



MEMORANDUM

EUGENE WATER & ELECTRIC BOARD

Rely on us.

TO: Commissioners McRae, Barofsky, Schlossberg, Brown, and Carlson
FROM: Kelly Hoell, Climate Policy Analyst & Advisor
DATE: March 23, 2024 (April 2, 2024, Board Meeting)
SUBJECT: Climate Guidebook v2.0 Launch
OBJECTIVE: Information only

Issue

The Climate Guidebook v2.0 has been comprehensively updated and is ready to release for Earth Month.

Background

At the January 3, 2023, Regular Board Meeting, EWEB staff introduced the concept of EWEB's Climate Guidebook as a reference document for internal and external audiences to see how EWEB's work intersects with climate issues. An initial set of draft principles for inclusion in the Guidebook was introduced at the February 7, 2023, Regular Board Meeting. At the March 7, 2023, Regular Board Meeting v1.0 of the Climate Guidebook was launched. At the September 5, 2023, v1.1 of the Guidebook was released with extensive updates, and both a PDF and HTML format on EWEB's website.

Discussion

EWEB's fully updated Climate Guidebook v2.0 is ready for launch. The PDF version of the Climate Guidebook v2.0 will be available on [EWEB's website here](#) as of Tuesday April 4th, 2023. The HTML format of the content will be updated to v2.0 throughout the month of April.

Comprehensive updates for the Guidebook are planned annually in honor of April and Earth Day and are indicated with a version jump in this case from v1.1 to v2.0. Minor updates throughout the year may happen as needed. The next minor update would be noted as v2.1.

Significant changes/additions included in v2.0:

- Updated message from EWEB's General Manager, Frank Lawson
- **Chapter 1 Introduction:** Updates within Section 1.3 on the Climate Guidebook Public Outreach Plan, showing completion of all Phase 1 activities.
- **Chapter 2 Climate Policy:**
 - Updates within Section 2.3.2 on Regionalization and Organized Markets to include references to EDAM and Markets+ day ahead market development activity.

- Updates within Section 2.3.5 Neighboring State Initiatives to outline Washington State’s Climate Commitment Act and Low Carbon Fuels Standard and what both mean to EWEB.
- Updates within Section 2.4 on State of Oregon Initiatives and specifically in section 2.4.1 as it relates to changes to the validity of Oregon’s Climate Protection Program.
- New section 2.6.4 added within EWEB’s Climate Guidebook Principles to include EWEB’s Rate Design Principles.
- **Chapter 3 Power Supply & Transmission:**
 - Within Section 3.3 on EWEB’s Integrated Resource Planning process, Section 3.3.1 has been added to include both the modeling results from the 2023 IRP process as well as status updates to the 2023 IRP Action Plan.
 - Section 3.3.2 has also been added introducing the kickoff of the 2025 IRP.
- **Chapter 4 Customer Decarbonization:** the introduction to the chapter has been updated to highlight EWEB’s long history related to conservation. Program reporting data throughout the chapter has been updated with 2023 results.
- **Chapter 5 Climate Impacts on EWEB – Resiliency & Adaptation:**
 - In Section 5.3, the updated Natural Hazard Mitigation Plan for Lane County for the period 2023-2028 has been linked to this section.
 - In Section 5.5, the State of the Watershed reports have been linked for current and past years.
- **Chapter 6 EWEB Internal Operations GHG Reductions:** This section has been updated with the results of EWEB’s 2023 Internal GHG Inventory.
- **Appendix D EWEB’s DEI Policy:** content has been updated to include the adopted Policy language from October 2023.
- **Appendix E EWEB’s Carbon Intensity Guidance:** Emissions factors have all been updated with the most recently available data.
- **Appendix F EWEB’s Role in City of Eugene CAP2.0:** Content has all been refreshed with updated data for 2023.

Recommendation

None.

Requested Board Action

Please read and use the Guidebook as a resource to answer constituent questions or understand EWEB’s approach to climate change. Please provide feedback and/or requests for future content to EWEB’s Climate Policy Analyst & Advisor via General Manager Lawson.



EWEB Climate Guidebook

Release v2.0 | April 2024



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 our 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 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 [SD15](#), defining our commitment to reducing emissions associated with both the energy we provide and our operations. In 2023, the Board provided further guidance by developing and adopting both a Resiliency Policy (SD22) and Diversity, Equity, and Inclusion Policy (SD23). To guide our progress and share it with the community, we created this Climate Guidebook and are pleased to share our second major update in v2.0 here. Annually, we 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 an ongoing 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 one location 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.

A handwritten signature in blue ink, reading "Frank J. Lawson".

Frank Lawson, CEO/General Manager

EXECUTIVE SUMMARY

INTRODUCTION TO THE CLIMATE GUIDEBOOK

EWEB's Climate Guidebook is a reference resource that articulates how EWEB is implementing its Board-approved Climate Change Policy (Strategic Direction Policy #15 – 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 (customers 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 different sections contain the specific language from each of the five areas outlined in SD15, as well as their importance to the Guidebook and how they are addressed in this version as well as what is planned for 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, regional, state, and local levels influence EWEB's work on climate change and progress in meeting climate goals. These 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.

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 and 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 and equity issues in our communities.

Content currently included in v2.0:

- Policy summaries and links for climate initiatives at the federal, regional, state, and local levels
 - Global/Federal: The Paris Accord, BIL/IIJA, IRA, SEC Enforcement Task Force on Climate & ESG
 - Regional: Western Energy Imbalance Market (EIM); Extended Day Ahead Market (EDAM); Western Regional Adequacy Program (WRAP); Western Climate Initiative (WCI); Regional Greenhouse Gas Initiative (RGGI); Regional Climate Forecasts and Analyses
 - 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)
 - Washington: I-937 Energy Independence Act, Clean Energy Transformation Act (CETA), Climate Commitment Act (CCA), Clean Fuels Standard
 - Oregon: Executive Order 20-04; Clean Electricity Standard; Clean Fuels Program; Clean Electricity and Coal Transition Plan; Renewable Portfolio Standard; Emissions Performance Standard
 - Eugene: Climate Recovery Ordinance; CAP 2.0
- Principles to guide EWEB investment of staff time and financial resources:
 - Carbon Policy & GHG Reduction Principles
 - Distributed Generation Principles
 - Green Hydrogen Principles
 - EWEB Rate Design 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

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.

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 balance customer demand and resources continuously.

Content currently included in v2.0:

- EWEB's 2020 and 2021 Electrification Studies showing expected load growth through 2040
- EWEB's 2023 Integrated Resource Plan (IRP)

Content planned for future Guidebook Versions:

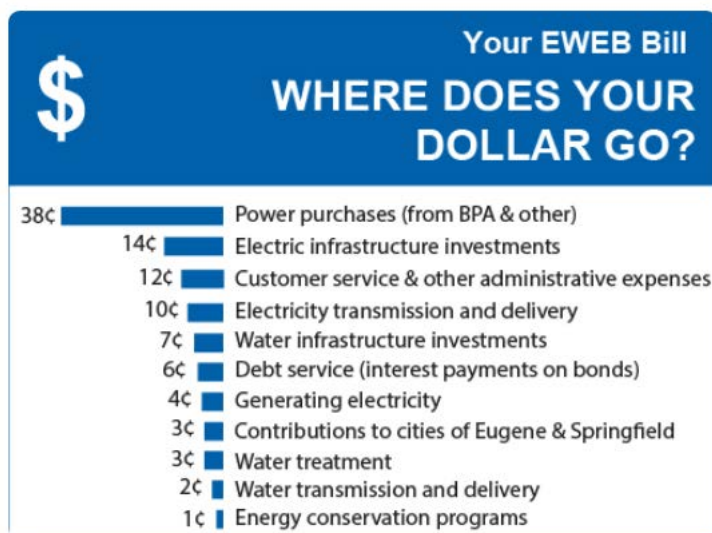
- Conservation Potential Assessment and Demand Response Analysis
- 2025 Integrated Resource Plan

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 v2.0:

- 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 D – EWEB's Diversity, Equity, and Inclusion Policy SD23
- Appendix E – EWEB's Carbon Intensity Guidance
- Appendix F – EWEB's Role in City of Eugene's CAP2.0

Content planned for future Guidebook Versions:

- 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 likelihood, magnitude, and duration of sudden or gradual disruptive events through risk mitigation, emergency preparedness and 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, wildfire, changes in ocean temperatures and chemistry, coastal hazards, drought, expansion of non-native invasive species, reduced air quality, and loss of wetlands. EWEB is planning for these threats in coordination with local partners through the Eugene-Springfield Natural Hazard Mitigation Plan, as well as through EWEB’s Wildfire Mitigation Plan. EWEB also has a robust watershed protection program to reduce the threats to the McKenzie River, which is Eugene’s sole 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 v2.0:

- 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
- Appendix C – EWEB’s Resiliency Policy (SD22)

Content planned for future Guidebook Versions:

- 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 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.

While there has been variation in annual emissions due to a number of factors, EWEB has met its 2020 goal of 25% reduction in 2010 baseline emissions consistently since 2014. In 2020, emissions dipped below the 2030 goal of 50% reduction compared to our 2010 baseline, but some of those reductions were temporary as a result of the COVID-19 pandemic and work-from home orders. In 2023, EWEB is pleased to report our emissions once again fell below the 2030 50% emissions reduction goal. In 2023, EWEB is reporting a drop of 54% compared to 2010 baseline emissions. This drop is due to a lower electricity emissions factor, as calculated by Oregon DEQ for EWEB in 2022, lower fleet emissions, lower natural gas emissions due to the sale of the headquarters building in June 2023, and no recorded refrigerant or industrial gas recharge in 2023.

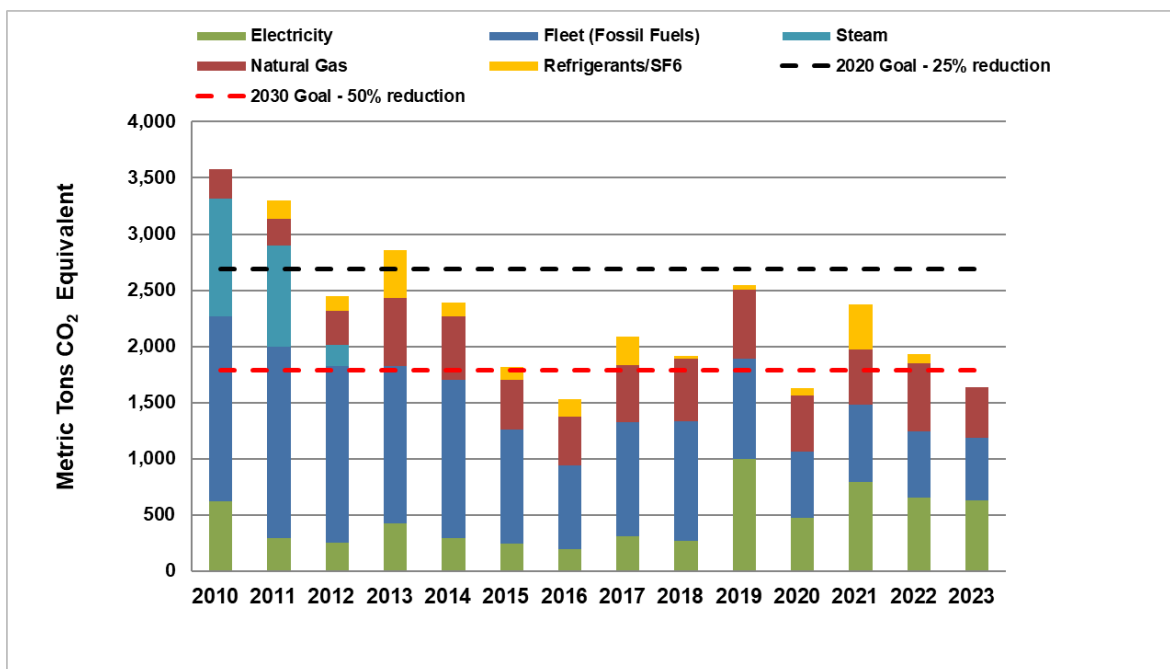
EWEB Climate Change Policy SD15: Internal Operations Section

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.***

Figure 2: EWEB Greenhouse Gas Emissions from Internal Operations and progress towards climate goals (MT CO₂e), 2010-2023



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 voluntary Board-approved goals align with goals set by both the State of Oregon and the City of Eugene, and EWEB seeks to be an active partner in these efforts to both decarbonize our operations and support our community in further decarbonization efforts. 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 valuable insights from a customer perspective.

Finally, EWEB 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 and we regularly work with our local partners to advance community approaches to emissions reduction efforts.

Content currently included in v2.0:

- Greenhouse gas emissions inventory results for calendar year 2023

Content planned for future Guidebook Versions:

- Internal Climate Action Plan and Roadmap to Carbon Neutrality 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

structured based on the five areas outlined in EWEB's Climate Change Policy (SD15) with a chapter for each. 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.

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.

The Climate Guidebook is a living document and will be updated at regular intervals, to serve as a resource for internal and external stakeholders. 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 major 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. Staff throughout the organization have contributed to this resource.

1.1.2 Timing for Future Updates

The first release, Version 1.0, was discussed at the March 2023 regular Board meeting and was limited in scope, with additional content planned for future versions. Version 1.1 was released in September 2023. This is version 2.0. Any additional minor updates within 2024 will be indicated as version 2.1, 2.2, etc. Annually, readers can expect significant updates in April, in advance of Earth Day. These more significant updates will be indicated as version 3.0, 4.0, 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 within 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 were planned for 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.



Image by Rudy and Peter Skitterians from Pixabay

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 Lane County and 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 and Results:

1. **Website:** Build a public website on eweb.org containing the Guidebook and supporting materials.

Phase 1 of this work has been completed. All materials for the Climate Guidebook can be found on [EWEB's website here](#).

2. **External Outreach:** 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.

Phase 1 of this work has been completed. In fall 2022 and spring 2023 as EWEB was developing content for v1.0, EWEB met individually with sixteen different external organizations including environmental non-profits, industry associations, and fellow Large Lever Shareholders who also made commitments to GHG reductions as part of the City of Eugene's CAP2.0 process. These groups included: 350 Eugene, Beyond Toxics, Cascadia Wildlands, City of Eugene, Eugene Chamber of Commerce, Lane Community College, Lane County, McKenzie River Trust, NAACP Eugene-Springfield, Northwest Natural, Oregon Environmental Council, Oregon Physicians for Social Responsibility, Oregon Solutions, Public Generating Pool, Sierra Club, and University of Oregon. During these meetings, EWEB explained the purpose of the Guidebook, how to access it, and sought direct feedback on current and future content. This led to additional content development in v1.1 that was released in September 2023.

3. **Internal Outreach:** Present updates on the Guidebook to EWEB's Board of Commissioners and staff groups.

Phase 1 of this work has been completed. After the release of v1.1 in September 2023, nine internal presentations of the content were conducted throughout fall 2023 to ensure all staff groups and divisions are aware of the Climate Guidebook and how information can support their role in customer service or support their day-to-day work directly. These presentations were tailored to each work group to highlight sections of content that most relate to that team's focus. Groups met with included: EWEB's Executive Team, the Customer Division, the Contact Center and Customer Service, the Energy Division, the Customer Solutions team, the Business Continuity Team, the Communications and Marketing team, the Finance Team, and the Operations Manager Team.

4. **Publish Employee News:** Utilize EWEB's internal SharePoint and email updates to provide on-going updates internally about the Climate Guidebook.

Phase 1 of this work has been completed. Two Employee News stories were published on EWEB's internal SharePoint site in 2023. The first was on Feb 16, 2023 introducing the concept of the Guidebook, and the second was on Oct 26, 2023 announcing the release of v1.2.

1.3.2 Phase 2: April 2024 – December 2024

Goals:

- Increase customer trust and confidence by demonstrating shared values and priorities relating to the environment, public health, reliability, 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 and water sectors, and partner with key stakeholders to build the future that we want to see based on the values of our customers.

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 as well as describing the impacts to EWEB.

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. Focus areas for EWEB Principles 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 v2.0:

- Policy summaries and links for climate initiatives at the federal, regional, state, and local levels
 - Global/Federal: The Paris Accord, BIL/IIJA, IRA, SEC Enforcement Task Force on Climate & ESG
 - Regional: Western Energy Imbalance Market (EIM); Extended Day Ahead Market (EDAM); Western Regional Adequacy Program (WRAP); Western Climate Initiative (WCI); Regional Greenhouse Gas Initiative (RGGI); Regional Climate Forecasts and Analyses
 - 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)
 - Washington: I-937 Energy Independence Act, Clean Energy Transformation Act (CETA), Climate Commitment Act (CCA), Clean Fuels Standard
 - Oregon: Executive Order 20-04; Clean Electricity Standard; Clean Fuels Program; Clean Electricity and Coal Transition Plan; Renewable Portfolio Standard; Emissions Performance Standard
 - Eugene: Climate Recovery Ordinance; CAP 2.0
- Principles to guide EWEB investment of staff time and financial resources:
 - Carbon Policy & GHG Reduction Principles
 - Distributed Generation Principles
 - Green Hydrogen Principles
 - EWEB Rate Design 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

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. These international efforts have been based on the research produced by the Intergovernmental Panel on Climate Change (IPCC), the United Nations body for assessing the science related to climate change that represents 195 member organizations.

The first notable and binding of these international agreements was the Kyoto Protocol, signed in 1997 and building upon the 1992 United Nations Framework Convention on Climate Change (UNFCCC). The Protocol sought to reduce GHG emissions in the atmosphere to “a level that would prevent dangerous anthropogenic interference with the climate system”. There were two compliance periods. The first ran from 2008-2012 and the second from 2012-2020. As of 2020, the United States was the only signatory that did not ratify the Protocol. Currently there are 192 parties to the Kyoto Protocol.

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 signed in 2016. It is estimated that to stay below 1.5 °C of global warming, global emissions need to be cut by roughly 50% by 2030. As of 2023, 195 members of the UNFCCC are parties to the agreement. The United States signed the Paris Agreement in 2016, subsequently withdrew in 2020, and rejoined in 2021. Recently enacted federal GHG investments (see U.S. Federal Policy section) 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.

Why does this matter to EWEB?

Since current international agreements are nonbinding, direct impacts on EWEB will be minimal. However, if world leaders continue to delay on robust climate action, the resulting physical changes to the climate will impact every community around the globe, including EWEB's. Federal efforts in the United States to demonstrate commitment to the Paris Accord have led to new federal investments in funding for programs to reduce emissions (Inflation Reduction Act and Infrastructure Investment in Jobs Act). These grant programs are available to groups like EWEB.

Links and Relevant Resources:

- [Intergovernmental Panel on Climate Change \(IPCC\) and Assessment Reports \(include AR6 from 2023\)](#)
- [United Nations work on Climate Change](#)
- [Kyoto Protocol Text](#)
- [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. This change comes a decade after the U.S. House of Representatives approved a national emissions trading program, the 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 passage of the Infrastructure Investment and Jobs Act (IIJA) in Nov. 2021 and the Inflation Reduction Act (IRA) in Aug. 2022.

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.

Simultaneously, in the U.S. investors are demanding disclosure of climate and environmental, social and governance (ESG) information. The Securities and Exchange Commission (SEC) has proposed a new climate disclosure rule. Many companies and governments currently disclose climate, water, and forestry risks and impacts to investors via CDP, a nonprofit organization that runs a global disclosure system.



The U.S. Capitol building. Image by Trev Adams from Pexels.

Why does this matter to EWEB?

The IIJA and IRA are poised to have profound impacts on the clean energy economy. Energy producers – such as developers and owners of wind farms and other renewable energy generators – will be able to access tax credits leading to greater investment in renewable energy and lower prices. Energy consumers – such as EWEB customers – will be able to take advantage of rebates and incentives to install high-efficiency electric heat pumps and to buy electric vehicles, among other electric products. Due to this legislation, it is expected that renewable energy will be more abundant and cheaper for EWEB to procure, while demand for electricity will be higher as EWEB's customers continue to electrify.

Links and Relevant Resources:

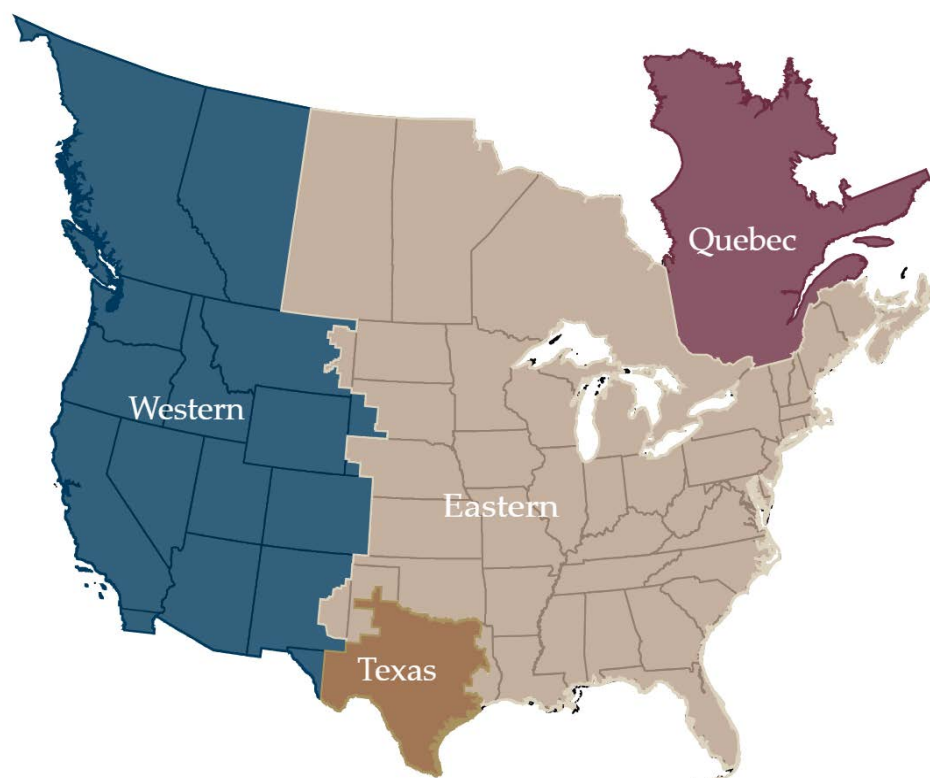
- [United States Department of Energy, Inflation Reduction Act of 2022](#)
- [Congress.gov – Infrastructure Investment in Jobs Act](#)
- [IIJA Implementation Resources from Government Finance Officers Association](#)
- [US Securities and Exchange Commission Climate and ESG Risks and Opportunities](#)
- [CDP Global Disclosure System](#)

2.3 REGIONAL INITIATIVES

2.3.1 The U.S. Electricity Grids

People often refer to “the electricity grid” in the United States as if it were a single network of generating resources and infrastructure to deliver electricity from where it is produced to where it is consumed. In reality, in North America, there are four grids, or major electric system networks, as shown in the map below. The Western Interconnection (of which EWEB is part) and the Eastern Interconnection are the two major networks. Texas and Quebec are served by two smaller networks. The Western and Eastern Interconnections are divided by the Rocky Mountains and very little, if any, electricity is passed between them.

Figure 3: Four North American Electricity Interconnections Map. Source: WECC.org



Electricity in the United States is managed under the Federal Energy Regulatory Commission (FERC). FERC is an independent agency responsible for regulating the interstate transmission of electricity, natural gas, and oil. The North American Electric Reliability Corporation (NERC) is a nonprofit international regulatory authority whose mission is to assure the effective and efficient reduction of risks to the reliability and security of the grid¹. FERC and Canadian governmental agencies oversee NERC’s operations.

