again in 2025. Actions R1-R8 provide link back to the NHMP. This is not an exhaustive list of items in the NHMP that will help Eugene achieve its climate goals, but rather a sample of the types of actions that will be needed to help the community adapt to the impacts of climate change.</i>
R20	Emergency Water Stations	<i>EWEB is installing emergency water stations at schools and public spaces around the region, with a goal to have at least five stations around the community. There are three stations that are operational and two more that are now under development with completion slated for the end of 2020. A new site on City property in south Eugene is now under exploration as a potential sixth emergency water station.</i>
R21	Pure Water Partners Program	<i>MWMC partnership with EWEB in Pure Water Partners program, a new initiative designed to reward landowners who protect high quality land along the McKenzie River. The program assists EWEB in protecting water quality and helps avoid future water treatment costs.</i>

Guiding Policy: Natural Hazards Mitigation Plan

For more information about EWEB's Natural Hazard Mitigation Plan, please see Section 5.3 in the Climate Guidebook above or see the links below.

Links and Relevant Resources:

- [City of Eugene Emergency Plans: Eugene Springfield Multi-Jurisdictional Emergency Operations Plan, Eugene Springfield 2020 Natural Hazards Mitigation Plan, Oregon Resiliency Plan, and Neighborhood Radio Communications Response Guide](#)
- [Lane County, Oregon's Office of Emergency Management](#)
- [Natural Hazard Mitigation Plan for Lane County, 2018-2023](#)
- [Natural Hazard Mitigation Plan for Oregon, 2020-2025 - Oregon Department of Land Conservation and Development](#)

Guiding Policy: Natural Hazards Mitigation Plan

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R20: Emergency Water Stations

EWEB is making investments to prepare, replace and maintain our community's water system.

We are working with community partners to develop an emergency water supply program that includes several permanent distribution sites located throughout the community using groundwater wells, as well as mobile water trailers. As of September 2022, five sites are operational:

- Prairie Mountain School - 5305 Royal Ave.
- Howard Elementary School - 700 Howard Ave.
- Eugene Science Center - 2300 Leo Harris Parkway
- Lane Events Center/Fairgrounds - 796 W 13th Ave.
- Sheldon Community Center - 2445 Willakenzie Rd.

Two additional sites are planned—near Churchill High School and near Roosevelt Middle School.

Links and Relevant Resources:

- [EWEB Emergency Water Stations](#)

R21: Pure Water Partners Program

For more information about EWEB's Pure Water Partners Program, please see Section 5.5 in the Climate Guidebook above or see the links below.

Links and Relevant Resources:

- [EWEB Pure Water Partners Program](#)

R20: Emergency Water Stations

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