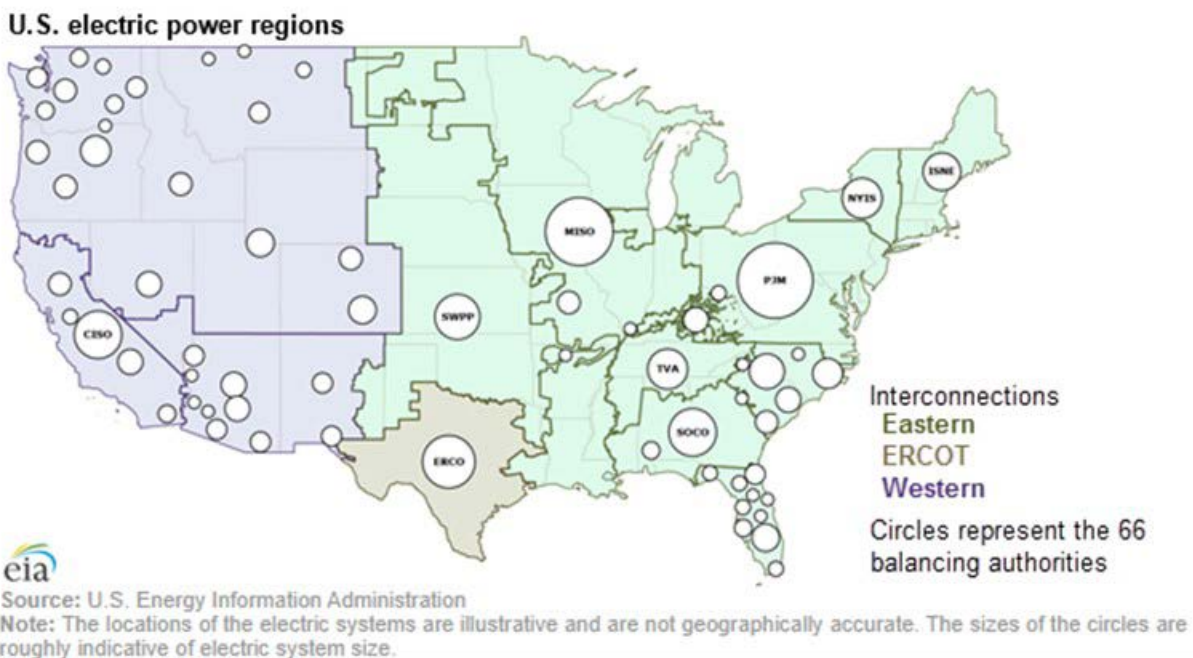
The Western Interconnect includes two Canadian provinces, 14 Western U.S. states, and northern Baja Mexico. It has several unique characteristics that distinguish it from the other North American interconnects. Within the Western Interconnect, 87% of land is public or protected compared to only 27% within the Eastern Interconnect. In the West, we also have longer transmission lines compared to the East that connect remote electricity generating facilities to population centers. This pattern allows the West to take advantage of different supply-and-demand patterns, and different renewable energy sources, as electricity is transported over long distances.

¹ <https://www.nerc.com/AboutNERC/Pages/default.aspx>

Another difference between the East and West has to do with how electricity supply and demand is managed. The map from The U.S. Energy Information Administration (EIA) shows the balancing authorities within each of the U.S. interconnections. Per EIA, a Balancing Authority is an entity that, “ensures, in real time, that power system demand and supply are 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.

- The Eastern Interconnection includes 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 has 37 balancing authorities, including two in Canada, one in Mexico, and the remainder located in the U.S.

Figure 4: Map of US Electric Power Regions and Balancing Authorities, Courtesy of US Energy Information Administration (2023)



Why does this matter to EWEB?

EWEB is part of the Western Interconnection and therefore the electricity EWEB delivers to customers comes from this large, subnational grid. In some circumstances, it makes sense to calculate the carbon intensity of electricity based on the overall makeup of this large Western grid, since electrons flow freely across it. In other circumstances, it makes more sense for EWEB to calculate the carbon intensity of electricity based just on the energy EWEB generates or buys.

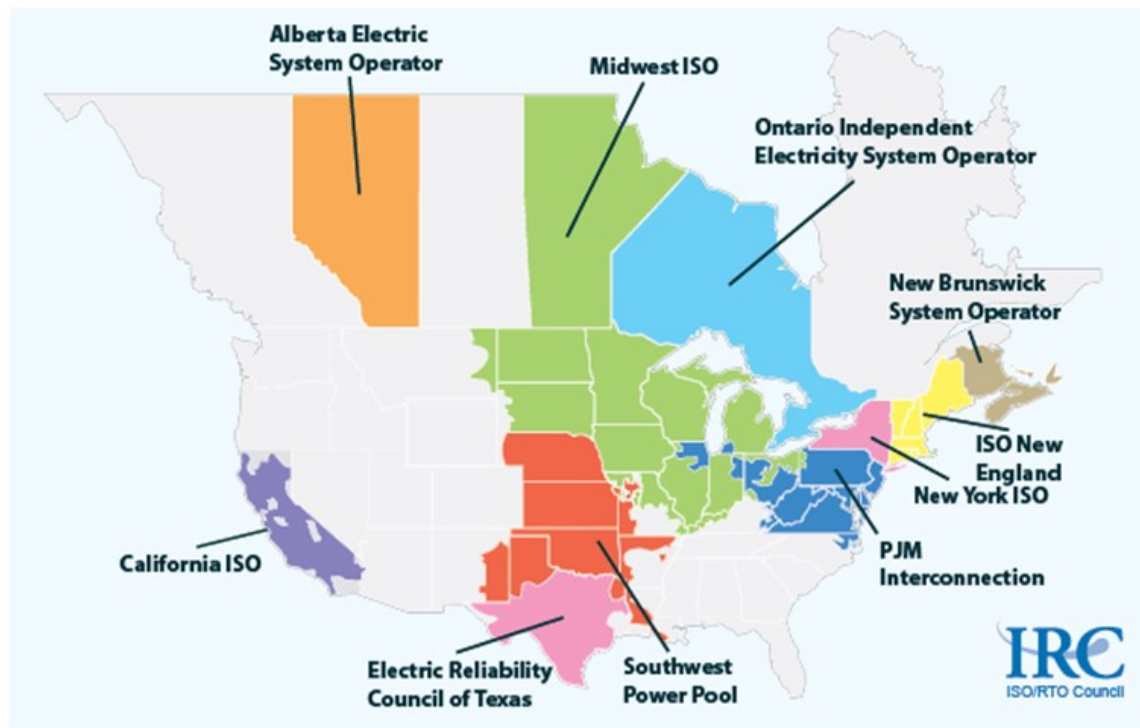
Links and Relevant Resources:

- [Federal Energy Regulatory Commission \(FERC\)](#)
- [North American Electric Reliability Corporation \(NERC\)](#)
- [Western Electricity Coordinating Council \(WECC\)](#)
- [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), Pacific 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 5: Map of US Independent System Operator / Regional Transmission Organizations, Sourced from US Energy Information Administration (2023)



Currently, most electricity market transactions in the Pacific Northwest are conducted bilaterally (1:1) 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 such as an Extended Day Ahead Market (EDAM) through CAISO or via the Markets+ model being proposed by the Southwest Power Pool. The hope with these two different models for a day ahead market is that significant societal and environmental benefits in grid efficiency, consumer savings, and decarbonization 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 necessary new transmission more effectively to move energy from where it is plentiful to where it is not, at any given time.

Why does this matter to EWEB?

Organized markets or other regional initiatives could carry with them requirements around resource adequacy or the dispatch of electricity generating resources. This means that EWEB may be required to plan to have a buffer of extra energy resources available, so that shortages don't occur during times of high demand. EWEB is tracking the evolving requirements that may arise and is accounting for them in our Integrated Resource Planning process.

Links and Relevant Resources:

- [Western Energy Imbalance Market website](#)
- [CAISO Extended Day-Ahead Market \(EDAM\)](#)
- [Markets+, Southwest Power Pool](#)
- [Western Resource Adequacy Program](#)

2.3.3 Regional Climate Policies

In the absence of a national binding emissions cap and/or comprehensive regulatory emissions reduction targets, state efforts to accomplish regional equivalents have been established. Current initiatives include 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.

Why does this matter to EWEB?

Regional climate policies could affect the price of carbon and the availability of certain kinds of energy resources.

Links and Relevant Resources:

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

2.3.4 Regional Climate Forecasts & Analyses

In 1980, The Northwest Power Act authorized the states of Montana, Idaho, Washington, and Oregon to plan for the energy future of the Pacific Northwest and to balance energy requirements with environmental concerns. The Northwest Power and Conservation Council was created to do this work. The Act required the new organization to both create a fish and wildlife program and to develop a 20-year least-cost power plan to be updated every five years. The Power Plan includes forecasts for both future electricity demand as well as future electricity and natural gas prices. It also includes an assessment of the amount of cost-effective energy efficiency that can be acquired over the 20-year term of the plan, and an assessment of a least-cost generating resources portfolio. The plan supports Bonneville Power Administration's resource decision-making.

Other regional organizations in the Pacific Northwest are in the process of evaluating the patchwork of state-level policies within the region and how they intersect, as well as various pathways to get to net-zero greenhouse gas emissions within the Pacific Northwest.

Links and Relevant Resources:

- [1980 Northwest Power Act](#)
- [Northwest Power and Conservation Council](#)
- [2021 Northwest Power Plan](#) (March 2022)
- [Pacific Northwest Power Supply Adequacy Assessment for 2027](#) (January 2023)
- [Net-Zero Northwest: Technical and Economic Pathways to 2050 \(NZNW\)](#) (June 2023)
- [The Brattle Group Greenhouse Gas and Clean Energy Accounting Methodology Catalogue](#) (June 2023)

2.3.5 Neighboring State Initiatives

2.3.5.1 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,



Smog in Los Angeles. Image by misterfarmer from Pixabay.

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 Low Carbon Fuel Standard (LCFS) was also a key measure recommended through AB 32 that began implementation in

2011. This is a program designed to decrease the carbon intensity of transportation fuels to reduce greenhouse

gas emissions, reduce dependency on petroleum products, and improve air quality. 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](#)
- [California Low Carbon Fuels Standard](#)

2.3.5.2 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](#)

2.3.5.3 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.

In August 2022, California set new targets requiring 100% new car sales to be zero emission by 2035. Oregon followed suit and adopted California's rule just a few months later.

Links and Relevant Resources:

- [California Air Resources Board: 100% new zero-emission vehicle sales by 2035](#)

2.3.5.4 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 23 EIM participants.

The Enhanced Day Ahead Market (EDAM) has been proposed and would build on the success of the EIM in pursuit of reliability, economic, and environmental benefits through increased regional coordination and resource optimization. It would provide 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 \(CAISO\)](#)

2.3.5.5 Washington: I 937 Energy Independence Act (EIA)

Washington State has also passed several laws in recent years to address greenhouse gas emissions and renewable energy provisions. The Energy

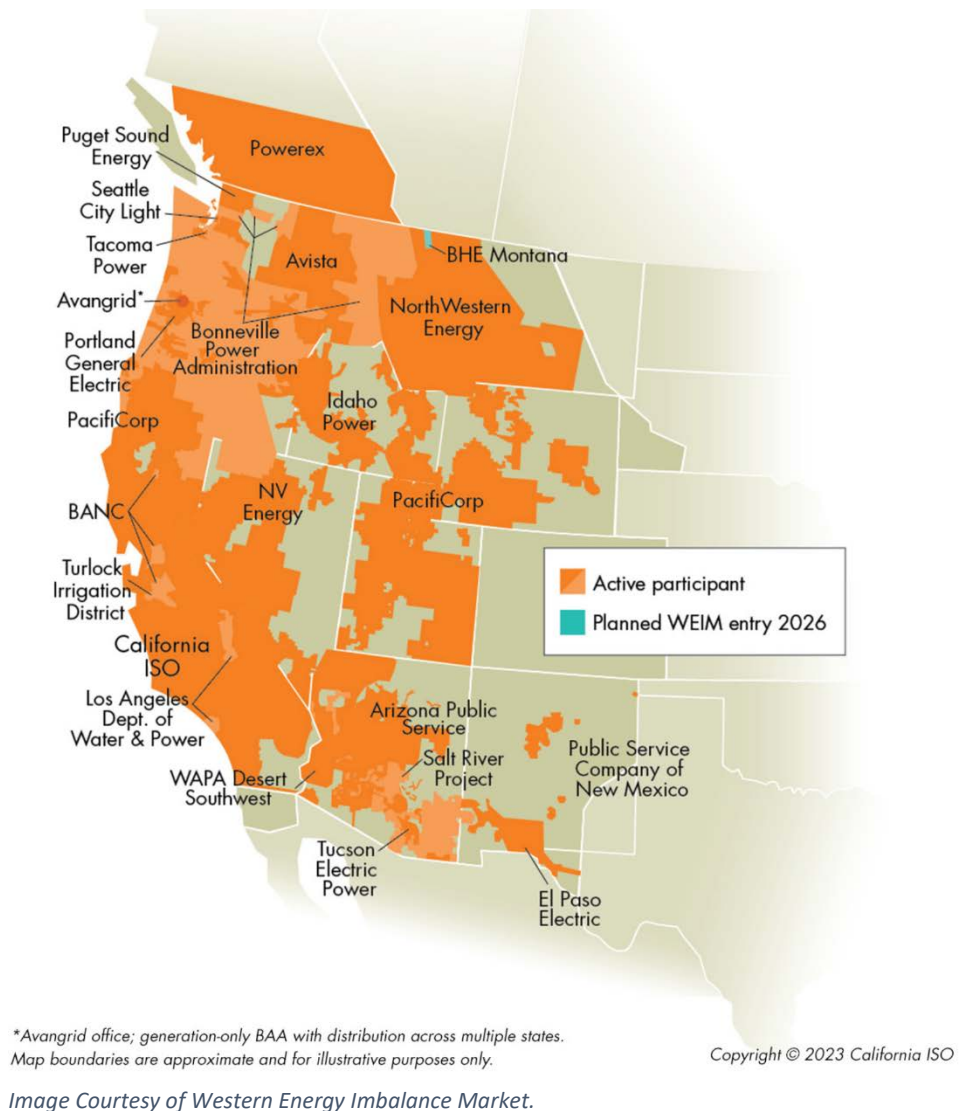
Independence Act (EIA), approved by the voters in 2006 through the passage of Initiative 937, requires Washington electric utilities serving at least 25,000 retail customers to use renewable energy and energy conservation. There are 18 Washington utilities subject to the EIA. They provide 80% of the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



2.3.5.6 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:



*Key elements of the Washington Clean Energy Transformation Act (CETA).
Courtesy of the Washington Department of Commerce.*

- 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 \(CETA\)](#)

Why does this matter to EWEB?

Initiatives in neighboring states have varying levels of impact on EWEB. Broadly speaking, policies in California and Washington can increase or decrease the availability of certain kinds of energy resources, affecting region-wide energy markets.

2.3.5.7 Washington: Climate Commitment Act (CCA)

The Climate Commitment Act (CCA) is a comprehensive market-based cap-and-trade greenhouse gas emissions program applicable to Washington's largest emitting sources and industries, allowing businesses to find the most efficient path to lower emissions, towards the goal of Washington achieving its adopted statutory state greenhouse gas emission target of a 95 percent reduction by 2050.

Businesses covered by the program must obtain allowances equal to their emissions and submit them to Ecology according to a staggered four-year compliance schedule. Emissions-Intensive Trade-Exposed (EITEs) industries and electric and gas utilities receive an allocation of free allowances while the remainder of allowances are auctioned off quarterly and subject to floor and ceiling price standards. Auction proceeds are deposited and reinvested into specific climate, environmental justice, and ecological projects. Washington CCA-funded investments have a strong emphasis on reducing transportation emissions, alternatives to single occupancy

passenger vehicles, and emissions reductions programs for freight, ferries, and ports – a reflection of the regional importance of Puget Sound and marine transportation.

The CCA regulates the electric sector in two different ways; 1) in-state electric generating units (EGUs) are regulated at the source (EGU owner/operator is responsible for compliance); 2) compliance responsibility for electricity imported into Washington is assigned to entities defined as “First Jurisdictional Deliverer” (FJD) of the electricity. Presently there are thresholds that trigger FJD compliance responsibility (25,000 metric tons of carbon dioxide in a year) and separately FJD reporting responsibility (10,000 metric tons annually). These thresholds stand a relatively high probability of changing in the future as a condition of California and the Western Climate Initiative (WCI) authorizing CCA to link to the existing cap-and-trade programs of California and the WCI.

Why does this matter to EWEB?

EWEB buys and sells wholesale electricity in the region. EWEB is preparing for reporting and compliance obligations that EWEB may incur under the Washington CCA if EWEB triggers FJD thresholds, again which may change (more stringent). Generally, EWEB’s compliance costs from carbon pricing programs are offset by the resulting higher wholesale power prices that put a premium on cleaner electricity, which produces more revenue from EWEB’s sales of clean or low-carbon electricity.

Links and Relevant Resources:

- [Washington Department of Ecology Climate Commitment Act](#)

2.3.5.8 Washington: Clean Fuel Standard

The Washington Clean Fuels Standard is modeled after programs previously adopted in California, Oregon, and British Columbia.

The Washington Clean Fuel Standard requires fuel suppliers to gradually reduce the carbon intensity of transportation fuels to 20% below 2017 levels by 2034. There are several ways for fuel suppliers to achieve these reductions, including: improving the efficiency of their fuel production processes; producing and/or blending low-carbon biofuels into the fuel they sell; and purchasing credits generated by low-carbon fuel providers, including electric vehicle charging providers.

Why does this matter to EWEB?

Because the Washington legislation is designed to integrate into existing LCFS programs in Oregon and California, these markets will cover the entire West Coast, creating a West Coast market for transportation-electrification credits, biofuels, green electrolytic hydrogen and other low-carbon transportation fuels. Approximately 20 million vehicles are located in these states, which promises to make this a robust market.

Links and Relevant Resources:

- [Washington Department of Ecology Clean Fuels Standard](#)

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 outlined 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 was the establishment of the Climate Protection Program (CPP). The Climate Protection Program set 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 regulated site-specific greenhouse gas emissions at manufacturing facilities, such as emissions from industrial processes, with a best available emissions reductions approach. Notably, the program did 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 required that covered entities reduce greenhouse gas emissions and allowed covered entities to comply in part with Community Climate Investments (CCIs)– contributing funds to authorized third-party entities to implement projects that reduce greenhouse gas emissions in Oregon.

In December 2023, the CPP was invalidated by the Oregon Court of Appeals due to insufficient notice requirements during the 2021 rulemaking process. Oregon Department of Environmental Quality has stated that they seek to reestablish a climate mitigation program.

Why does this matter to EWEB?

The Climate Protection Program, if reinstated, could affect the market for fossil fuel-based technologies, contributing to electrification of transportation and other sectors. This could increase demand for the electricity that EWEB supplies.

Links and Relevant Resources:

- [State of Oregon, Executive Orders](#)
- [Oregon Public Utility Commission, Executive Order 20-04 Resources](#)
- [Oregon Department of Energy, Reducing Greenhouse Gas Emissions, State GHG reduction goals](#)
- [Oregon Department of Environmental Quality Climate Protection Program 2024](#)

2.4.2 HB 2021 - Oregon Clean Electricity Standard (CES)

Oregon's 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.

Why does this matter to EWEB?

Though EWEB is not subject to the emissions reduction requirements of HB 2021, the requirements will prompt Oregon's two largest utilities (PGE and PacifiCorp) to build increasing amounts of carbon-free resources, such as wind and solar which will affect regional energy markets in hard to predict ways.

Links and Relevant Resources:

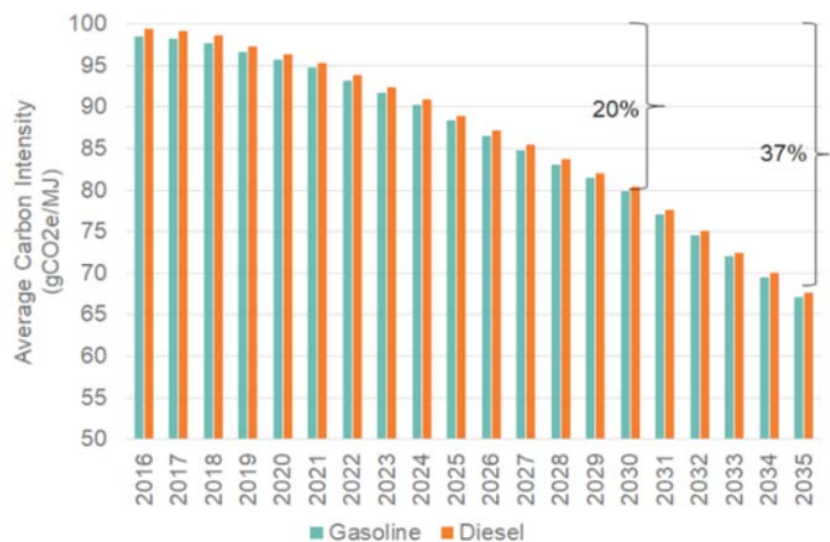
- [HB 2021 Oregon Clean Electricity Standard](#)
- [Oregon Clean Energy Targets \(Oregon Department of Environmental Quality\)](#)

2.4.3 Oregon Clean Fuels Program (CFP)

The Oregon CFP is a program designed to reduce the carbon intensity of transportation fuels, similar to laws in both CA and WA. 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.

Figure 6: Oregon Clean Fuels Program Basic Structure, Sourced from Oregon Clean Fuels Program



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 produce revenue to pay for projects that lower GHGs. For information about how to estimate credits or to which entities the credits will flow under the program, please see Appendix E: Resources for Entities Seeking to Estimate the GHG Impact of Transportation Electrification Projects and Potential Credit Generation Under the Oregon Clean Fuels Program.

Why does this matter to EWEB?

Under the Oregon Clean Fuels Program (CFP), EWEB is authorized to be an aggregator of credits attributed to residential EV charging. EWEB may use the revenue from these credits to make investments in transportation electrification and decarbonization. Additionally, EWEB owns EV charging infrastructure at the Roosevelt Operations Center (for both our owned fleet vehicles and for public use in our employee parking lot), and at our Hayden Bridge water treatment facility in Springfield along the McKenzie River. EWEB generates additional CFP credits from these owned 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 Renewable Portfolio Standard (RPS) targets from 25% to 50% by 2040.

Why does this matter to EWEB?

Fewer coal plants result in less dispatchable (able to be turned on and off) energy on the grid, making regional grid reliability more challenging. EWEB, like utilities across the region, must adapt to these new dynamics.

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.

Why does this matter to EWEB?

Because of EWEB's hydropower-dominant portfolio, the utility has been exempted from RPS requirements. However, this exemption is not guaranteed if EWEB's portfolio mix changes.

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).

Why does this matter to EWEB?

The prohibition on these carbon-intensive dispatchable fossil fuel sources of electricity in Oregon can affect reliability across the entire region, especially during peak times of high electricity demand when dispatchable power is often required, if they can't be replaced with low-carbon dispatchable sources.

Links and Relevant Resources:

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

2.4.7 Advanced Clean Car II Rule

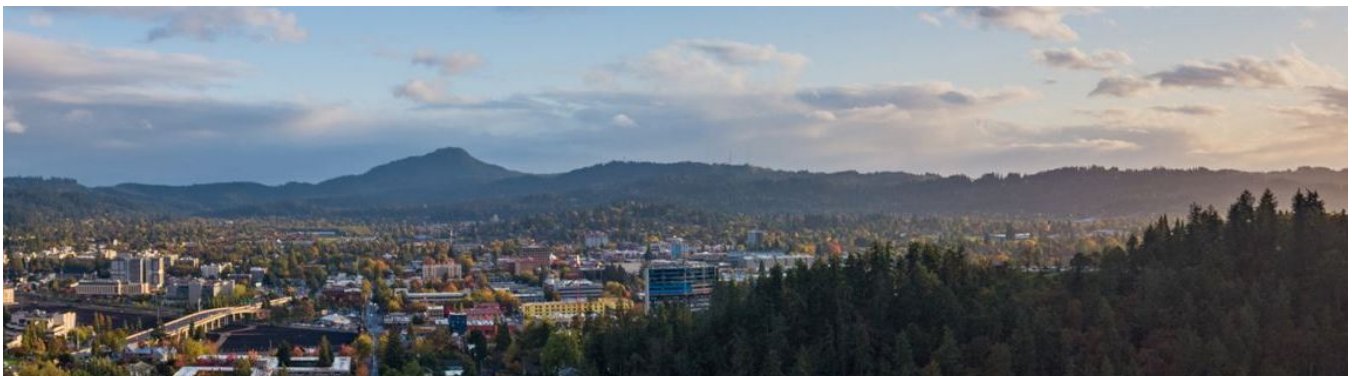
In 2022, the Oregon Department of Environmental Quality adopted the Advanced Clean Car II Rule, which is modeled after California's Tailpipe Emissions Standards. Both rules require that 100% of new, light-duty vehicle sales in their states be zero emission by 2035.

Why does this matter to EWEB?

EWEB's electrification forecasts already assume high levels of electric vehicle adoption in the next 20 years. The Advanced Clean Car II Rule effectively formalizes that demand increase. EWEB predicts that vehicle electrification will be the greatest driver of increases in demand for electricity in the next 20 years. It will be critical for EWEB to manage EV charging to avoid significant increases to peak demand as EV adoption increases.

Links and Relevant Resources:

- [Oregon Department of Environmental Quality Advanced Clean Cars II Rule](#)



Aerial view of Eugene. Courtesy of City of Eugene.

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 F for specific reporting on EWEB’s commitments in CAP2.0.

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](#)

Why does this matter to EWEB?

EWEB supports the objectives of the Climate Recovery Ordinance and is committed to advancing our commitments in Eugene’s CAP 2.0, including tracking our progress through this Guidebook.

Links and Relevant Resources:

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

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

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 the 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.

Developing a set of principles will guide the General Manager, and thus the organization, in fulfilling the Strategic Directive Policies such as SD15 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 those previously articulated 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.

Rate Design Principles: One of EWEB's five organizational values is affordability, and as discussed in Chapter 3, keeping rates low for customers is climate action. EWEB has long held a set of principles, based on industry accepted principles, for meeting legal standards and achieving best practices in rate making.

2.6.1 EWEB's Carbon Policy & GHG Reduction Principles

Revision date: April 2024

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 did not apply to electricity generation, which already must meet goals under the State's Renewable Portfolio Standard. In December 2023, the Climate Protection Program was invalidated by the Oregon Court of Appeals, yet Oregon Department of Environmental Quality seeks to reestablish a climate mitigation program. 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 and are consistent with EWEB's Diversity, Equity, and Inclusion Policy SD23.

2.6.2 EWEB's Distributed Generation Principles

Revision date: April 2024

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 and are consistent with EWEB's Diversity, Equity, and Inclusion Policy SD23.



Solar panels are installed at St. Vincent de Paul in Eugene. EWEB photo.

2.6.3 EWEB's Green Hydrogen Principles

Revision date: April 2024

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



1 Dollar



1 Kilogram



1 Decade

U.S. Department of Energy [Hydrogen Shot initiative](#).

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."*

As part of the IIJA, 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. In October 2023, the US Department of Energy selected the Pacific Northwest Hydrogen Hub as one of seven regional hydrogen hubs nationwide.

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.

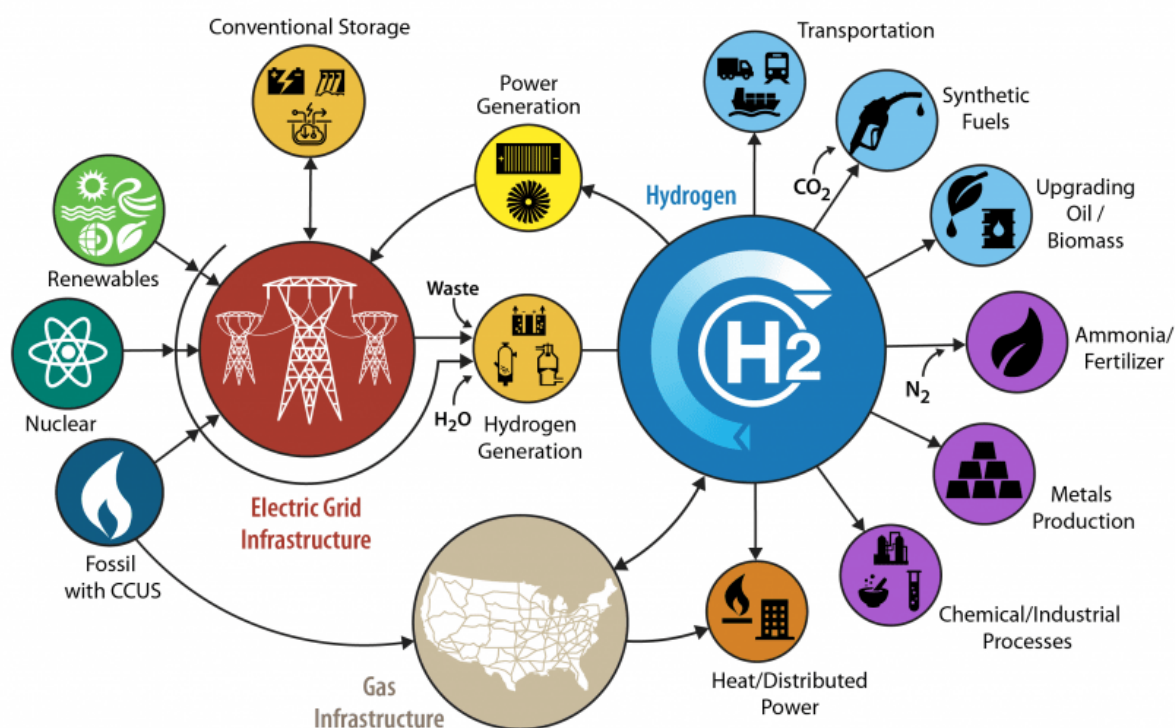
The technology for hydrogen is advancing rapidly. While more than 95% of hydrogen used in the U.S. today is generated using fossil fuels, researchers are improving methods of creating clean, green, renewable hydrogen. And utilities are launching pilot projects to test hydrogen's energy storage potential.

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 such as industrial processes and medium/large vehicle transportation.
- 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 and are consistent with EWEB's Diversity, Equity, and Inclusion Policy SD23.



U.S. Department of Energy's [H2@Scale initiative](#), which seeks to advance affordable hydrogen production, transport, storage and use to decarbonize sectors of the economy.

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.

2.6.4 EWEB Rate Design Principles

Revision date: April 2024

Utility rates have a legal duty to establish rates that are “reasonable” and not “unduly discriminatory”⁷ and EWEB has closely aligned its rate making principles with industry accepted principles that provide the basis for meeting legal standards and best practices in rates making.

Industry Standard Principles:

- Sufficiency
- Fairness
- Efficiency
- Customer Acceptability
- Bill Stability

EWEB Rate Making Principles:

- Sufficiency
- Affordability
- Efficiency
- Cost Basis
- Equity
- Gradualism

EWEB ratemaking principles are codified in several different Board policies.

Sufficiency is the principle that provides investor-owned utilities with the ability to recover costs and a reasonable rate of return to attract capital and continue to invest in the system on behalf of customers. For a municipal utility like EWEB, sufficiency is a principle supported by Board Policy *SD6 Financial Policies* and *SD9 Rate Setting Policy*.

SD6 states “Rate Sufficiency Policy: Rates and charges will be adequate to provide revenues sufficient to maintain a degree of financial soundness over and above requirements for compliance with existing bond covenants. (FP 1.1) “

SD9 states “set rates at a level sufficient to recover ongoing costs of utility operation.”

Affordability is included in Board policy SD1, Mission, Vision, Values & Legacy. “Affordable” is listed as one of the utility’s five values.

SD1 states that EWEB values and respects our customer’s financial resources by making wise investments and controlling costs and rates. This value is supported by EWEB’s limited-income programs and long-standing budgeting practices.

Efficiency in ratemaking refers to the concept that electricity prices should be set at an economically efficient level. The prices should reflect, as closely as possible, the true cost of providing reliable electric services to each customer class and should not inadvertently distort the market. Setting an electricity price that does not align with costs has significant consequences for utilities. Additionally, efficiency can also be used to describe the customers’ understanding and interpreting the utility prices, rates, and tariffs.

Cost Basis has two components that align with the Board policies *SD3 Customer Service Policy* and *SD9 Rate Setting Policy*.

SD3 states that “rates will be uniform to all consumers within various service classifications; and that pricing for utility service and products will be cost based...”

⁷ Federal Power Commission v. Hope Natural Gas Co., 320 U.S. 591 at 645 (1944).

SD9 states EWEB’s elected Board of Commissioners has complete authority to “approve rates which are cost-based, nondiscriminatory, and in concert with the needs of EWEB’s customers.”

The cost-of-service models are the basis for meeting the standard of cost-based rates for EWEB customers. The costs are based on the Board approved budget annually and projected in three-year periods for multi-year cost of service review.

Equity is in reference to the legal standard of rates that are “fair and reasonable” and “not unduly discriminatory” and is met by applying an industry standard cost of service approach to cost allocation among various customer classes and by employing standard rates and policies for customers within the respective customer classes. This ratemaking principle is aligned with Board policy SD9 Rate Setting Policy and SD23 EWEB’s Diversity, Equity, and Inclusion policy, especially within the focus area of equitable “access to products and services”.

SD9 requires that “rates and charges for utility service be fair and nondiscriminatory” and are considered nondiscriminatory when “customers receiving like and contemporaneous service under similar circumstances are treated equally in the development and application of specific rates.”

SD23 authorizes, delegates, and directs EWEB’s General Manager to ensure that the Community we serve has Equitable Access to Products and Services.

Gradualism (Bill Stability) refers to the need to ensure that electricity tariffs remain relatively stable over time. The cost of electricity can vary hour to hour and the principle of stability reflects the utilities’ role in managing that volatility and insulating customers from the impact of the volatility. EWEB develops a 10-year financial plan and manages its financial plans to mitigate rate shock and volatility in retail rates and prices.

EWEB Board policy SD6 Financial Policies 1.2 supports the principle of gradualism.

SD6 FP 1.2 states “certain funds will be held in reserve for the purpose of mitigating the customer rate impact of unanticipated events.” EWEB annually reviews and updates its Rate Stabilization Fund.

The intent of these established rate design principles is to align EWEB rate development processes with the legal framework and utilizing industry standard practices of establishing its revenue requirement and cost allocation, while providing the Board of Commissioners adequate discretion within these principles to meet competing objectives, organizational goals, and community values.

Links and Relevant Resources:

- [EWEB Board of Commissioner Policies](#). Includes Strategic Direction Policies SD 1, SD 3, SD 6, SD 9, and SD23 referenced in this section.

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 in terms of customers served. EWEB is the fourth largest electric utility (behind Portland General Electric, PacifiCorp, and Umatilla Electric Cooperative) in terms of total electricity sales.

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 v2.0:

- EWEB's 2020 and 2021 Electrification Studies showing expected load growth through 2040
- EWEB's 2023 Integrated Resource Plan (IRP)

Content planned for future Guidebook Versions:

- Conservation Potential Assessment and Demand Response Analysis
- 2025 Integrated Resource Plan

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.***

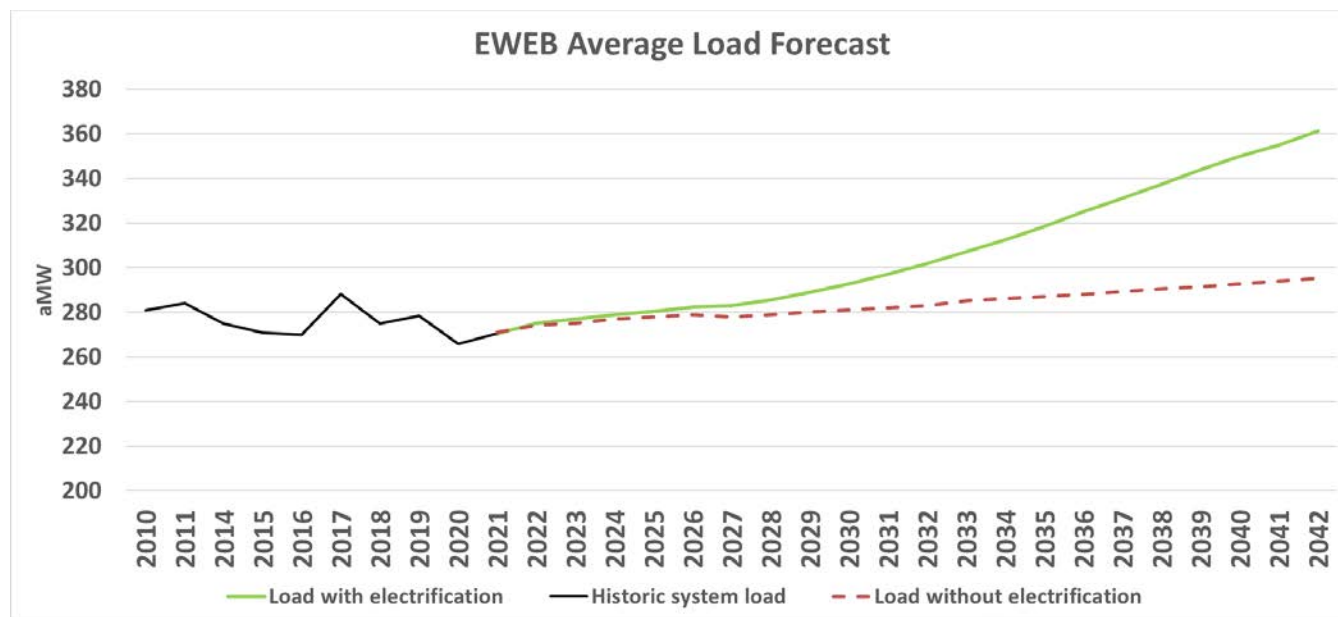
Using the Integrated Resource Plan (IRP) process including final adoption by resolution (GP7), the Board will work with the General Manager to establish the long-term (20-year) principles, priorities, approaches, definitions (including carbon-free, carbon intensity), measurements, and goals for the electric 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 Electrification Study (released in November 2020), focused on the potential impacts of electrification without analyzing the costs to customers choosing to electrify. The Phase 2 report from 2021 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 7: 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 EWEB’s stated values, 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 Planning process (IRP).

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 (IRP) PROCESS

An IRP is a long-term modeling exercise to assess a utility's energy needs over the next 20 years and identify the best mix of resource options to meet those needs. Unlike Investor-Owned Utilities (IOUs), EWEB as a public utility is not required to complete an IRP on a specific timeframe. EWEB had completed an IRP in 2011, but with demand staying steady, had not undergone a full-scale IRP again until 2022-2023. EWEB is now planning to conduct regular IRPs on a 2-year cycle with the previous IRP finished in summer 2023 and the following IRP expected to be completed in summer 2025.

These long-term power supply decisions are 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, one of which is to maintain a focus on affordability. The climate benefits of electrification depend on both the cost and the carbon content of electricity. 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.**

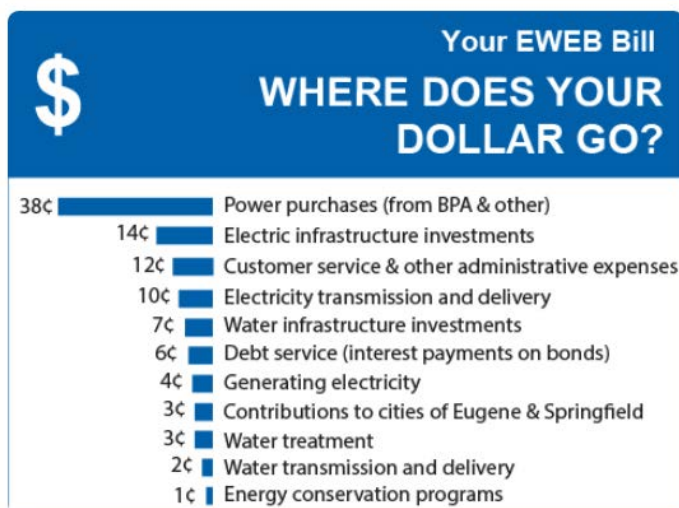
Power purchases represent the largest share of each customer dollar EWEB receives, so we must be especially cognizant of how we source our wholesale power. Additionally, the carbon intensity of EWEB's power relates directly to the carbon reduction benefit of electrification.

Through EWEB's IRP process, EWEB will develop resource plans to meet the SD15 goal for getting to 95% carbon-free resources by 2030 *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 balance customer demand and resources continuously. For example, EWEB's current portfolio is predominantly hydro power, so poor water years with low hydro supply will likely cause EWEB to make additional market purchases to balance supply and demand.

What is an IRP?

An Integrated Resource Plan is a long-term planning process to identify EWEB's energy needs and the best resource options to meet those needs. **There are two main components to a standard IRP:** an Energy Resource Study that relies on modeling and analysis and public input to provide a 20-year look at future portfolio options and a nearer-term (2-5 year) Action Plan. Best resource options will be identified in accordance with EWEB's organizational values.

Figure 8: Your EWEB Bill - Where Does Your Dollar Go? (2023)



3.3.1 2023 IRP

The 2023 IRP used modeling software to determine a reference case, built on a set of assumptions, along with a set of sensitivity analyses. The full set of modeling results and the near-term Action Plan were published in July 2023.

Key insights from the 2023 modeling and analysis included:

- **Energy demand will rise:** While our overall demand has fallen or remained flat in recent years despite population growth due to conservation investments, we expect this trend to change starting around 2030 due to electrification.
- **Peak needs will continue to occur during the winter:** For the next 20 years, EWEB is expected to continue to remain a winter-peaking utility despite the impacts of climate change that are expected to increase summer demand. The primary driver for increased peak energy use is unmanaged electric vehicle charging behavior.
- **Hydropower is a good fit:** Currently more than 80% of EWEB’s energy comes from hydropower, both from the Bonneville Power Administration (BPA) and EWEB-owned projects on the McKenzie and Clackamas Rivers. IRP analysis points towards BPA hydropower remaining a cost-effective, low-carbon way to meet most of EWEB’s needs.
- **Wind and batteries are promising options:** The IRP modeling analysis indicated that a combination of wind and batteries is a competitive option to meet growing demand in the future.
- **Customer Partnerships will be vital:** Customers are likely to play an integral role in helping reduce peak energy usage. Programs such as conservation, demand response, and new rates designs, such as time-of-use rates, were all indicated as competitive options across various portfolios.
- **Zero-carbon, dispatchable resources will likely be necessary in the future:** As EWEB and the Pacific Northwest region pursue full decarbonization, there will likely be a need for dispatchable resources that do not create emissions and can be relied upon for extended periods of time.

The 2023 IRP Action Plan included several action items outlined below with status updates:

- **BPA Contract:** EWEB committed to participating in BPA’s “Provider of Choice” regional negotiations and to incorporate BPA product details into future IRP modeling as information becomes available. Update: staff continue to actively engage in regional discussions to define a post-2028 BPA contract. This process involves over a hundred utilities who all have a right to cost-based preference power from BPA.
- **Conservation/Demand Response:** EWEB committed to commissioning a study to quantify the amount and cost of available energy efficiency/conservation and availability and value of demand response within EWEB’s territory through 2045. Update: EWEB has initiated this Demand-Side Potential Assessment, and the work is expected to be completed in 12-15 months.
- **Existing Energy Resources Contracts:** EWEB committed to engaging with existing local resource contracts to improve terms and identify future generation opportunities. Update: EWEB’s Board has extended the joint operation contract for the 25 MW steam turbine generator located on International Paper’s property through September 2028 to align with the current BPA contract. This extension fills resource gaps in the portfolio and benefits EWEB customers, including International Paper.
- **Western Markets Analysis:** Update: EWEB is conducting a Power Markets Gap Analysis to identify the gaps and investments required in systems, processes, and resources that EWEB will need to participate in new market constructs.
- **Ongoing IRP Modeling Refinements:** EWEB seeks to update modeling inputs and assumptions, continue to monitor trends, update load forecasts assumptions, and improve workforce analytical capabilities. Update: EWEB analysts continue to identify modeling improvements such as incorporating monthly capacity targets (instead of annual) into our least-cost portfolio selection process. These monthly targets are anticipated to impact EWEB’s least-cost portfolio solutions by identifying a resource mix which helps meet EWEB’s growing summer peak needs in addition to our higher winter peak capacity requirements. This enhancement is also expected to better align with the reliability standards utilized in the Western Resource Adequacy Program.
- **Prepare for the 2025 IRP:** Prepare to publish the next IRP in summer 2025. Update: See next section.

3.3.2 2025 IRP

The 2025 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. The 2025 IRP will build off the initial analysis and assumptions used in the 2023 IRP.

Why is the BPA 2028 contract renegotiation important?

BPA sells power from 31 federal dams and a nuclear plant (called the Federal Columbia River Power System or “FCRPS”), which provide EWEB with cost-based, low-carbon, dispatchable power. Historically, BPA’s costs have been relatively low due to the size and scale of these legacy assets. EWEB’s current 17-year take-or-pay⁸ BPA power contract is called the Regional Dialogue Contract and is set to expire in September 2028. This BPA contract costs EWEB approximately \$80 million annually and provides roughly 80% of EWEB’s energy. Negotiations for BPA’s next contract offering, referred to as the Provider of Choice (PoC) contracts, are underway. The regional negotiations involve in-depth discussion and analysis of various power products that BPA intends to make available to their customers⁹, as well as other contract and rate principles. For example, this includes contract details such as billing determinants and organized market compatibility. Customers expect to be asked to sign BPA PoC contracts in December of 2025.

For the 2025 IRP, staff will prepare an Energy Resource Study (ERS) which will compile useful information for making the BPA product decision in 2025. The completion of this ERS in mid-2025 would allow for EWEB management to review the study results before preparing a BPA product recommendation and a first draft of an IRP action plan. In Q4 2025, the Board will review management’s recommendation and endorse an Action Plan, including a BPA product selection.

Key questions that the 2025 Energy Resource Study intends to address:

1. How would different BPA product decisions impact EWEB’s resource portfolio?
2. Which resources could be used to serve EWEB’s future load growth?
3. How much energy efficiency and demand response should EWEB pursue in the future?

Links and Relevant Resources:

- EWEB Website: [2023 Integrated Resource Plan](#)
- 2023 IRP Fact Sheets:
 - [Is Solar a Good Fit for Our Community’s Energy Needs?](#)
 - [How can EWEB’s IRP Incorporate Diversity, Equity, and Inclusion?](#)
 - [What are Considerations Around Utility-Scale Storage in EWEB’s Future Portfolio?](#)
 - [IRP Next Steps: How and When Will EWEB Acquire New Resources?](#)
 - [Planning for Long-term Carbon Reduction Goals in the IRP](#)
- Board of Commissioners Regular Meeting – March 5, 2024: [2025 IRP & Energy Resource Study Kickoff, Scope & Analytical Plan](#)

⁸ In a take-or-pay contract, the buyer takes the product from the supplier or pays the supplier a penalty. Effectively, EWEB is committing to purchase power from BPA whether or not EWEB actually takes delivery of such power.

⁹ BPA customers include over 130 NW entities including NW public utilities, like EWEB, and a few direct use industrial customers

4 CUSTOMER DECARBONIZATION

4.1 CUSTOMER DECARBONIZATION INTRODUCTION AND POLICY LANGUAGE FROM SD15

Since 2011, EWEB has aligned its investments in energy efficiency with forecasted load growth. It is not by accident that over the last decade, EWEB's electric load has remained relatively flat despite our growth in population. EWEB has a great legacy for innovating energy efficiency programs and consistently investing in conservation to lower customer costs, thereby minimizing the need for new generation, and simultaneously reducing greenhouse gas emissions and other pollution.

This legacy began two generations ago when visionary EWEB Board members and creative staff embraced a wholistic path towards limiting the need for new generation by managing demand with customer-centric conservation programs. EWEB's energy efficiency programs were the first in the northwest, and even preceded BPA programs by several years. In 1976, EWEB embraced the latest advances in home insulation and began offering home audits and certifications. These early innovative programs plotted EWEB's future course as a leader in conservation.

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 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 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 v2.0:

- 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

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.

- Appendix D – EWEB’s Diversity, Equity, and Inclusion Policy SD23
- Appendix E – EWEB’s Carbon Intensity Guidance
- Appendix F – EWEB’s Role in City of Eugene’s CAP2.0

Content planned for future Guidebook Versions:

- 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

4.2 GREEN OPTIONS PROGRAMS



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 Commercial (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

Leveraging financial 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 August 2023, there were 3,993 electric vehicles in EWEB’s service territory, nearly a 29% increase from the previous year, resulting in over 10,900 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:

- Cleanpower
- Greenpower
- Solar Electric Program
- Carbon Offsets
- Carbon Forestry Lab

Figure 9: Annual Lead Green New Enrollments and Total RECs Retired on Behalf of EWEB Customers (MWh)

Lead Green - Participation and Direct Carbon Impact

	2018	2019	2020	2021	2022	2023
Total Participants	1,707	1,629	1,590	1,590	1,622	1,660
Contributed Revenues	\$234,098	\$212,421	\$193,438	\$192,587	\$199,419	\$198,341
Renewable Energy (MWh)	22,593	20,439	18,578	18,520	19,392	19,731
Carbon Offsets	Carbon Offset program launched April 2022				16	59
EWEB Carbon Intensity	0.015	0.055	0.026	0.040	0.034	0.034
Total MT CO2e	339	1124	483	741	791	730

* DEQ published carbon intensity only available through 2022.

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 their carbon emissions from electricity use through investment in new renewable electricity sources.

Cleanpower 2023 Program Details

- Participants: 10
- Consumption: 1,835 MWh
- Total carbon emissions reduction: 62 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 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 851 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.

In 2023, for every one dollar invested in Greenpower:

- \$0.78 for local solar installations
- \$0.16 for grants to nonprofit agencies
- \$0.06 for REC retirement

Greenpower 2023 Program Details

Participants: 1,606

Consumption: 17,896 MWh

Total carbon emissions reduction: 608 MT CO2e*

Please note: The climate 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](#)

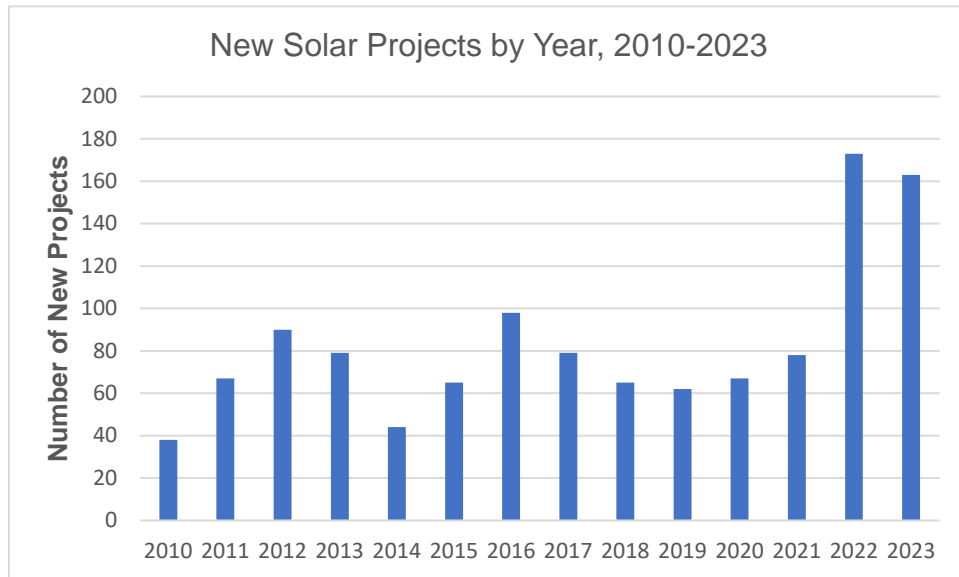
Solar Electric Program

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, 2001-2023

Eugene Cumulative Solar Installations, Residential and Commercial, 2001-2023			
System Type	Total Projects	Total Capacity (MW)	Annual Energy (MWh)
Net Metered	1,246	8.1	8,299.4
Direct Generation	48	2.7	2,728.3
Total	1,294	10.8	11,027.7

Figure 11: EWEB Solar Electric Program New Installations by Year, 2010-2023



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 above and beyond energy consumption from sources such as air travel, transportation, or 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 from the atmosphere, promotes healthy wildlife habitat, enhances biodiversity, protects water quality, and supports the local indigenous community.

EWEB Carbon Offset 2023 Program Details

Participants: 16

Total carbon emissions reduction: 59 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.”¹⁰

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 2023 Program Details

Participants: 28

2023 Project Accomplishments: 8,540 trees and 23,100 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](#)

¹⁰ [What are natural climate solutions? | World Economic Forum \(weforum.org\)](https://www.weforum.org/)

5 CLIMATE IMPACTS ON EWEB – RESILIENCY & ADAPTATION

5.1 CLIMATE IMPACTS ON EWEB INTRODUCTION AND POLICY LANGUAGE FROM SD15

What is resiliency?

EWEB defines resiliency

as, “*the ability to reduce the likelihood, magnitude, and duration of sudden or gradual disruptive events through risk mitigation, emergency*

preparedness and response, and recovery strategies.” The U.S. EPA, within its Regional Resilience Toolkit¹¹ says, “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.”

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.

When thinking about resiliency to both sudden and gradual disruptive events, it’s helpful to remember EWEB was created back in the early 20th century 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.

More than 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, and into the future forever. 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

¹¹ 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/5-steps-to-build-large-scale-resilience-to-natural-disasters)



Road damage on Highway OR 126 during the Holiday Farm Fire in September 2020. Courtesy of Oregon Department of Transportation.

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 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.

Climate Policy 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 the Climate Guidebook, this chapter will focus on resiliency initiatives related to expected changes to our physical environment in Lane County, our drinking water quality and water availability for both drinking 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 v2.0:

- 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
- Appendix C – EWEB's Resiliency Policy (SD22)

Content planned for future Guidebook Versions:

- 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 (Table 2 in the OCCRI report) to determine if the risks in Lane County 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 – see below) 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 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 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

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
Risk Increasing 		 Drought  Expansion of Non-native Invasive Plants  Reduced Air Quality  Loss of Wetlands	 Heavy Rains  Flooding  Wildfire  Changes in Ocean Temperature and Chemistry  Coastal Hazards	 Heat Waves
Risk Unchanging =	 Windstorms			
Risk Decreasing 				 Cold Waves

The report provides ranges of impacts from the above projected hazards in tangible form. For example, related to the very high confidence of the increasing risk of impact from heat waves, the report states, “*In Lane County, the number of days per year with temperatures 90°F or higher is projected to increase by an average of 18 days (range 5–30 days) by the 2050s, relative to the 1971–2000 historical baselines, under the higher emissions scenario.*”

Links and Relevant Resources:

- [Oregon Climate Change Research Institute \(OCCRI\): Future Climate Projections for Lane County, Oregon](#)
- [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 (SUB), 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 for Lane County was most recently updated in 2023.

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:

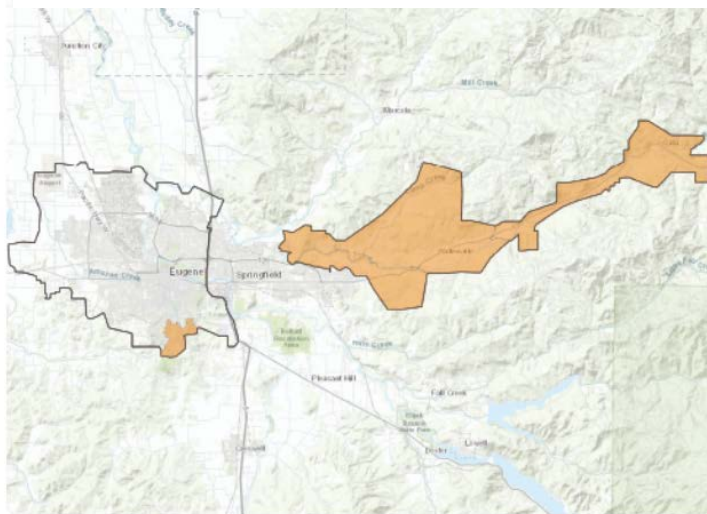
- [City of Eugene Emergency Plans: Eugene Springfield Multi-Jurisdictional Emergency Operations Plan, Eugene Springfield 2020 Natural Hazards Mitigation Plan, Oregon Resiliency Plan, and Neighborhood Radio Communications Response Guide](#)
- [Lane County, Oregon's Office of Emergency Management](#)
- [Natural Hazard Mitigation Plan for Lane County, 2023-2028](#)
- [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 and was updated in July 2023. The plan meets legislative intent outlined in SB 762 and more detailed rules from the Public Utility Commission to protect public safety and reduce risks to utility customers and infrastructure.

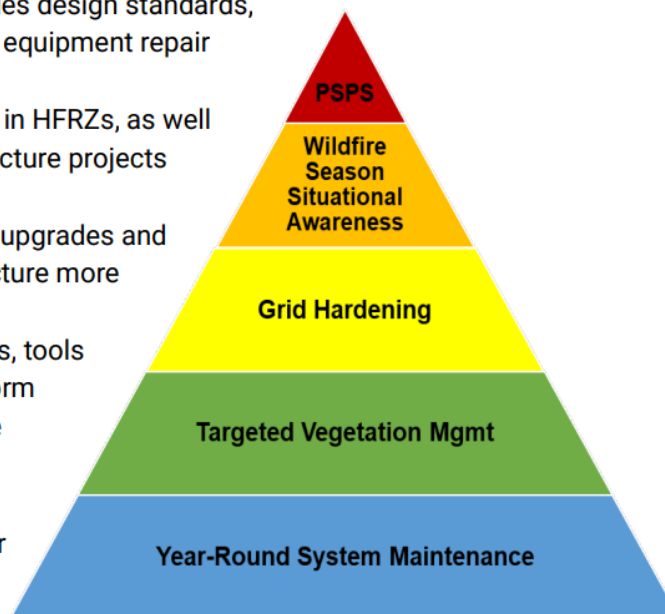
Understanding areas of high wildfire potential across the electric system is critical to effectively target key locations and mitigation investments. Most of EWEB's electric infrastructure is in urban areas with relatively low risk for wildfire. Areas currently deemed to have heightened risk include the McKenzie River Valley and a portion of southeast Eugene. EWEB plans to update this map in 2024 after conducting a comprehensive wildfire analysis using the most current risk data.

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.



EWEB's WMP's comprehensive approach to wildfire risk reduction includes:

- **System Operations and Maintenance:** Includes design standards, inspections and equipment diagnostics, and equipment repair and replacement.
- **Vegetation Management:** Enhanced pruning in HFRZs, as well as fuels reduction and select green infrastructure projects with wildfire risk reduction co-benefits.
- **Grid Hardening:** A broad array of equipment upgrades and capital investments to make utility infrastructure more resilient to wildfires.
- **Situational Awareness:** Operational practices, tools and monitoring of weather conditions to inform field activities and utility response to wildfire threats.
- **PSPS:** Encapsulates changes to system operational settings and Public Safety Power Shutoffs (PSPS) for specific circuits during extreme fire risk conditions.



EWEB has allocated \$1M as a funding floor specific to wildfire mitigation activities, including wildfire cameras, weather stations and forecasting, enhanced inspections, and multi-hazard reliability projects. Community engagement and interagency coordination is an essential component to the planning effort. In 2023, EWEB launched a new program to offer extra support to customers who rely on electricity for medical equipment and mobility devices during a Public Safety Power Shutoff (PSPS) event. The WMP is updated annually and includes metrics to track 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, 2023-2024](#) (adopted July 11, 2023)
- [EWEB Wildfire Mitigation Plan, 2022](#) (approved July 5, 2022)
- [Oregon SB 762: Wildfire Preparedness](#)

5.5 WATERSHED PROTECTION PROGRAMS

The overarching goal of EWEB's Drinking Water Source Protection (DWSP) program is to maintain our community's exceptional water quality. We do this by maintaining the balance between watershed health and human use over time. To meet this goal, we aim to:

- Prevent or reduce activities that have known or likely harmful effects on source water quality.
- Promote public awareness and maintain our healthy watershed in partnership with others.

Activities included in the Drinking Water Source Protection program 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.



EWEB's Karl Morgenstern examines damage from the Holiday Farm Fire at Fern Creek.

- 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 Website: Fire Recovery and Watershed Restoration](#)
- [2020 EWEB State of the Watershed Report](#)
- [2021 EWEB State of the Watershed Report](#)
- [2022 EWEB State of the Watershed Report](#)

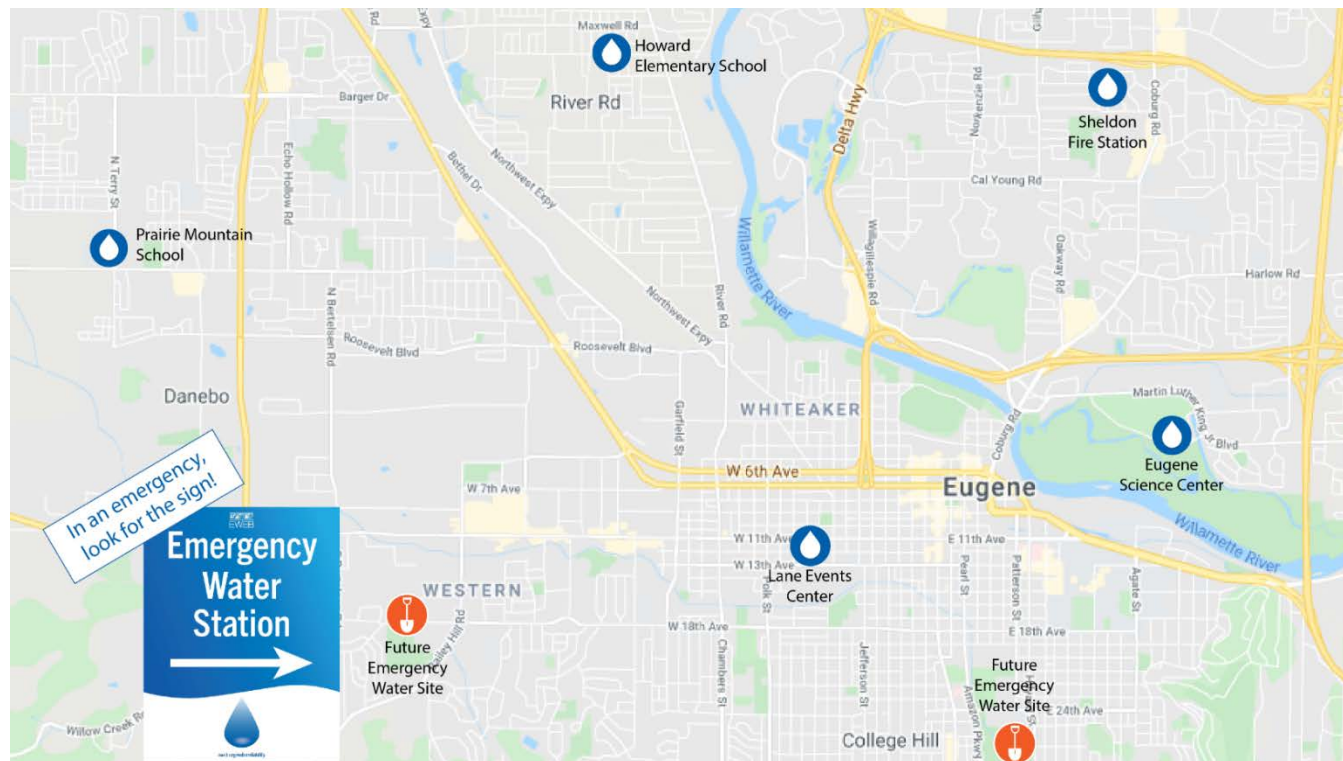
5.6 SECOND SOURCE OF DRINKING WATER DEVELOPMENT

For more than 100 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, see the map for locations.

Figure 15: Map of EWEB Emergency Water Stations



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. Included here are the results of EWEB's internal GHG inventory from calendar year 2023.

Content currently included in v2.0:

- Greenhouse gas emissions inventory results for calendar year 2023

Content planned for future Guidebook Versions:

- Internal Climate Action Plan and Roadmap to Carbon Neutrality by 2050
- Additional Scope 3 GHG emissions reporting

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, 2023

EWEB has been tracking our internal greenhouse gas emissions annually since 2009, in accordance with industry standards. 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 in line with the science-based targets to keep warming below 1.5 degrees C as outlined as part of the Paris Accord and recommendations from climate scientists. EWEB seeks to be an active partner in these efforts to decarbonize our operations and our community.

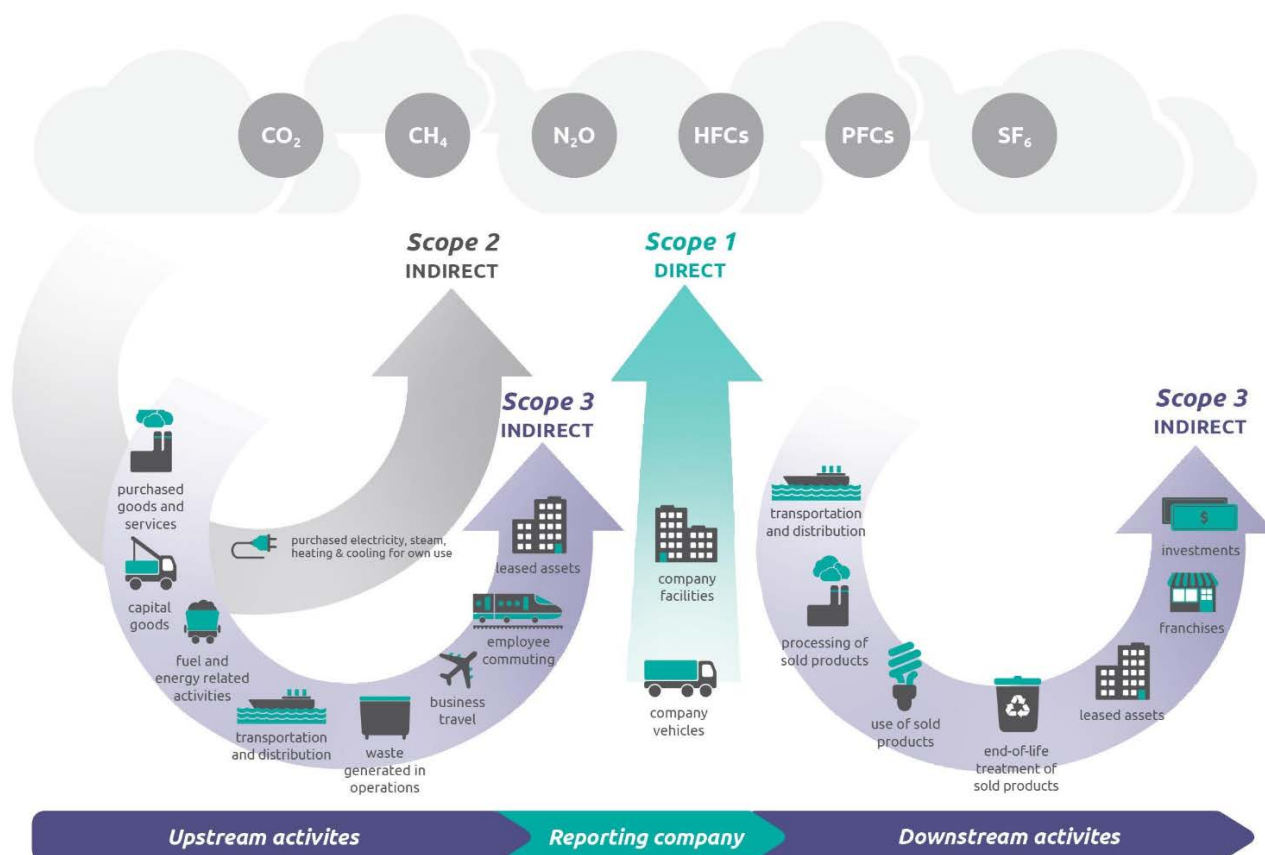
6.2.1 Inventory Protocols, Boundaries, and Scopes

In conducting our annual internal GHG inventory, EWEB follows the guidance outlined in the World Resources Institute's GHG Protocol as well as The Climate Registry's General Reporting Protocol. Emissions factors come from The Climate Registry's 2022 Default Emissions Factors, EPA eGRID emissions factors for the Northwest Power Pool, and Oregon Department of Environmental Quality's GHG Reporting Program's utility-specific emissions factors. EWEB uses a financial control approach, meaning that we report emissions for assets that we financially own. These protocols define 3 scopes of emissions coming from different types of business activities as follows:

- **Scope 1 emissions:** Direct emissions from organizationally-owned assets. Scope 1 emissions included in EWEB's inventory include fuels used in owned fleet vehicles, natural gas used for building heat in owned facilities, and industrial gases including HFCs in owned facility HVAC systems and owned vehicles, as well as SF6 used in owned electrical substation equipment.
- **Scope 2 emissions:** Indirect emissions from electricity purchased from a utility provider and consumed in owned equipment. Scope 2 emissions in this inventory include emissions from purchased electricity (and formerly steam) used in EWEB owned facilities, equipment, and vehicles. Scope 2 also addresses owned electricity generation from the 74.62 kW solar photovoltaic system operating at EWEB's Roosevelt Operations Center and from EWEB's purchase and retirement of renewable energy certificates via EWEB's participation as a customer in the GreenPower program.
- **Scope 3 emissions:** All other indirect emissions from sources or equipment that an organization does not own or manage, but where it has some shared responsibility. Examples of Scope 3 emissions can include: business travel in rental vehicles, or other non-owned vehicles such as trains, buses, or airplanes; emissions associated with commute travel in employee-owned vehicle; organizationally generated solid waste disposed of at landfills owned and operated by other entities; or purchased goods and services manufactured at vendor locations around the world.

While EWEB has calculated Scope 3 emissions in the past and will begin to do so again in the future, the focus of this report is on emissions sources included under EWEB's voluntary GHG reduction goals outlined in SD15. The focus of that policy is on Scope 1 and 2 emissions only as those are the sources that EWEB has more direct control over.

Figure 16: Overview of Scores and Emissions throughout an Organization's Operations. Source: World Resources Institute and World Business Council on Sustainable Development GHG Protocol Corporate Value Chain (Scope 3) Accounting and Reporting Standard.

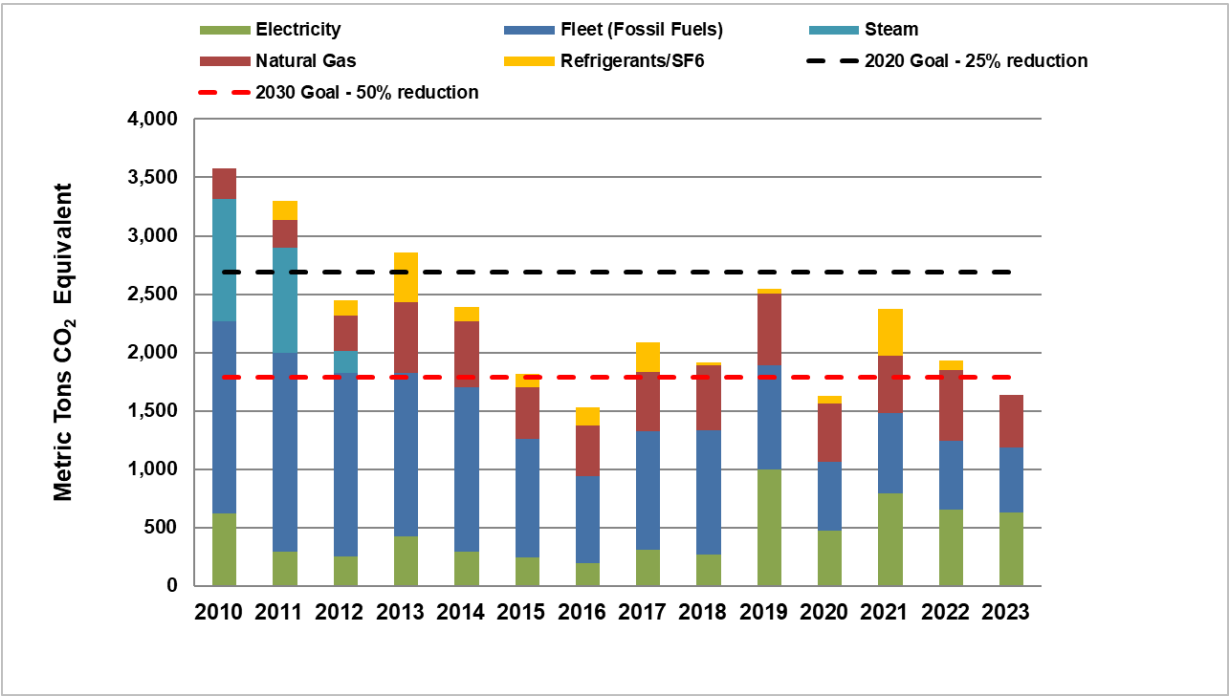


Emissions exclusions: This GHG inventory does not include Scope 1 emissions from owned electricity generation sources, as those emissions are reported annually to the Oregon Department of Environmental Quality under their Greenhouse Gas Reporting Program and turned into an annual utility-specific emissions factor for EWEB customers to use in their GHG inventories for emissions from purchased electricity. As explained in Chapter 3, EWEB seeks to meet the SD15 goal for getting to 95% carbon-free resources on a planning basis by 2030. Emissions from Scope 1 owned electricity generation equipment will be managed under the 95% carbon-free goal under SD15 and so are reported separately. See Appendix E about EWEB’s Carbon Intensity Guidance.

6.2.2 EWEB’s Progress towards SD15 GHG Reduction Goals

SD15 outlines emissions reduction targets for EWEB’s Scope 1 (owned) and Scope 2 (shared from electricity and steam consumption) emissions. While there has been annual variation in emissions over time due to several factors, EWEB has met its 2020 goal of 25% reduction over 2010 baseline emissions consistently since 2014. In 2020, emissions dipped below the 2030 goal of 50% reduction compared to our 2010 baseline, but some of those reductions were temporary due to the COVID-19 pandemic and work-from-home orders. In 2023, EWEB is pleased to report our emissions once again fell below the 2030 50% emissions reduction goal. **In 2023, EWEB is reporting aggregate emissions reductions of 54% compared to 2010 baseline performance.** The decrease in emissions between 2022 and 2023 is due to lower fleet emissions due to utilization of renewable fuels, lower natural gas emissions due to the sale of the headquarters building in June 2023, no recorded refrigerant or industrial gas recharge in 2023, and a lower electricity emissions factor, as calculated by Oregon DEQ for EWEB in 2022.

Figure 17: EWEB Greenhouse Gas Emissions from Internal Operations and progress towards climate goals (MT CO₂e), 2010-2023

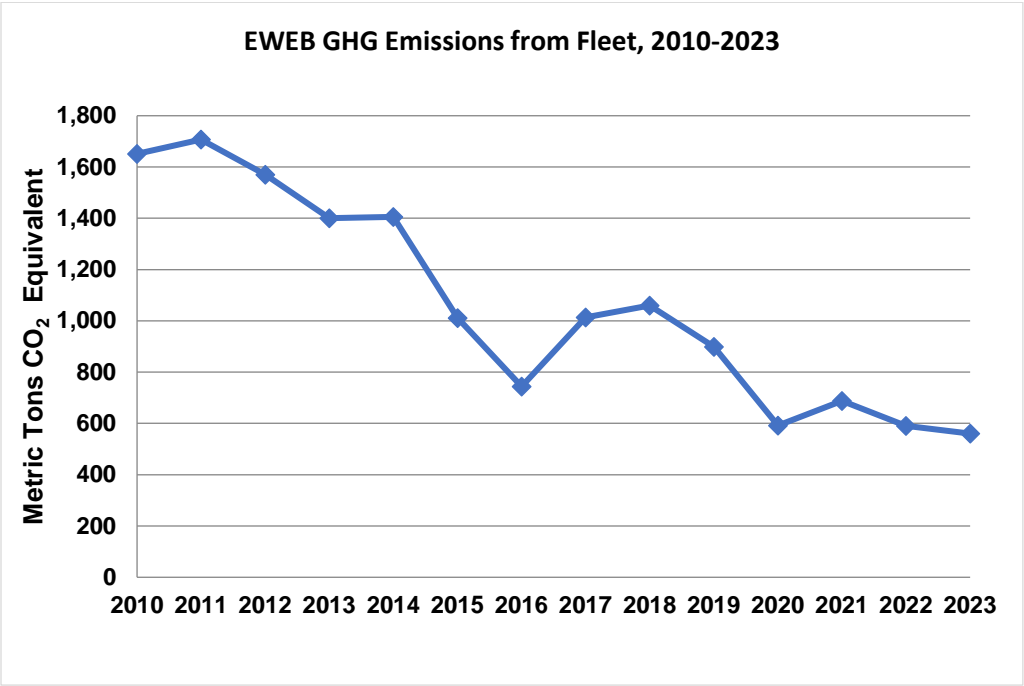


Progress towards EWEB’s internal GHG goals is calculated using a market-based approach to electricity emissions that uses the EWEB-specific emissions factor for purchased electricity as calculated by Oregon DEQ’s GHG reporting program.

6.2.3 EWEB's Scope 1 Emissions: Fleet fuels, Natural Gas, and Refrigerants and SF6 Fleet

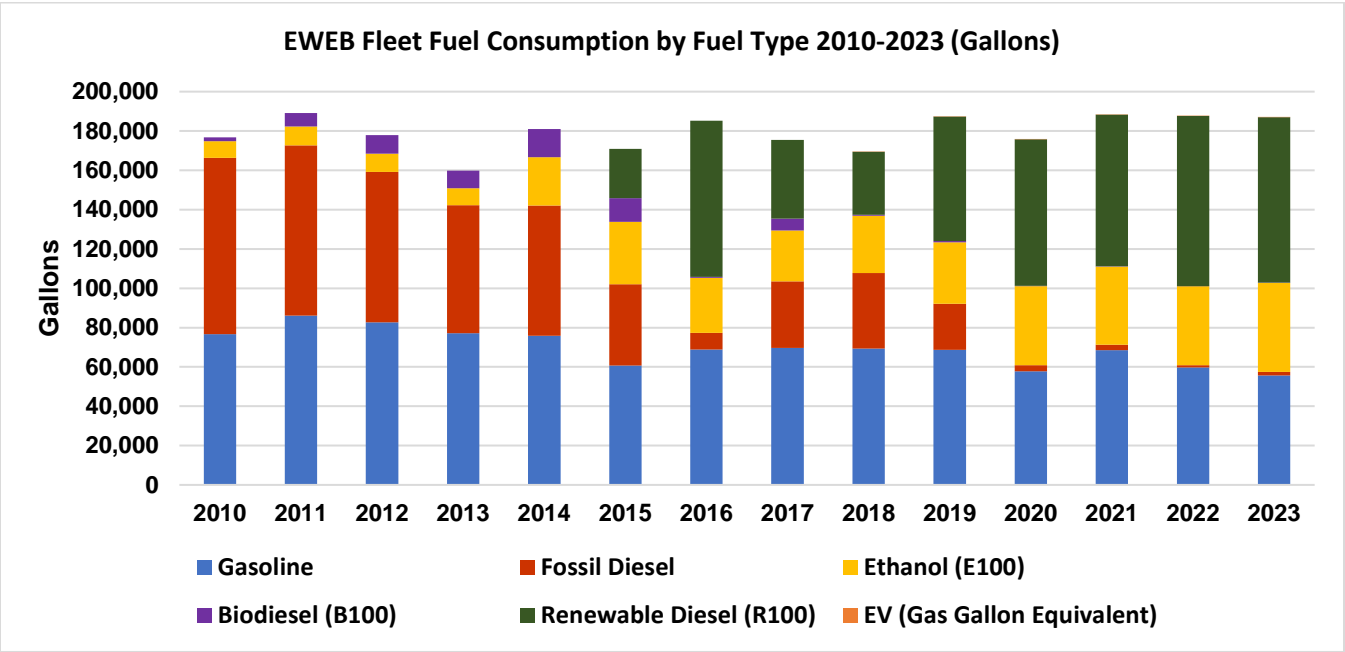
Much of EWEB's overall operational GHG reduction success has been due to emissions reductions from our owned fleet vehicles. **Emissions from EWEB's fleet vehicles have dropped 66% since 2010.**

Figure 18: EWEB GHG Emissions from Fuel Consumed in EWEB-owned Vehicles, 2010-2023



EWEB's fleet is comprised of 419 active (in-service) units, including 233 vehicles, 69 units of power-operated equipment, and 117 trailers. The size of EWEB's fleet has grown 18.5% since 2020. Despite this growth in fleet size, total gallons of fuel consumed has only grown by 6% since our 2010 emissions baseline.

Figure 19: EWEB Fleet Fuel Consumption by Fuel Type (Gallons), 2010-2023



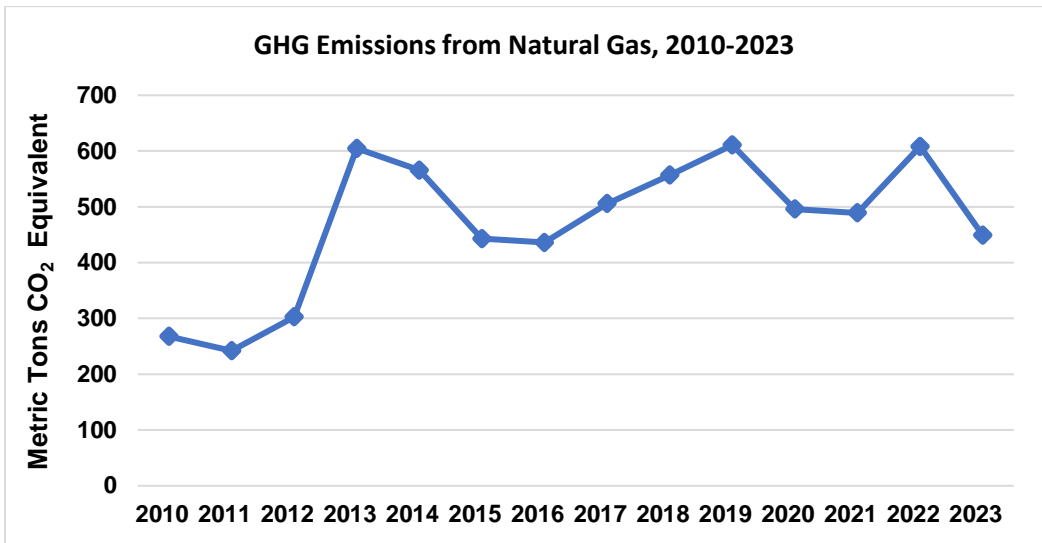
What has changed significantly are the types of fuel consumed. Since 2010, and especially since 2016, EWEB has invested heavily in new renewable fuels including Ethanol, Biodiesel, Renewable Diesel, and more recently Electric Vehicles (EVs). These biomass-based fuels reduce the carbon intensity of the fuel being consumed.

In 2023, EWEB was excited to receive two all-electric Ford Lightning pick-up trucks to complement its small fleet of passenger plug-in hybrid EVs. Due to supply chain challenges, these two trucks took over 26 months to receive from the date of order. Moving forward, EWEB will need to augment the electric vehicle charging infrastructure at EWEB’s ROC facility in order to continue to grow our EV fleet.

Natural Gas

Historically, natural gas has been used for space heating in three EWEB-owned facilities: EWEB’s headquarters building in downtown Eugene, EWEB’s Roosevelt Operations Center in west Eugene, and a facility EWEB owned for just two years in 2013 and 2014 on W. 3rd Ave in Eugene. The increase in emissions from natural gas in 2013 and 2014 can be attributed to W. 3rd facility for those two years. Once that facility was sold, the higher natural gas emissions in 2015 compared to 2010 and 2011 come from the fact that EWEB phased out steam consumption (a Scope 2 emissions source) for space heating at the headquarters building and began using natural gas at that facility instead. In June 2023, EWEB vacated and sold its headquarters facility. Due to guidance from GHG Inventory Protocols and EWEB’s financial control approach to our inventory boundaries, natural gas consumption from this facility was only included for 2023 through the date of our facility sale.

Figure 20: EWEB GHG Emissions from Natural Gas, 2010-2023

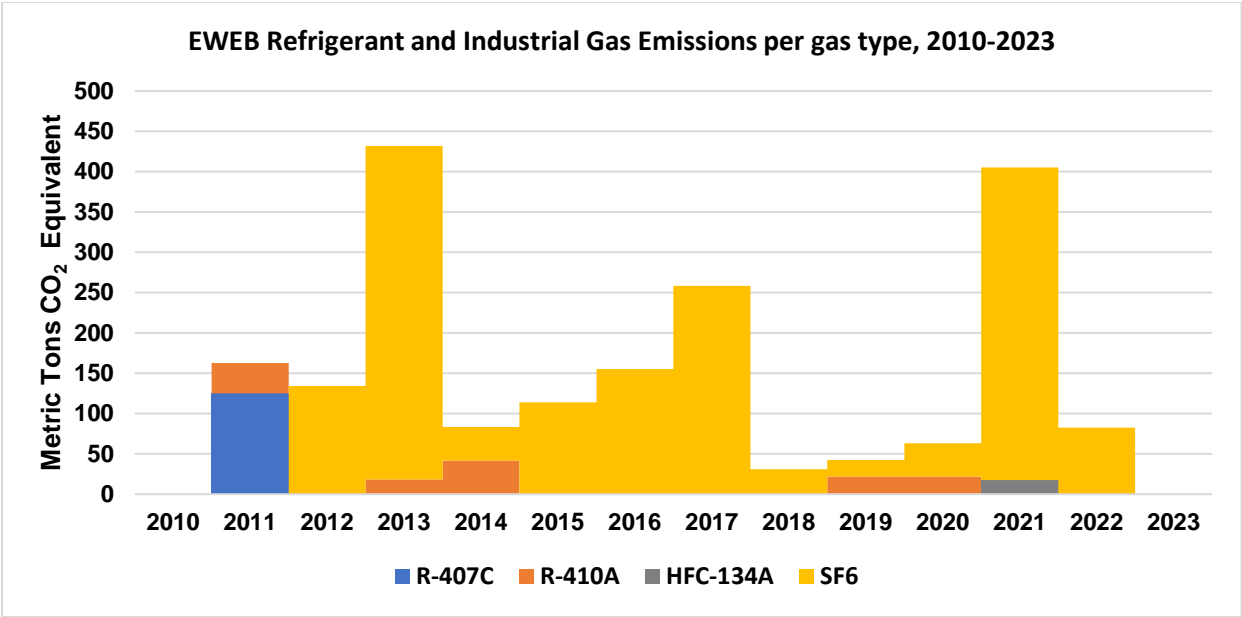


Refrigerants and Industrial gases

The final category of Scope 1 emissions includes industrial gases used in various equipment that can leak into the atmosphere and have an impact on the climate. EWEB tracks four types of industrial gases and refrigerants that are used in fleet vehicles and building HVAC equipment (for air conditioning) as well as sulfur hexafluoride (SF6) which is used as an insulator in electrical switchgear at substations.

Leaks of these gases can happen slowly over time yet are captured in our inventory during the year in which the equipment was recharged. Similar to 2010, there were no industrial gas recharges for EWEB in 2023.

Figure 21: EWEB Refrigerant and Industrial Gas Emissions by Gas Type (MT CO2e), 2010-2023



6.2.4 EWEB's Scope 2 Emissions: Electricity and Steam

In 2010-2013, EWEB consumed steam for heating at its headquarters building before the steam plant was decommissioned and the building transitioned to natural gas for space heating instead.

Emissions from electricity consumption have two components – how much electricity an organization is consuming, and the carbon intensity of the electricity being consumed. The carbon intensity of EWEB's electricity varies from year to year depending on real customer demand (driven by local weather patterns and customer behavior) and EWEB's changing need to rely on market purchases to balance customer demand and resources continuously. The high emissions factor in 2019 was reflected throughout the west due to decreased water availability in the western hydropower system.

Figure 22: EWEB Emissions from Electricity Consumption (MT CO₂e), 2010-2023

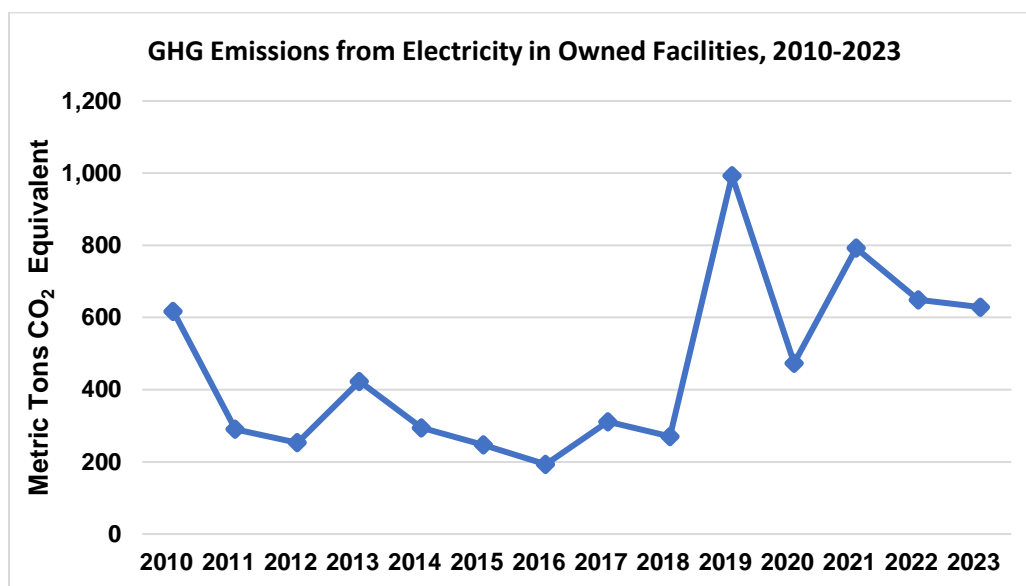
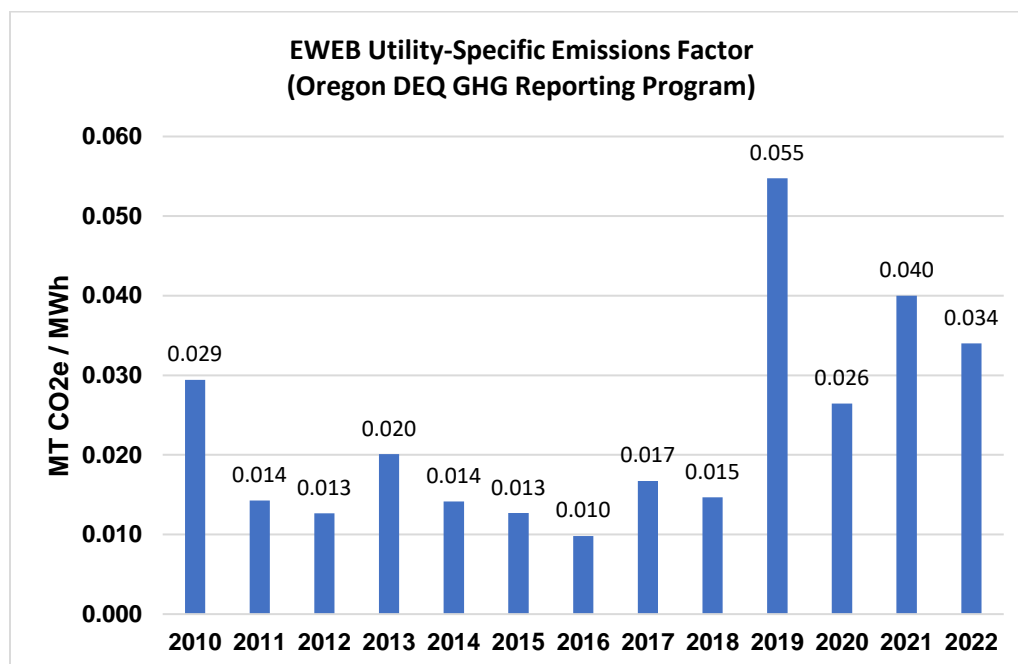


Figure 23: EWEB Utility-Specific Emissions Factor, Oregon DEQ GHG Reporting Program, 2010-2022



Please note: EWEB utility-specific emissions factors are calculated by Oregon DEQ and there is a lag in data reporting so 2022 is the latest emissions factor available. It was used to calculate EWEB’s 2023 emissions in this inventory. When the 2023 emissions factor becomes available, these calculations will be updated accordingly.

EWEB’s electricity consumption in MWh has declined by 11% between 2010 and 2023.

Figure 24: EWEB Electricity Consumption for All Facilities (MWh), 2010-2023

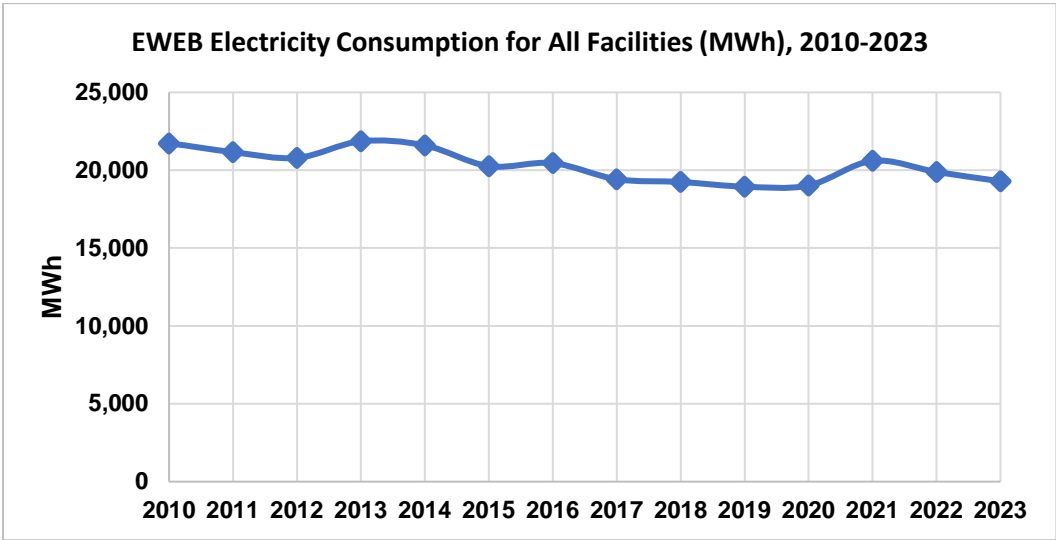
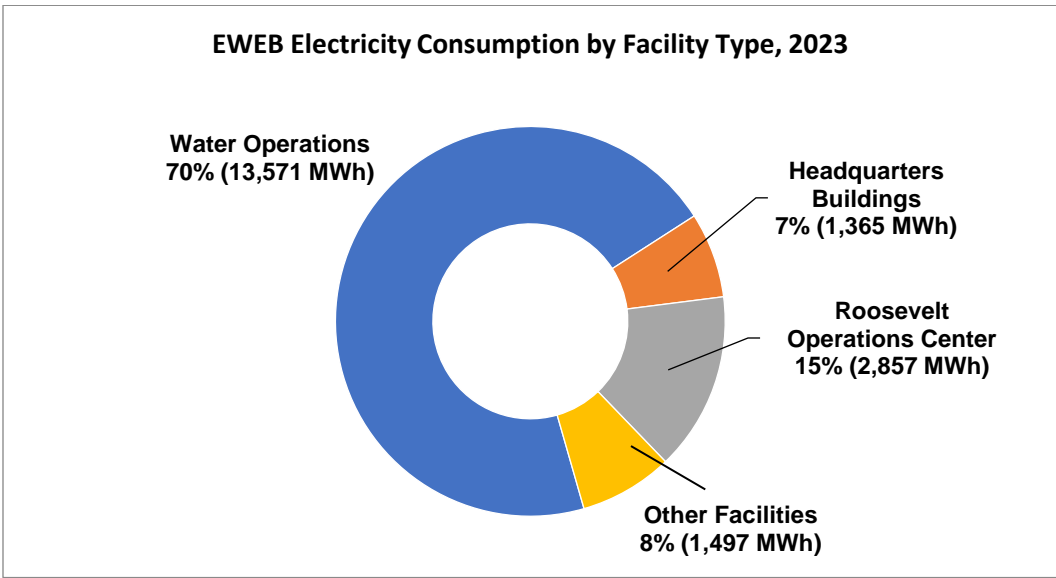


Figure 25: EWEB Electricity Consumption by Facility Type, 2023



Water operations facilities includes both EWEB’s Hayden Bridge drinking water filtration facility in Springfield and the electricity for water pumping and reservoir storage within the water distribution system. EWEB’s Headquarters building is in downtown Eugene on East 4th Ave. EWEB began moving into the Roosevelt Operations Center in 2009 and operated out of both the Headquarters facility and the ROC until June 2023 when operations were consolidated at ROC and Headquarters was sold to the City of Eugene. The Other Facilities category includes buildings that support operations at the Carmen Smith and Leaburg hydroelectric dams along the McKenzie River, and other smaller facilities in Eugene.

EWEB's annual electricity consumption is dominated by EWEB's Hayden Bridge water treatment facility that produces finished drinking water for a community of more than 200,000 residents.

6.2.5 Next Steps for EWEB's Carbon Emissions Reporting

EWEB sees an opportunity to lay out a plan to achieve carbon neutrality by (and potentially sooner than) 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.

In 2024, EWEB plans to pilot reporting its emissions according to The Climate Registry's Electric Power Sector Protocol. This would allow us to report all Scope 1 emissions from both owned electricity generating resources that are currently report to Oregon DEQ and the Scope 1 emissions from our owned fleet, buildings, and equipment into one centralized location.

Links and Relevant Resources:

- [EWEB's website: Our Commitment to the Environment](#)
- [March 7, 2023 Regular Board Meeting: Climate Guidebook Part 2: GHG Inventory and CAP2.0](#)

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. ¹²
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 and is used to support the Federal Government's Justice40 Initiative. .
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 (BTU _h 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 ¹³ .

¹² [Capacity Factor \(net\) | NRC.gov](#)

¹³ <https://www.eia.gov/tools/glossary>

Cold Climate Heat Technology	The most efficient type of air source heat pump designed for cold climates using variable speed drive compressor technology.
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 ¹⁴ .
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 ¹⁵ .
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

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

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

	<p>both. When the battery is fully charged and gasoline tank full, the PHEV driving range is comparable to a conventional ICE vehicle.</p> <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 Chargers¹⁶.</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 ¹⁷ .
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 ¹⁸
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 ¹⁹ .
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

¹⁶ <https://www.energy.gov/eere/electricvehicles/charging-home>

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

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

¹⁹ <https://www.epa.gov/ghgemissions/sources-greenhouse-gas-emissions>

	the outside. Heat pumps are vapor-compression refrigeration systems whose indoor/outdoor coils are used reversibly as condensers or evaporators, depending on the need for heating or cooling ²⁰ .
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.
Justice 40 Initiative	The goal set by the Federal Government under the Biden Administration that 40% of the overall benefits of certain Federal investments (IIJA, IRA, etc.) flow to disadvantaged communities that are marginalized, underserved, and overburdened by pollution. These communities are mapped in the US using the Climate and Economic Justice Screening Tool (CEJST) .
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 ²¹ . 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 ²² .
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 ²³ .
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.

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

²¹ <https://www.eia.gov/tools/glossary>

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

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

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 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 ²⁴ .
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 "CO2e" represents an amount of a GHG whose atmospheric impact has been standardized to that of one unit mass of carbon dioxide (CO2), 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 ²⁵ .
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) ²⁶ .
PUC	Public Utility Commission
Quad	Quadrillion Btu 10 ¹⁵ Btu. The quantity 1,000,000,000,000,000(10 to the 15th power). ²⁷
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.

²⁴ <https://www.epa.gov/fueleconomy/text-version-electric-vehicle-label>

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

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

²⁷ <https://www.eia.gov/tools/glossary>

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 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 ²⁸ .
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. ²⁹ .
Wholesale Market	The market for buying and selling of electricity before it is sold to the end-user.

²⁸ <https://www.eia.gov/tools/glossary>

²⁹ <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](#)
- [December 6, 2022 Regular Board Meeting: Annual Board Policy Review \(including SD15\)](#)
- [December 7, 2021 Regular Board Meeting: Board Policy – SD15 Climate Change Policy](#)
- [July 10, 2018 Regular Board meeting: Consent Calendar](#) – See page 35 of 42 in Consent Calendar PDF
- [June 5, 2018 Regular Board Meeting: Draft Revisions to Board Policy SD15, Climate Change](#)

APPENDIX C: EWEB’S RESILIENCY POLICY (SD22)

Strategic Direction Policies (SD Policies)

SD22 Resiliency Policy

Effective Date August 1, 2023

EWEB is committed to providing essential services that protect and enhance our community’s vitality and strives to maintain these services without disruption. With the goal of sustaining safe, reliable, affordable, and environmentally responsible drinking water and electricity services, EWEB faces the challenge of effectively planning and operating in an environment of a changing climate, new technology, developing markets, political and regulatory flux, natural and human-caused threats, and evolving community expectations.

Meeting our ongoing obligation to provide essential services requires an organizational culture that fosters sustainability and resiliency of our infrastructure, finances, workforce, information, and decisions. In addition, EWEB acknowledges its role in furthering community resiliency so that our customer-owners can self-sustain through periods of disruption, recognizing the broad and unique needs of members of the community.

EWEB defines resiliency as follows.

Resiliency: The ability to reduce the likelihood, magnitude, and duration of sudden or gradual disruptive events through risk mitigation, emergency preparedness and response, and recovery strategies.

Consistent with EWEB’s Vision, Mission, and Values (SD1) and other Strategic Direction (SD) policies, along with other policies guiding Governance Process (GP), Board-Staff Linkage (BL) and Executive Limitations (EL), the Board supports a comprehensive approach to organizational and community resiliency, as defined above, using the following primary guidance.

1. **Infrastructure and Systems** (including service delivery, financial, and information systems)

The Board authorizes, delegates, and directs the General Manager to ensure that infrastructure design and construction, communication and information systems, and operational and maintenance processes use risk-assessment methodologies to identify and achieve resilient outcomes under both normal operating conditions and disruptive events.

2. **Workforce**

The Board further authorizes, delegates, and directs the General Manager to build workforce resiliency through transfer of knowledge and skills across the organization, creating redundancy, flexibility, and depth in mission-critical functions. The organization shall facilitate employee and family emergency preparedness, improving EWEB’s response to and recovery from disruptive events.

3. **Finance**

The Board further authorizes, delegates, and directs the General Manager to ensure that the organization considers resiliency in the development of budgets and financial plans under a range of potential future conditions, including but not limited to, the variability of economic and market forecasts, and the impacts of regulatory changes.

4. **Community**

The Board further authorizes, delegates, and directs the General Manager to cultivate partnerships that enhance community resiliency, leveraging unique capabilities with the potential to plan, mitigate adverse impacts of, or respond and recover from a variety of operating conditions or disruptive events. EWEB shall educate and encourage the community at-large, including vulnerable and/or historically marginalized customer-owner segments, to plan and prepare to self-sustain through periods of disruption, as well as other options for response and recovery.

Implementation

The guidance outlined in this policy are acknowledged as results or conditions that are acceptable to the Board in the process of establishing policy and approval of Strategic Plans, Long-Term Financial Plans, Capital Improvement Plans, annual budgets, and goals, as established in Board Policy BL4 “Delegation to the General Manager”. According to this policy, the aforementioned plans will include resiliency considerations by incorporating content showing the sensitivities of recommendations, actions, and/or outcomes to variables impacted by relevant changing future conditions.

Implementing the guidance provided in the policy will include the development and maintenance of risk mitigation and recovery plans for major potential threats (e.g., wildfires, chemical spills, etc.), and others in partnership with local agencies (e.g. Natural Hazard Mitigation Plan).

Triple-Bottom-Line (TBL) assessments of plans, designs, and processes will include resiliency criteria to highlight each alternative’s performance and/or outcome under both normal and disruptive event conditions. The resiliency of major decisions will be evaluated by assessing the sensitivity of outcomes under a variety of different future conditions.

So that EWEB’s actions related to this policy are visible to the Board and our community, at least annually EWEB will compile and report on the status of strategic initiatives and annual goals associated with the implementation of this policy, as applicable.

Source: Lawson, Board Approved 08/01/23, Resolution No. 2313

Links and Relevant Resources

- [EWEB Board Policies](#)
- [August 1, 2023 Regular Board Meeting agenda item: SD22 Resiliency Policy Approval; Resolution No. 2313](#)
- [June 6, 2023 Regular Board Meeting agenda item: Draft Resiliency Board Policy](#)

APPENDIX D: EWEB’S DIVERSITY, EQUITY, AND INCLUSION POLICY (SD23)

Strategic Direction Policies (SD Policies)

SD23 **Diversity, Equity, and Inclusion Policy¹**

Effective Date **October 3, 2023**

1. Background

EWEB acknowledges that the principles of Diversity, Equity and Inclusion are foundational to the consistent application of our values in the pursuit of our vision and fulfillment of our mission. EWEB recognizes and strives to celebrate our human differences and will ensure representation across a wide spectrum of characteristics and experiences, combat bias and discrimination that negatively impacts members of our community, and foster an inclusive culture that welcomes people and leads to a sense of belonging and shared commitment.

Why Diversity – Embracing and respecting our individual uniqueness and collective Diversity fosters broad perspectives, creative solutions, and an improved understanding of our workforce and Community.

Why Equity – As a public entity, providing our entire workforce and Community with Equitable Access to Products and Services, public participation, governance, employment opportunities, and business partnerships is fundamental to enhancing the vitality, health, and welfare of the community and meeting our obligation to serve.

Why Inclusion – An environment based on Inclusion creates the collaboration, motivation, and commitment necessary to galvanize our board and workforce, and inspire our customers to use our Products and Services and actively participate in our governance and public processes, essential to sustaining and continually improving our organization.

2. Definitions - as applied to this policy:

Diversity: in addition to legally protected classes, the presence and recognition of all aspects of human differences within a group.

Equity (Equitable): the fair, unbiased, impartial opportunity to achieve a just outcome.

Inclusion (Inclusive): continually creating a welcoming environment where people with different identities and diverse experiences feel respected, have a sense of belonging, and can participate and achieve to their potential.

Community: includes the people with whom we serve, conduct business with, collaborate, influence, or impact in the fulfillment of our mission.

Products and Services: includes the delivery of drinking water, electricity, information, support, and supplemental programs related to the fulfillment of our mission.

Access: the physical and/or virtual means of obtaining, examining, or consuming Products and Services.

¹ Non-Grammatical capitalized terms in this policy refer to the definitions as described in Section 2

3. Primary Directives

Consistent with EWEB’s Vision, Mission, and Values (SD1) and other Strategic Direction (SD) policies, along with other policies guiding Governance Process (GP), Board-Staff Linkage (BL) and Executive Limitations (EL), the Board supports an intentional and comprehensive approach to reducing and/or eliminating discrimination, and continually improving Diversity, Equity, and Inclusion, as defined above, by focusing on the following strategic areas:

- a. **Access to Products and Services:** The Board authorizes, delegates, and directs the General Manager to ensure that the Community we serve has Equitable Access to Products and Services.
- b. **Workforce:** EWEB will rely on workforce, business, and operations management policies and practices to guide and govern conduct and decision-making. Furthermore, the Board authorizes, delegates, and directs the General Manager to ensure these policies exist, are routinely reviewed, and are enforced with the goal to create and nurture a working environment that facilitates productive, Inclusive, and respectful workforce engagement through Equitable actions, including but not limited to recruiting and hiring, compensation, promotion and retention, training and skill building, discipline and separation policies, procedures, and practices.
- c. **Engagement:** Furthermore, the Board authorizes, delegates, and directs the General Manager to facilitate productive, Inclusive, and respectful Community engagement through open, accessible, and transparent communications, facilities, and Equitable opportunity to participate in our procurement, contracting, governance, and/or public processes.
- d. **Board of Commissioners:** Commissioners shall adhere to board policies specifically addressing but not limited to their governing style³⁰, job duties³¹, rules of conduct³², external communications³³, and public input³⁴ in a manner that fosters the organizational and Community benefits of Diversity, Equity, and Inclusion outlined in this policy.

4. Implementation

According to Board Policy³⁵, the General Manager *“is responsible for implementing policies and direction established by the Board”*. To implement this policy, the Board and General Manager will work together to develop annual goals, consistent with Board Policy³⁶, related to the primary directives included herein, as applicable, including milestones and measurements, and reporting frequency.

So that the organization’s actions related to this policy are visible to the Board and our Community, at least annually EWEB will review and report on the status of relevant customer and workforce demographics and data, tactical activities, strategic initiatives, and annual goals associated with the implementation of this policy.

³⁰ Board Policy GP1 Governing Style

³¹ Board Policy GP2 Board Job Description

³² Board Policy GP6 Rules of Conduct

³³ Board Policy GP9 External Communications

³⁴ Board Policy GP10 Public Input

³⁵ Board Policy BL1 Global Board – General Manager Linkage

³⁶ BL4 Delegation to the General Manager; BL5 Evaluating the General Manager’s Performance

5. Reference Policies

The following are referenced in this policy:

- Board Policy GP1 Governing Style
- Board Policy GP2 Board Job Description
- Board Policy GP6 Rules of Conduct
- Board Policy GP9 External Communications
- Board Policy GP10 Public Input
- Board Policy BL1 Global Board – General Manager Linkage
- BL4 Delegation to the General Manager; BL5 Evaluating the General Manager’s Performance

Source: Initial Board Approval 10/03/23, Resolution No. 2318.

Links and Relevant Resources

- [EWEB Board Policies](#)
- [August 15, 2023 Board Work Session: SD23 Draft Diversity, Equity, and Inclusion \(DEI\) Policy Review and Discussion](#)
- [June 14, 2023 - Board Work Session: Introduction to DEI Training](#)
- [April 18, 2023 - Board Work Session: 2023 Organizational Goal #2 – Diversity, Equity, & Inclusion \(DEI\)](#)
- [April 4, 2023 - Regular Board Meeting: Correspondence item – Diversity, Equity, and Inclusion \(DEI\) Board Policy – April Work Session Overview](#) – See Page 14-16 of PDF packet
- [March 7, 2023 - Regular Board Meeting: Correspondence item – EWEB Participation in Equity Community Consortium](#) – See Page 1-2 of PDF packet
- [July 5, 2022 - Regular Board Meeting: Correspondence Item – DEI Board Policy Development Background Information](#) – See Pages 13-17 of PDF packet
- [February 15, 2022 - Board Work Session: Goal #2\(e\): New Board Policy – Diversity, Equity, and Inclusion](#)

APPENDIX E: EWEB'S CARBON INTENSITY GUIDANCE

THE CHALLENGES OF THE EXISTING POLICY CONTEXT FOR GHG REPORTING

Over the last twenty years, the practice of carbon accounting has emerged as an important component of fighting climate change. The question has been, **“How many emissions is an entity responsible for and what can be done to reduce those emissions?”**. In that statement, an “entity” could be an individual, a household, a business, a school, a government, a non-profit, a utility, a city, a state, a nation, a world, or more. The practice of quantifying the emissions an entity is responsible for has led to questions of boundaries, levels of direct responsibility vs. influence, methods, and standards.

Within the world of *financial* accounting, there is a set of Generally Accepted Accounting Principles (GAAP) that represent a common set of accounting rules, standards, and procedures that are set by the Financial Accounting Standards Board (FASB) and that public companies in the US must follow when reporting their financial statements. It is recognized that something similar is needed for carbon accounting.

There is a set of existing protocols and methods that make up the backbone of carbon accounting standards today that has been developed by several international non-governmental organizations (NGOs), such as the World Resources Institute among others. Within the next sections of this Appendix there will be links included to access this guidance as well as call out boxes explaining how this relates to EWEB. These standards often provide a tiered hierarchy of methods and emissions factors to use in an entity's carbon accounting practice, depending on the given circumstances and available data for the context in which it is being used. Because these international NGOs are trying to provide guidance that can be fit to a wide variety of entities, situations, contexts, and geographic locations, it is difficult to make a one-size fits all set of standards and guidance. As a result, many entities (including EWEB) have GHG accounting protocols that are informed by multiple international NGO's.

The United States lacks a comprehensive system specifically designed for GHG emissions accounting and data tracking. Throughout its history, electricity has been traded as a commodity without differentiating one MWH from another based on any characteristics. As carbon accounting has grown and developed, consumers increasingly want to differentiate a MWH with a high emissions profile from another MWH that was generated by zero-carbon resources. In the United States, in the absence of comprehensive national climate accounting standards or legislation, individual states have been left to build their own laws, policies, reporting requirements, and accounting methods, or to do nothing. This has led to a patchwork of practices across the Western Electricity Coordinating Council (WECC) that makes up the western electricity grid. Across the US WECC today there are:

- **State-specific programs dedicated to market development of new renewable energy**, including Renewable Portfolio Standards and clean energy targets. These programs are often focused on incentivizing the development of new renewable resources, which has led to tracking *some* qualifying low/zero-carbon electricity production, but not all. For example, legacy hydro power is often excluded as a RPS qualifying resource, but Oregon RPS does provide an exemption which reduces RPS targets based on energy received from legacy hydro from BPA³⁷.
- **State-specific programs dedicated to electricity fuel-mix disclosure.** Only some of these programs require that emissions rates be included.

³⁷ <https://www.oregon.gov/energy-energy-oregon/Documents/EWEB-RPS-compliance-report-2020.pdf>

- **Mandatory GHG Emissions Reporting Programs that apply to entities in the West.** Some of these are federal while others are state-specific. Some of them require reporting of only direct emissions sources while other require reporting of both direct and indirect emissions. Some are specifically focused on the electricity sector and others are economy-wide. Some have mandatory reduction targets, and some include a cap-and-trade program.
- **Voluntary utility and electricity consumer GHG reporting and commitments.** Many utilities, like EWEB, have made voluntary commitments and voluntarily disclose GHG emissions inventories annually based on existing reporting frameworks and protocols.

The contractual path of electricity tracking doesn't always match the physical flow of energy. In addition to the patchwork of federal and state, as well as mandatory and voluntary programs mentioned above, there is the added challenge that electricity has been managed by both a contractual path that tracks the ownership of a MWH of electricity by contract or financial ownership, and the physical flow of electricity on the transmission system. The contractual and the physical pathways sometimes diverge in ways that contribute to difficulty in calculating which generation source produced the electricity that flows into EWEB's service territory and who gets to claim the environmental attributes or "low-carbon-ness" of renewable electricity generation owned by the utility.

Links and Relevant Resources

- [The Brattle Group Greenhouse Gas and Clean Energy Accounting Methodology Catalogue](#) (June 2023)



Grand Coulee Dam in the winter. Courtesy of the Bureau of Reclamation.

COMMON PROTOCOLS AND RESOURCES FOR GHG REPORTING

Since the late 90s/early 2000's, several protocols, tools, resources, and guidance documents have been developed to support carbon accounting at different levels and for different industries or contexts. Many are complementary and build off one another.

The most common resources utilized in the United States are linked here. The links included in this section are not comprehensive but are provided to give EWEB customers and community members an easy way to find resources that could fit their reporting and disclosure needs.

Resources included:

- World Resources Institute
 - The GHG Protocol Corporate Accounting and Reporting Standard
 - The Scope 2 Guidance
 - The Corporate Value Chain (Scope 3) Accounting and Reporting Standard
 - The GHG Project Protocol
- The Climate Registry
 - The Climate Registry's General Reporting Protocol
 - The Climate Registry's Local Government Operations Protocol
 - The Climate Registry's Electric Power Sector Protocol
 - The Climate Registry's Default Emissions Factors (updated annually)
- CDP - formerly called the Carbon Disclosure Project, is an environmental disclosure system that was created on behalf of investors to document environmental risks, opportunities, and leadership that could impact an organization's financial performance.
- The Task Force on Climate Related Financial Disclosures

How does this relate to EWEB?

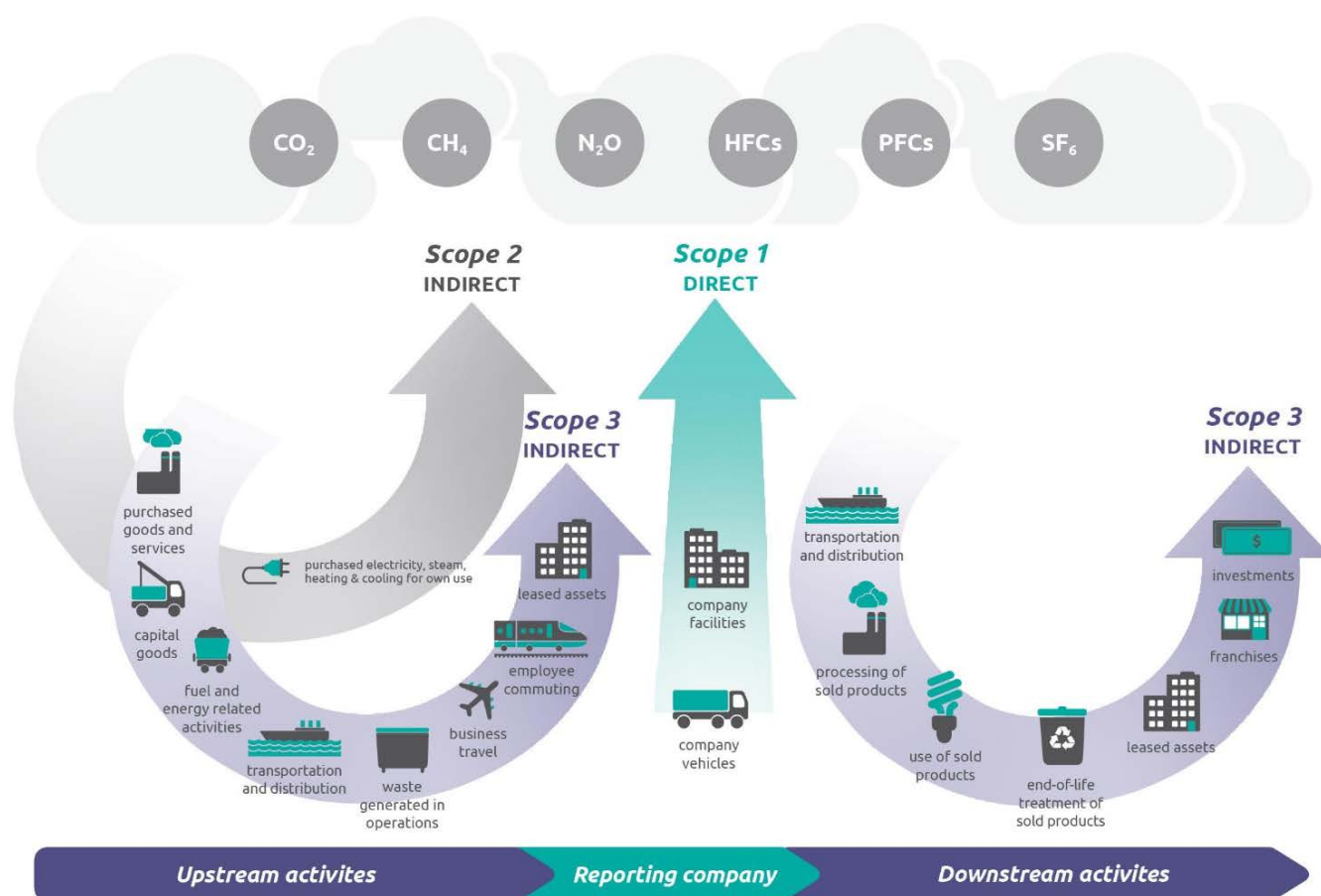
EWEB currently reports its internal operations emissions in accordance with the World Resources Institute Greenhouse Gas Protocol, and The Climate Registry's General Reporting Protocol. EWEB uses the World Resource Institute Scope 2 Guidance document to guide our calculations of Scope 2 emissions from purchased electricity. EWEB's internal GHG inventory excludes emissions from Scope 1 direct emissions from electricity generating activities at this time. This is because EWEB separately reports our emissions associated with electricity generation to Oregon DEQ in accordance with requirements under DEQ's GHG Reporting Program. Therefore, EWEB does not currently follow guidance published under The Climate Registry's Electric Power Sector Protocol. We may choose to do this in addition to our DEQ reporting in the future.

In 2023, EWEB submitted our first response to CDP's Supply Chain Climate Disclosure.

World Resources Institute (WRI) GHG Protocol

The World Resource Institute Greenhouse Gas Protocol is the de-facto international leader in GHG accounting and standard setting. It defined the types of gases that must be reported, and the Scopes of emissions that come from different types of business activities that have also become standard in GHG accounting nationally and internationally. See figure below.

Figure 26: Overview of Scores and Emissions throughout an Organization's Operations. Source: World Resources Institute and World Business Council on Sustainable Development GHG Protocol Corporate Value Chain (Scope 3) Accounting and Reporting Standard.



WRI's website describes its formation and offerings as follows:

"The Paris Agreement commits countries to reduce GHG emissions to keep the global temperature rise below 1.5 degrees C to avoid the worst impacts of climate change. GHG Protocol arose out of the need to help countries and companies account for, report, and mitigate emissions, based on a report that identified an action agenda to address climate change that included the need for standardized measurement of GHG emissions.

Greenhouse Gas Protocol provides accounting and reporting standards, sector guidance, calculation tools and trainings for businesses and local and national governments. It has created a comprehensive, global, standardized framework for measuring and managing emissions from private and public sector operations, value chains, products, cities, and policies to enable greenhouse gas reductions across the board.

*WRI and the World Business Council on Sustainable Development (WBCSD) created the GHG Protocol as an international standard for corporate accounting and reporting emissions, categorizing greenhouse gasses into Scope 1, 2 and 3 based on the source. In 2016, 92% of Fortune 500 companies responding to the Climate Disclosure Project (CDP) used GHG Protocol directly or indirectly through a program based on GHG Protocol. GHG Protocol also provides webinars and e-learning courses on its standards and tools."*³⁸

³⁸ WRI GHG Protocol: [Greenhouse Gas Protocol | World Resources Institute \(wri.org\)](https://www.wri.org/greenhouse-gas-protocol)

Links and Relevant Resources

- [World Resources Institute GHG Protocol website](#)
- [The GHG Protocol Corporate Accounting and Reporting Standard](#) provides requirements and guidance for companies and other organizations preparing a corporate-level GHG emissions inventory.
- [The Scope 2 Guidance](#) standardizes how corporations measure emissions from purchased or acquired electricity, steam, heat and cooling (called “scope 2 emissions”).
- [The Corporate Value Chain \(Scope 3\) Accounting and Reporting Standard](#) allows companies to assess their entire value chain emissions impact and identify where to focus reduction activities.
- [The Project Protocol](#) provides specific principles, concepts, and methods for quantifying and reporting GHG reductions—i.e., the decreases in GHG emissions, or increases in removals and/or storage—from climate change mitigation projects (GHG projects).

The Climate Registry

With protocols and guidance based on WRI’s GHG Protocol, The Climate Registry (TCR) provides North American entities a way to report and verify their emissions and therefore demonstrate their commitment to fighting climate change. TCR was created prior to many of the state regulations that required government and business GHG reporting and still allows for voluntary, standard-based, rigorous, and verified emissions reporting for all types of organizations whether they are located in a state with GHG reporting requirements or not.

TCR’s website describes its formation and offerings as follows:

“The Climate Registry (TCR) is a non-profit organization that empowers North American organizations to do more in the fight against climate change. We provide best-in-class services and tools that help companies, governments and institutions reduce their emissions.

Established in 2007, The Climate Registry was formed to continue the work of the California Climate Action Registry (CCAR). CCAR was developed by the State of California in 2001, to promote and protect businesses’ early actions to manage and reduce their greenhouse gas emissions. Recognizing that climate change is a global issue and success in emissions reporting must be based on consistent data in an integrated system that stretched beyond California’s borders, The Climate Registry was established to expand CCAR’s emissions reporting work to include all of North America.”

5.1 **TABLE 5.1**
Expected Emissions Categories for Various EPS Organizations

EPS Report Entity Type	Fossil Generator ¹	Other Generator ²	Transmission Company, Balancing Authority, ISO ³	Local Distribution Company ⁴	Marketer/ Intermediary/ Retail Provider ⁵
Direct Emissions (Scope 1)					
Stationary Combustion	✓	✓			
Process Emissions	✓	✓			
Fugitive Emissions	✓	✓			
Direct Emissions (Biogenic)					
Stationary Combustion		✓			
Process		✓			
Indirect Emissions (Scope 2)					
Bulk Power Transmission Losses			✓		
Wheeled Power			✓		
Local T&D Losses				✓	✓
Purchased and Consumed Electricity	✓	✓	✓	✓	✓
Other Indirect Emissions (Scope 3) ⁶					
Specified Purchases			✓	✓	✓
Other Purchases			✓	✓	✓
Direct Access			✓	✓	
Power Exchanges			✓	✓	
Wheeled Power			✓		

Notes:

1. Fossil Generator is an entity that owns, controls or shares ownership in a facility that uses fossil fuels for power generation, including coal, oil, waste oil fuel or waste tires. These entities will report emissions and power output for these facilities.

2. Other Generator is any entity that generates power at facilities using fuels and technologies that are not fossil fuels. Relevant facilities include nuclear, hydro, geothermal, biomass, biogas, and other renewable power generation. These entities will report anthropogenic and biogenic emissions, if applicable, and power output by facility.

3. Transmission companies, Balancing Authorities and Independent System Operators are required to report indirect emissions if they control the bulk power transmission systems they oversee.

4. Local Distribution Companies are required to report indirect emissions if they control a local transmission and distribution system.

5. Power Marketers, intermediaries and retail service providers that do not own or control physical assets (such as generation facilities or transmission or distribution systems) are not responsible for reporting Scope 1 emissions. The only Scope 2 emissions these entities are expected to have are those associated with purchased and consumed electricity. These entities may opt to report emissions associated with the power they purchase for resale (Scope 3). This is a necessary step for marketers, intermediaries or retail service providers that choose to report power deliveries metrics and do not already report their purchases as part of a T&D loss calculation.

The Figure above, pulled from The Climate Registry's Electric Power Sector Protocol, provides additional guidance, beyond the 3 Scope definitions provided by the World Resources Institute GHG Protocol that is specific for Electric Utilities.

How does this relate to EWEB?

EWEB does not currently report its emissions in accordance with The Climate Registry's Electric Power Sector Protocol. Instead, EWEB reports its emissions associated with electricity generation to the Oregon Department of Environmental Quality's Greenhouse Gas Reporting Program and DEQ publishes a carbon intensity metric for EWEB customers to use when calculating their carbon footprints from purchased EWEB electricity.

Based on the Electric Power Sector Protocol's Table 5.1 excerpted above, EWEB is considered an "Other Generator", a "Transmission Company", a "Local Distribution Company" and a "Retail Provider".

Links and Relevant Resources

- [The Climate Registry's Website](#)
- [The Climate Registry's Protocol Documents page](#). Includes links to:
 - The Climate Registry's General Reporting Protocol
 - The Climate Registry's Local Government Operations Protocol
 - The Climate Registry's Electric Power Sector Protocol
 - The Climate Registry's Default Emissions Factors (updated annually)

CDP, formerly called the Carbon Disclosure Project, is an environmental disclosure system that was created on behalf of investors to document environmental risks, opportunities, and leadership that could impact an organization's financial performance. It has expanded to government entities and now includes disclosures on climate, water, and forestry. [As of March 2022, more than 680 financial institutions with US\\$130+ trillion in assets call on nearly 10,400 companies to disclose environmental data through CDP](#). CDP's disclosure platform is in alignment with the Task Force on Climate-Related Financial Disclosures, launched in 2017. CDP's Climate questionnaire asks reporting entities to disclose its GHG emissions and asks which reporting protocol is being used for the disclosure process. Both WRI's GHG Protocol and The Climate Registry's General Reporting Protocols, among others, are accepted for this disclosure. Reporting entities receive scores on their disclosures, thus incentivizing action and driving change. CDP's website describes its formation and offerings as follows:

"Founded in 2000, CDP was the first platform to leverage investor pressure to influence corporate disclosure on environmental impact. Now with the world's largest, most comprehensive dataset on environmental action, the insights that CDP holds empowers investors, companies, cities, and national and regional governments to make the right choices today to build a thriving economy that works for people and planet in the long term."

How does this relate to EWEB?

In 2023, a large industrial customer requested that EWEB complete CDP's Supply Chain Climate Questionnaire. This was EWEB's first CDP disclosure.

Links and Relevant Resources

- [CDP](#)
- [Task Force on Climate-related Financial Disclosures](#). The Financial Stability Board created the Task Force on Climate-related Financial Disclosures (TCFD) to improve and increase reporting of climate-related financial information.

RELEVANT EMISSIONS FACTORS

EWEB recognizes that entities within our service area may have questions about which emissions factors they should use in their own GHG calculations when they buy electricity from EWEB. In this section of the Guidebook, EWEB seeks to provide access to information and emissions factors available for this work.

Please Note: This section is intended for GHG accounting professionals engaged in technical analysis on behalf of their organizations. The resources provided are not exhaustive. EWEB recognizes that other resources may be appropriate to use in different contexts. EWEB is not responsible for misuse of this information, nor is EWEB responsible for updating emissions factors at the source locations included in this section. EWEB provides the links/references here only as a service to our customers to support their decarbonization efforts.

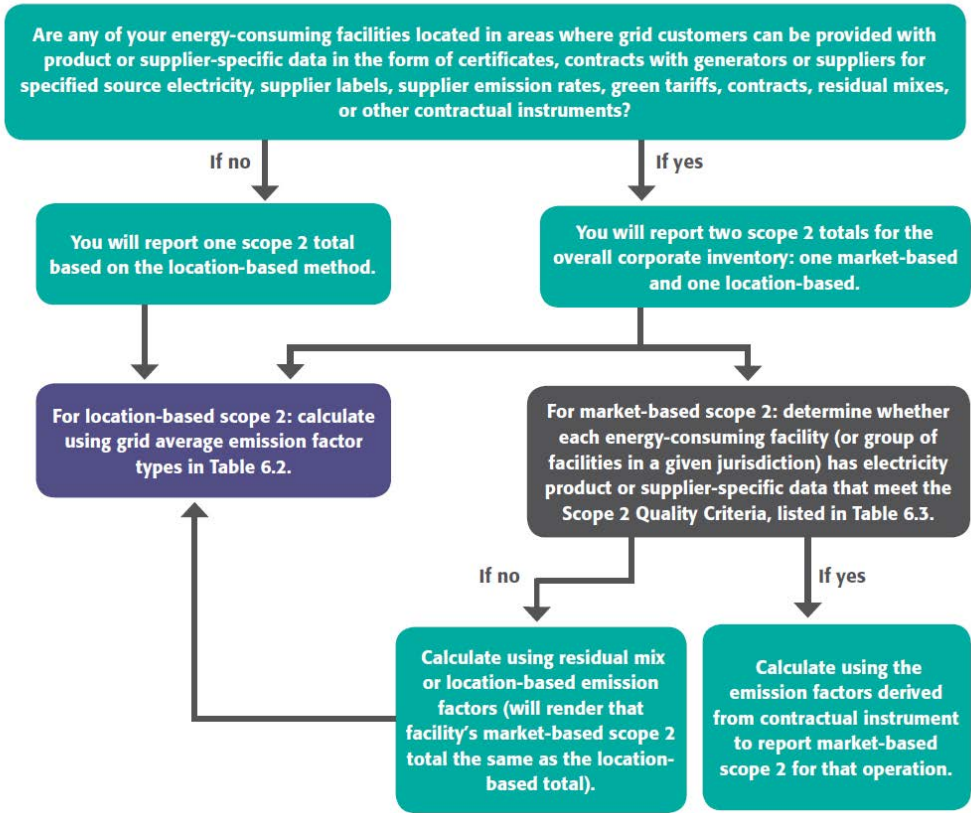
Several potential use-cases are included in this section of the report, including guidance and resources for:

- Entities seeking emissions factors for calculating Scope 2 emissions from purchased EWEB electricity.
- Entities seeking to estimate emission reduction benefits from energy efficiency & clean energy projects.
- Entities seeking to estimate the GHG impact of transportation electrification projects and potential credit generation under the Oregon Clean Fuels program.

Resources for Entities Seeking Emissions Factors for Scope 2 GHG Calculations from Purchased EWEB Electricity
Often, the first step in determining the appropriate emissions factor to use in calculating Scope 2 emissions from purchased electricity is to follow the guidance offered in **Chapter 6 of the World Resources Institute Scope 2 Guidance Document (see link below)** to determine if your organization will be reporting using the location-based method or the market-based method.

Figure 28: WRI Scope 2 Guidance, Chapter 6, Figure 6.1 Decision Tree to Determine which Accounting Method to Use for Scope 2

Figure 6.1 Determining which accounting methods to use for scope 2



How does this Decision-Tree relate to EWEB?

As can be seen in the excerpted decision tree from Chapter 6 of WRI's Scope 2 Guidance document, the answer to the first question is **yes** for EWEB's customers. Oregon DEQ calculates supplier emissions rates by utility provider. Therefore, for most EWEB customers, **the guidance recommends reporting Scope 2 emissions using both the location-based and the market-based methods.**

Continuing in the decision tree under the market-based scope 2, it asks if the supplier-specific data meets the Scope 2 quality criteria listed in Table 6.3. For EWEB's DEQ utility-specific emissions factor, the answer to this question is also **yes**.

In EWEB's internal GHG inventory, we report our emissions using both the Location-Based Method and the Market-Based Method. Progress towards EWEB's internal emissions reduction goals is usually tracked using the Market-Based Method.

Continuing in **Chapter 6 of the World Resources Institute Scope 2 Guidance Document (see link below)**, the guidance provides a hierarchy of data sources that can be used to calculate both the Location-Based and the Market-Based methods. Excerpted below is the location-based method emissions factor hierarchy. As can be seen, the eGRID regional total output emissions rate is considered more precise than using a national emissions factor. This resource is linked below.

Figure 29: WRI Scope 2 Guidance, Chapter 6 Table 6.2 Location-Based Method Emissions Factor Hierarchy

Table 6.2 Location-based method emission factor hierarchy

Data forms listed here should convey combustion-only (direct) GHG emission rates, expressed in metric tons per MWh or kWh.

Emission factors	Indicative examples
Regional or subnational emission factors <i>Average emission factors representing all electricity production occurring in a defined grid distribution region that approximates a geographically precise energy distribution and use area. Emission factors should reflect net physical energy imports/exports across the grid boundary.</i>	eGRID total output emission rates (U.S.) ^a Defra annual grid average emission factor (U.K.) ^b
National production emission factors <i>Average emission factors representing all electricity production information from geographic boundaries that are not necessarily related to dispatch region, such as state or national borders. No adjustment for physical energy imports or exports, not representative of energy consumption area.</i>	IEA national electricity emission factors ^c

Notes:

a Although eGRID output rates represent a production boundary, in many regions this approximates a consumption or delivery boundary, as eGRID regions are drawn to minimize energy imports/exports. See: <http://www.epa.gov/cleanenergy/energy-resources/egrid/index.html>.

b See Defra: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/224437/pb13988-emission-factor-methodology-130719.pdf.


c IEA emission factors do not adjust for imports/exports of energy across national boundaries. See: http://data.iea.org/ieastore/product.asp?dept_id=101&pf_id=304.

For the Market-based method emissions factor hierarchy from Chapter 6 (Table 6.3), Oregon DEQ's EWEB-specific GHG Reporting Program emissions factor would be considered a Supplier/Utility Emissions Rate. This resource is also linked below.

Figure 30: WRI Scope 2 Guidance, Chapter 6, Table 6.2 Market-Based Method Emissions Factor Hierarchy

Table 6.3 Market-based scope 2 data hierarchy examples

Data forms listed here should convey combustion-only (direct) GHG emission rates, expressed in metric tons per MWh or kWh. Reporting entities should ensure that market-based method data sources meet Scope 2 Quality Criteria. Instruments listed here are not guaranteed to meet Scope 2 Quality Criteria, but are indicative of instrument type.

Emission factors	Indicative examples	Precision
Energy attribute certificates or equivalent instruments (unbundled, bundled with electricity, conveyed in a contract for electricity, or delivered by a utility)	<ul style="list-style-type: none"> Renewable Energy Certificates (U.S., Canada, Australia and others) Generator Declarations (U.K.) for fuel mix disclosure Guarantees of Origin (EU) Electricity contracts (e.g. PPAs) that also convey RECs or GOs Any other certificate instruments meeting the Scope 2 Quality Criteria 	 <p>Higher</p> <p>Lower</p>
Contracts for electricity, such as power purchase agreements (PPAs) ^a and contracts from specified sources, where electricity attribute certificates do not exist or are not required for a usage claim	<ul style="list-style-type: none"> In the U.S., contracts for electricity from specified nonrenewable sources like coal in regions other than NEPOOL and PJM Contracts that convey attributes to the entity consuming the power where certificates do not exist Contracts for power that are silent on attributes, but where attributes are not otherwise tracked or claimed 	
Supplier/Utility emission rates , such as standard product offer or a different product (e.g. a renewable energy product or tariff), and that are disclosed (preferably publicly) according to best available information	<ul style="list-style-type: none"> Emission rate allocated and disclosed to retail electricity users, representing the entire delivered energy product (not only the supplier's owned assets) Green energy tariffs Voluntary renewable electricity program or product 	
Residual mix (subnational or national) that uses energy production data and factors out voluntary purchases	<ul style="list-style-type: none"> Calculated by EU country under RE-DISS project ^{b, c} 	
Other grid-average emission factors (subnational or national) – see location-based data	<ul style="list-style-type: none"> eGRID total output emission rates (U.S.).^d In many regions this approximates a consumption-boundary, as eGRID regions are drawn to minimize imports/exports Defra annual grid average emission factor (UK) IEA national electricity emission factors^e 	

Notes:

a Because PPAs are the primary example of this type of instrument used in the markets consulted in this TWG process, this class of instrument may be referred to in shorthand as “PPAs” with the recognition that other types of contracts that fulfill a similar function may go by different names.

b See: http://www.reliable-disclosure.org/static/media/docs/RE-DISS_2012_Residual_Mix_Results_v1_0.pdf.

c The Norwegian authority also publishes a residual mix emission factor that can be found here: <http://www.nve.no/en/Electricity-market/Electricity-disclosure-2011/>.

d See: <http://www.epa.gov/cleanenergy/energy-resources/egrid/index.html>.

e See: <http://www.epa.gov/cleanenergy/energy-resources/egrid/index.html>.

Figure 31: Oregon Department of Environmental Quality EWEB Utility-Specific Emissions factors, 2010-2022

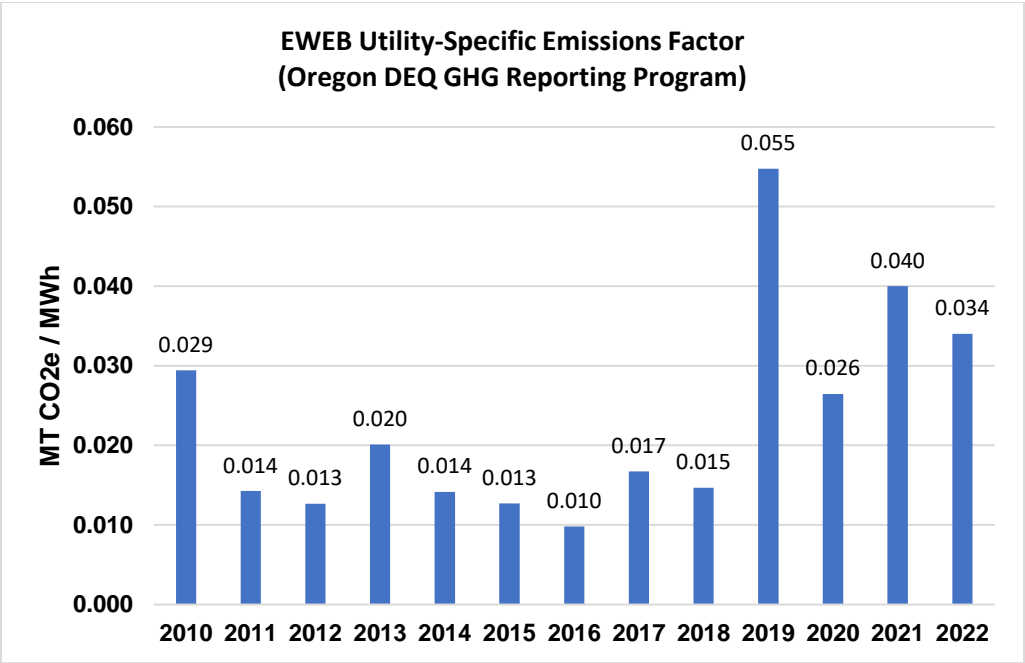


Figure 32: US EPA's eGRID Regional Total Output Emissions Rate for NWPP, 2010-2022. Note: data for years 2010-2018 was only calculated every other year. Annual reporting began in 2018.

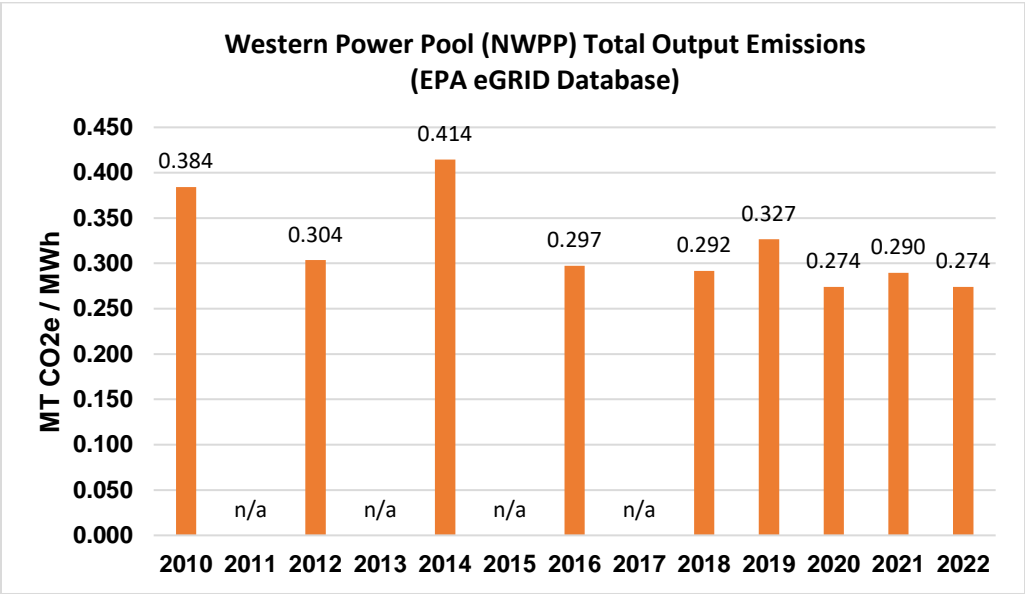
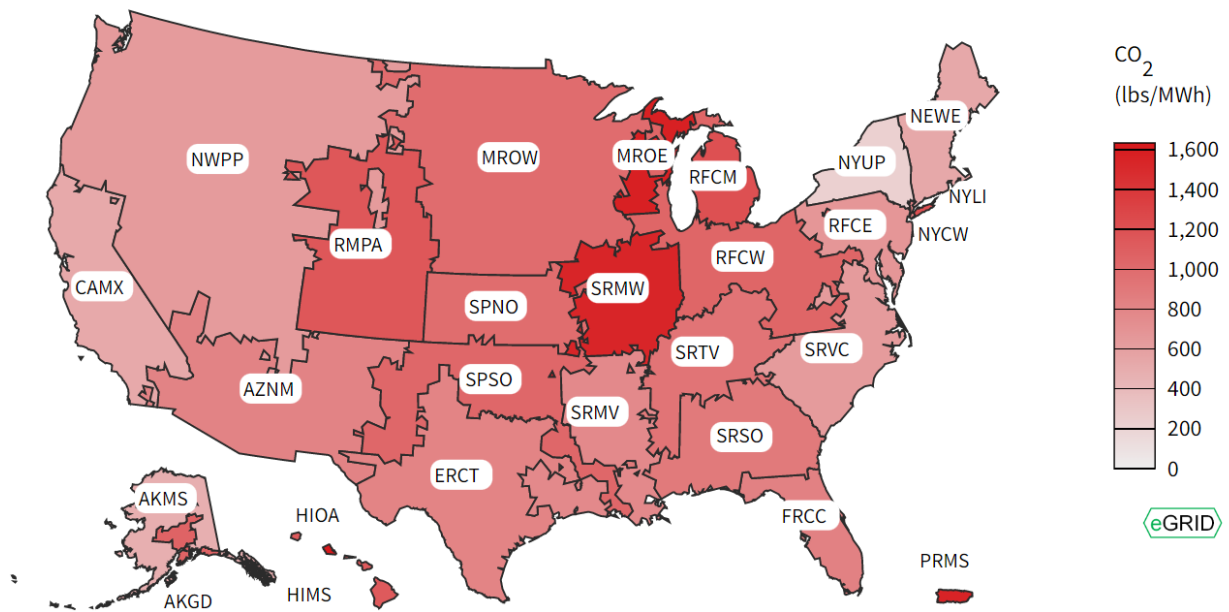


Figure 33: US EPA's eGRID Subregion Map showing Carbon dioxide in Pounds / MWh for 2021. Source: [Power Profiler / US EPA](#)

This map provides [eGRID subregion](#) average emission rates in pounds per [MWh](#).



Links and Relevant Resources:

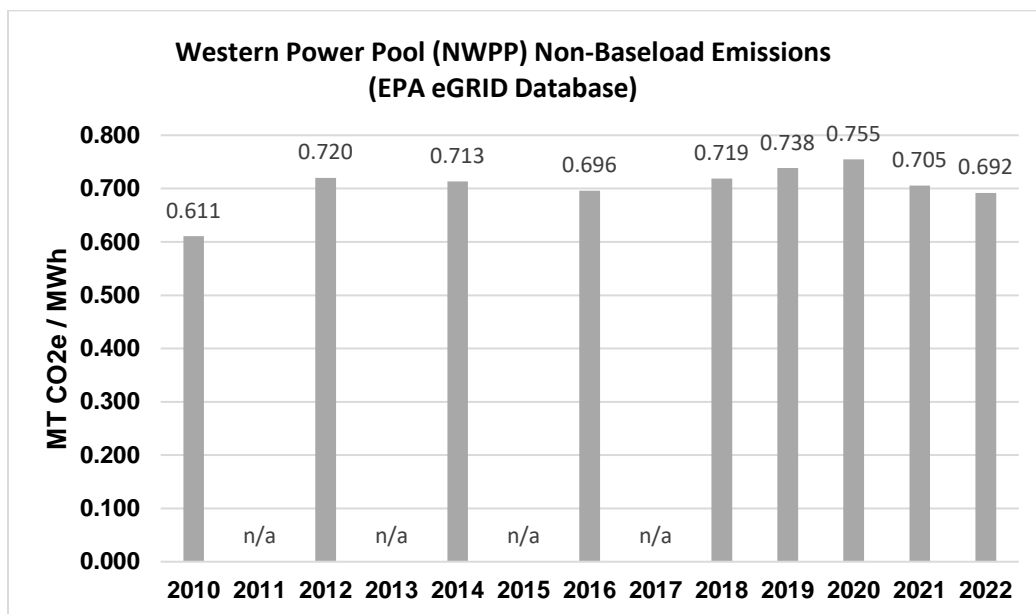
- [WRI GHG Protocol Scope 2 Guidance for Market-Based vs. Location-Based Scope 2 accounting methods.](#)
- [US EPA Emissions & Generation Resource Integrated Database \(eGRID\) Home](#)
- [EPA eGRID's regional Total Output Emissions Rate for the Northwest Power Pool \(NWPP\)](#)
- [Oregon DEQ's Greenhouse Gas Reporting Program](#)
- [Oregon DEQ's 2010-2022 Greenhouse Gas Emissions from Electricity Use.](#)
- [US EPA Green Power Partnership: Offsets and RECs – What's the Difference?](#)

Resources for Entities Seeking to Estimate Emissions Reduction Benefits from Energy Efficiency or Clean Energy Projects

Entities engaged in estimating the emissions reduction benefits from energy efficiency or clean energy projects may seek to understand the marginal or peak carbon reductions associated with their efforts. EPA eGRID database provides a different set of emissions factors for this use-case, called the **Non-Baseload Emissions Rate**. These Non-Baseload Emissions Rates are different from the EPA eGRID Total Output Emissions Rates that were referenced in the previous section.

US EPA recommends using non-baseload emissions factors when you estimate the carbon impacts of projects that reduce electricity emissions, like conservation or energy efficiency. However, the non-baseload emissions factors should NOT be used when calculating annual greenhouse gas inventories or carbon footprints. As described in the previous section, for calculating annual greenhouse gas inventories or carbon footprints, the EPA eGRID Total Output Emissions Rates are more appropriate.

Figure 34: US EPA eGRID Non-Baseload Emissions Rate for NWPP, 2010-2022



Links and Relevant Resources:

- [EPA eGRID's regional Non-Baseload Output Emissions Rate for the Northwest Power Pool](#)

Additional Notes and References:

This set of emissions factors is defined by EPA as follows:

***“Non-baseload output emission rates** were developed to provide an improvement over the fossil fuel output emission rates as an estimate of emission reduction benefits from energy efficiency and clean energy projects. Demand for electricity changes diurnally and seasonally. The term “baseload” refers to those plants that supply electricity to the grid when demand for electricity is low. Baseloaded plants are usually called upon to provide electricity to the grid no matter what the demand for electricity is during any given period of time, and generally operate continually except when undergoing routine or unscheduled maintenance.*

Non-baseload emission rates are a slice of the system total mix, with a greater weight given to plants that operate coincident with peak demand for electricity. In eGRID, the capacity factor of each plant is used as a surrogate for determining whether a plant is baseloaded and how much of each plant’s generation is considered

to be non-baseloaded. Non-baseload emission rates are the output emission rates for plants that combust fuel and have capacity factors less than 0.8, weighted by generation and a percent of generation determined by capacity factor. The non-baseload emissions and generation include only emissions and generation from combustion sources and exclude emissions and generation from plants that have high capacity factors. The remaining emissions and generation are weighted by a factor which is a function of capacity factor. These data values are derived from plant level data and factor out baseload generation, which is generally unaffected by measures that affect marginal generation. This rate is the sum of the non-baseload emissions divided by the sum of non-baseload net generation, divided by a unit conversion factor.

In eGRID, these values are displayed beginning at the state aggregation level. eGRID subregion CO2 non-baseload output emission rates are the underlying data in [EPA's Greenhouse Gas Equivalencies Calculator](#) since the results of the calculation is the potential amount of avoided CO2 emissions. These rates are also the underlying data for [EPA's Green Power Equivalency Calculator](#), which helps to translate a green power kWh purchase into more understandable everyday terms such as equivalencies to coal plant CO2 emissions or greenhouse gas emissions from passenger vehicles or CO2 emissions from electricity use in American homes, for example.³⁹

While non-baseload emissions rates can be used to estimate the emissions reductions associated with projects that displace electricity generation, such as energy efficiency and/or renewable energy, these rates should not be used for assigning an emission value for electricity use in carbon-footprinting exercises or GHG emissions inventory efforts. Rather, eGRID subregion-level total output emission rates are recommended for estimating emissions associated with electricity use (scope 2 emissions).⁴⁰ “

³⁹ <https://www3.epa.gov/ttnchie1/conference/ei18/session5/rothschild.pdf>

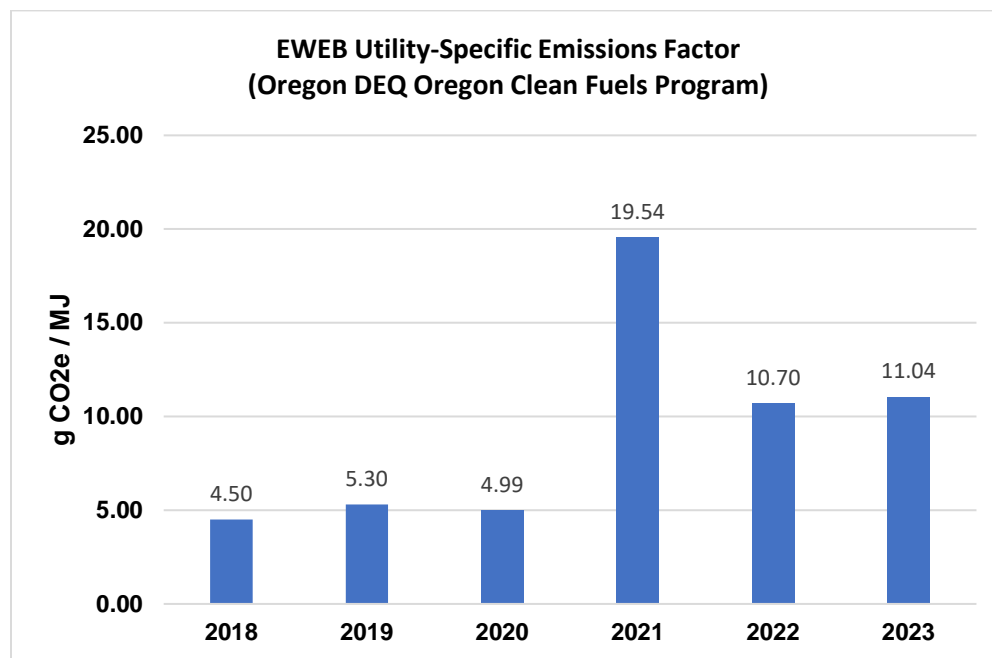
⁴⁰ eGRID Technical Guide: https://www.epa.gov/system/files/documents/2022-01/egrid2020_technical_guide.pdf

Resources for Entities Seeking to Estimate the GHG Impact of Transportation Electrification Projects and Potential Credit Generation Under the Oregon Clean Fuels Program

Entities engaged in transportation electrification or other types of transportation related fuel-switching to lower carbon fuels may be interested in estimating the carbon impact of their project or the potential for credit generation under the Oregon Clean Fuels Program.

In this case, Oregon DEQ calculates a *lifecycle* utility-specific emissions factor for utility providers in the state that is based on the total output emissions rate calculated under the Oregon DEQ GHG Reporting Program but includes upstream emissions from fuel feedstocks procurement, fuel manufacturing and transportation of finished product to the point of consumption. This is sometimes known as a well-to-wheels lifecycle analysis.

Figure 35: EWEB Utility-Specific Emissions Factors from Oregon DEQ Oregon Clean Fuels Program



Note: Please note that even though the Oregon Clean Fuels emissions factors are based on the emissions factors calculated as part of the DEQ GHG Reporting Program (discussed above), the years of emissions factors don't match between the two programs. There is a 2-year lag in calculations. For example, the 2023 Clean Fuels Program emissions factor is calculated based on the 2021 GHG Reporting Program Emissions Factors.

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 entities⁴¹:

- 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.

⁴¹ Oregon Clean Fuels Program Overview: [Department of Environmental Quality: Clean Fuels Program Overview : Oregon Clean Fuels Program : State of Oregon](#)

- 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.

Links and Relevant Resources:

- [OR Clean Fuels Program Electricity Guidance Documents](#)
- [OR DEQ Clean Fuels Program Electricity Carbon Intensity Values for 2023.](#)
- [OR Clean Fuels Program Fuel Pathways – Carbon Intensity Values](#)
- [OR Clean Fuels Program - Current List of Carbon Intensity Values](#)
- [Guidance on Utility-Specific Electricity Carbon Intensity Calculations in GREET](#)
- [OR Clean Fuels Credit Estimator](#). Excel spreadsheet to estimate expected credits.

APPENDIX F: 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'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](#)

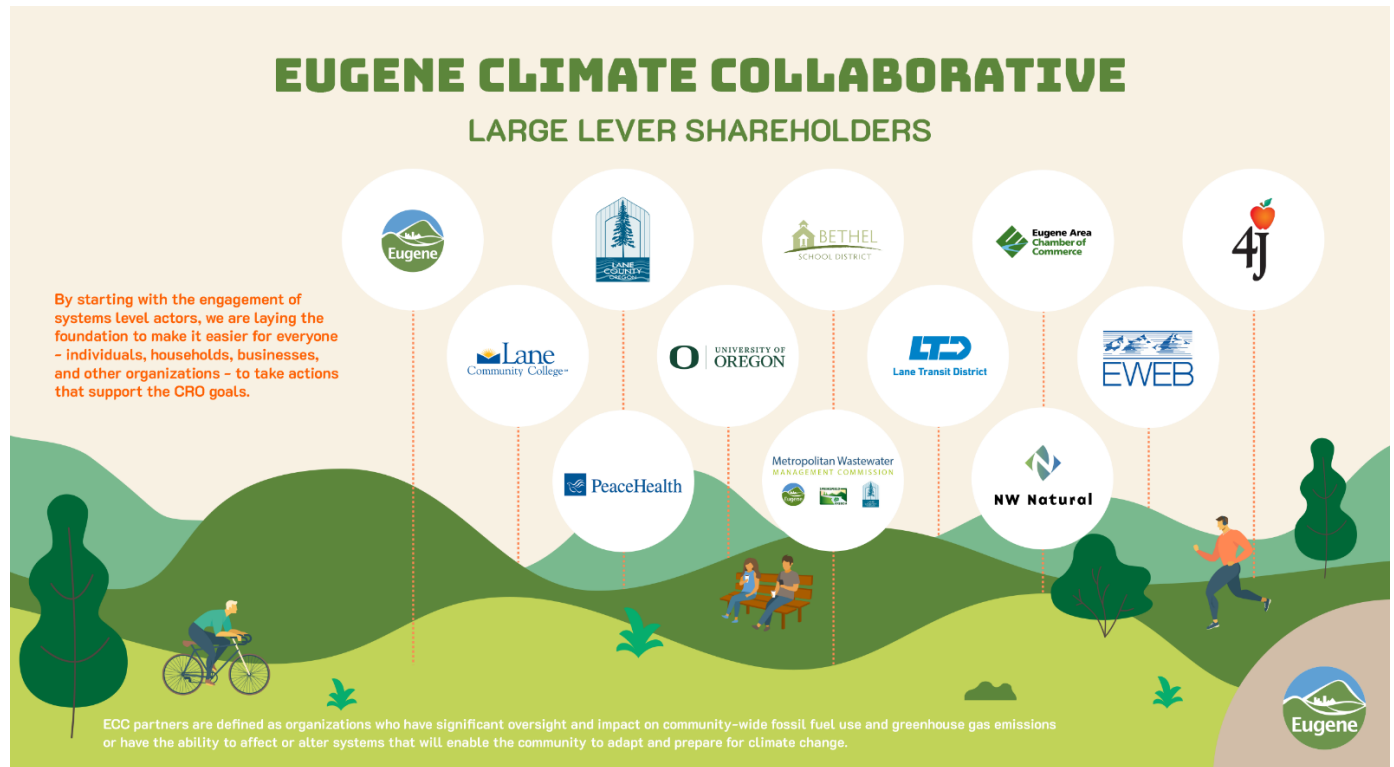
EUGENE CLIMATE COLLABORATIVE (ECC), LARGE-LEVER SHAREHOLDERS

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.”⁴²

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.

⁴² Eugene CAP2.0, page 15, Eugene Climate Collaborative Partners. Downloaded from <https://www.eugene-or.gov/4284/Climate-Action-Plan-20>.

Figure 36: 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>

Each of these commitments are discussed in detail in the coming sections.

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:

- Number of EVs registered in EWEB's service area, using vehicle registration data from the Department of Motor Vehicle (DMV).
- An estimate of electricity used per EV, from direct & non-direct metered data.
- The carbon-intensity of EWEB's utility-specific average from Oregon DEQ (see Appendix E).

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 EV Dashboard, by August 2023 EWEB has 3,993 registered EVs within its service territory⁴³.**

EWEB supports electric mobility education and market transformation in several ways (T24/32, T37, and T38 below). Key 2023 EV market support initiatives included:

- **EV education and awareness events:** EWEB and our community partners, such as the Emerald Valley Electric Vehicle Association, support, host, and participate at events that provide customers the opportunity to learn and experience electric transportation firsthand.
- **Electric vehicle test-drive events:** Through EV test-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 2023 in June and October, reaching 191 drivers.
- **Free charging stations:** EWEB has installed free public level 2 electric vehicle charging stations at its Roosevelt Operations Center (ROC) in West Eugene. They are available for community and employee use. In 2023, these public charging stations saw a near 50% increase in usage

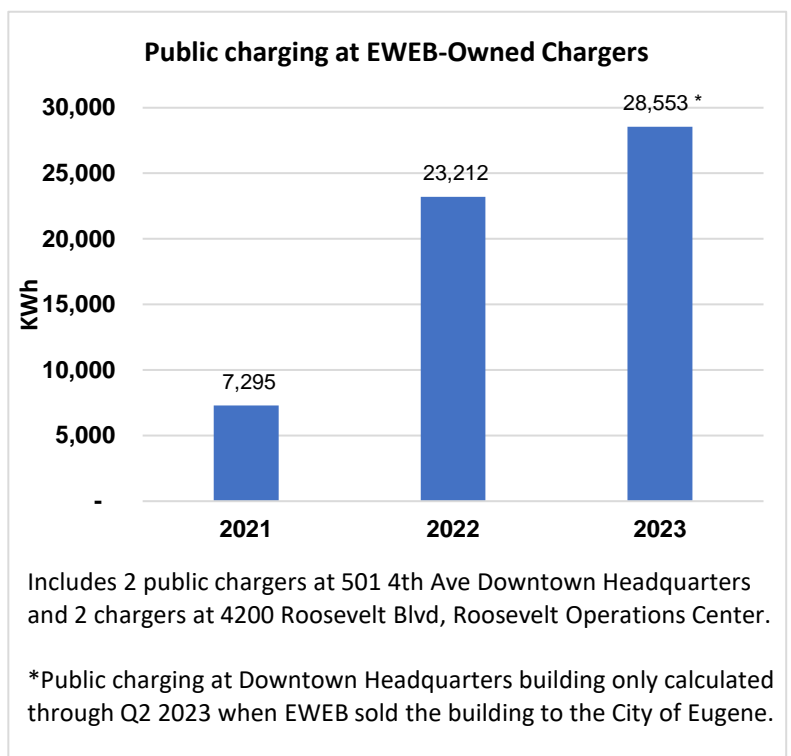
T24: EV Marketing & Awareness

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).

Figure 37: Public Charging (kWh) at EWEB-Owned Chargers 2021-2023



⁴³ <https://www.oregon.gov/energy/Data-and-Reports/Pages/Oregon-Electric-Vehicle-Dashboard.aspx>

compared to 2022. EWEB will be installing additional level 2 stations and potentially level 3 stations at ROC in 2024.

Links and Relevant Resources:

- [EWEB Oregon Clean Fuels 2021 Clean Fuels Credits Revenue Spending Report](#) (April, 2022)
- [Oregon Clean Fuels Program: Electric Utilities and the Clean Fuels Program](#)
- [Oregon Clean Fuels Program: Electricity Guidance Documents](#)
- [Oregon Department of Energy Electric Vehicle Dashboard](#)

T37: EV Infrastructure Incentives

Replacing a fossil fuel-burning car with an all-electric model powered by EWEB's clean electricity 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 in the region required to meet peak demands, and leads to higher power prices and infrastructure costs.

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 mid-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): 262 installations completed in 2023
- \$1,500 Commercial EVSE Rebates (Level 2): 32 installations completed in 2023
- \$2,000 Commercial EVSE Rebates (Level 2) - Affordable Housing: 2 installation completed in 2023
- \$10,000 Commercial EVSE Rebates (Direct Current Fast Charging) - Single Port: 6 installations in 2023
- \$15,000 Commercial EVSE Rebates (Direct Current Fast Charging) - Multi Port: 0 installations in 2023

Figure 38: 2023 Residential EVSE Incentive Adoption by Month

2023 Residential EVSE Incentive Adoption by Month, 2023													
Month	1	2	3	4	5	6	7	8	9	10	11	12	Totals
# Rebates	23	20	39	22	14	23	22	17	14	10	27	31	262

Figure 39: Residential EV Incentive Adoption by Year 2020-2023

2020-2023 Residential EVSE Projects	
Year	Projects
2020	92
2021	175
2022	228
2023	262

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:

- **Electric Vehicle Car Sharing:** In 2023, EWEB continued to partner with Forth, a non-profit organization supporting vehicle electrification to implement an electric car sharing program called GoForth CarShare in Eugene. Forth offers similar programs throughout Oregon. The goal of the GoForth CarShare 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, Lane Transit District, and the City of Eugene, EWEB and Forth provided three car share vehicles, including one at an affordable housing site to offer low-cost electric mobility and charging. The first 4-hour ride with GoForth CarShare is free. Recurring rentals are \$4/hour. See the table below for program-to-date usage information. The program launched in 2022 and data below runs through end of January 2024. EWEB plans to expand the electric vehicle car sharing program throughout 2024.
- **Electric Mobility Community Grants:** Grants can be up to \$25,000 and can be awarded to tax-exempt, academic, or public institutions in the Eugene community. In 2023, eight grants were awarded – see table below 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 40: Eugene GoForth CarShare User Information since program inception (early 2022 through January 2024)

GoForth CarShare User Data since program inception			
Location	Miles Driven	Hours	Users
Saint Vincent de Paul Affordable Housing: Iris Place	9,391	3,389	29
Lane Transit District: Santa Clara LTD Station	5,630	1,583	29
City of Eugene: Broadway South Parking	3,049	714	17

Figure 41: EWEB Transportation Electrification Community Grant Recipients, 2023

2023 Transportation Electrification Community Grant Winners	
Community Entity	Project
City of Eugene	Cargo E-Trike
Eugene Science Center	Electric Outreach Vehicle
Friends of Trees	Pedal Powered Planting
HIV Alliance	Utilizing Electric Mobility for Healthcare Access
Homes for Good	W.A.F.E.R. (Weatherization Auditor Fleet Electrification Redesign)
Lane County	Charging Toward Autzen Stadium
Looking Glass Community Services	Center Point School PHEV
University of Oregon	University of Oregon Level 3 EV Charging Station Plan

Figure 42: EWEB e-Bike Rebate Program Participation by Month, 2023

2023 EWEB E-Bike Program Adoption by Month													Totals
Month	1	2	3	4	5	6	7	8	9	10	11	12	
Incentives	59	32	67	76	108	118	133	157	107	105	66	61	1,089

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

From 2010 and 2023, EWEB reduced its GHG emissions from owned fleet vehicles by 66%.

In 2023, EWEB had a fleet of 419 active pieces of equipment. Of that, 233 were vehicles (including pick-up trucks, dump trucks, bucket trucks, etc), there were 69 units of power operated equipment, and 117 trailers. The fleet size increased nearly 7% in 2023 over 2022 and 18.5% since 2020. 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. In 2023 EWEB purchased its first two Ford Lightning all-electric pick-up trucks. 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 43: EWEB GHG Emissions from Fleet Vehicles, 2010-2023

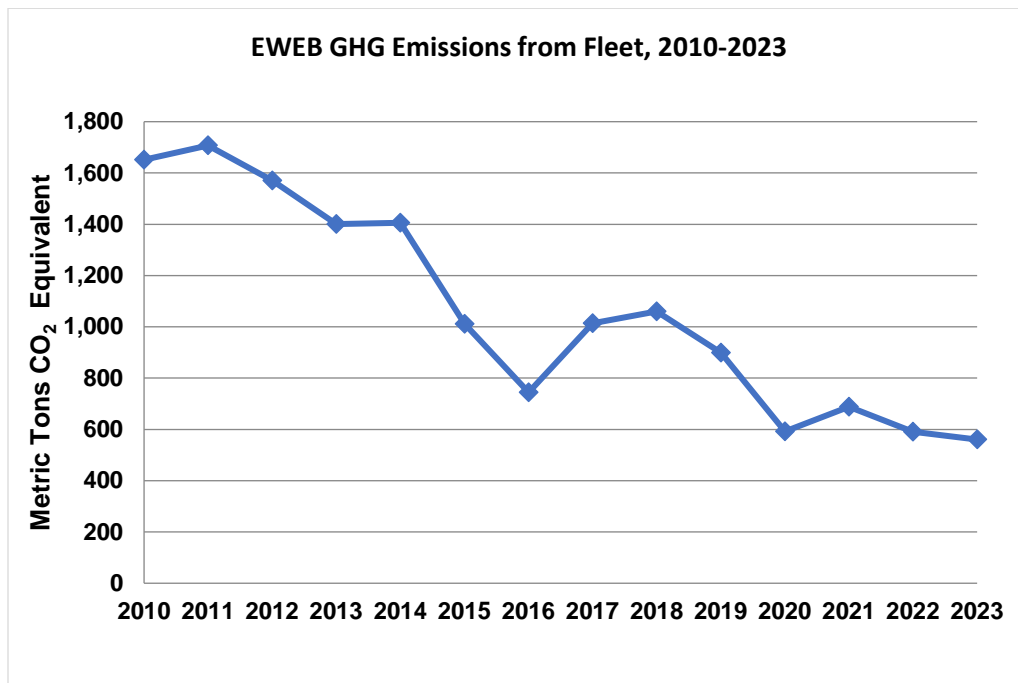


Figure 44: EWEB Fleet Fuel Consumption by Fuel Type, 2010-2023 (Gallons)

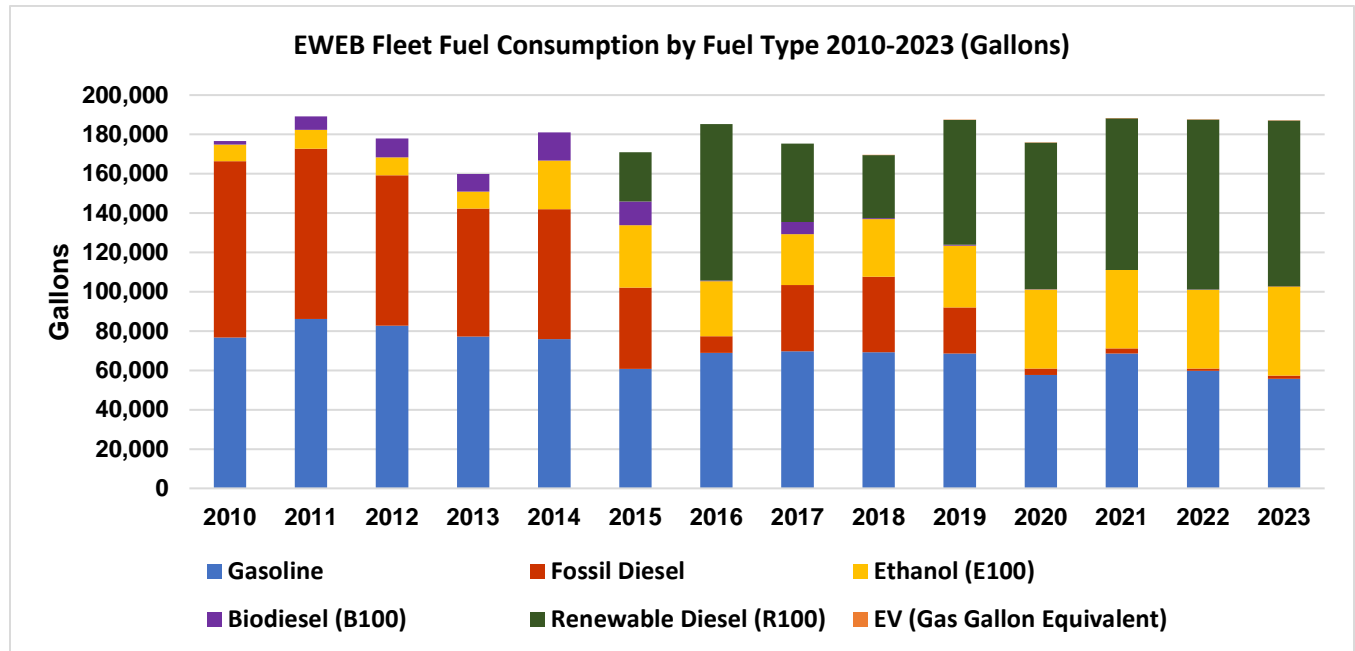


Figure 45: EWEB Fleet Fuel Consumption 2010-2023 (Gallons)

Gallons							
Year	Fossil Gasoline	Fossil Diesel	Ethanol (E100)	Biodiesel (B100)	Renewable Diesel (R100)	EV (Gasoline 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
2023	55,722	1,683	45,378	44	84,205	108	187,140
% Change 2010-2023	-27%	-98%	433%	-98%	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 updated its IRP in July 2023.

An Integrated Resource Plan is a long-term planning process to identify EWEB's energy needs and the best resource options to meet those needs. **There are two main components to a standard IRP:** an Energy Resource Study that relies on modeling and analysis and public input to provide a 20-year look at

future portfolio options and a nearer-term (2-5 year) Action Plan. Best resource options will be identified in accordance with EWEB's organizational values.

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.

For more information about EWEB's 2023 IRP base-case results and additional analysis, please see Section 3.3 in the Climate Guidebook above or see the links below.

Links and Relevant Resources:

- EWEB Website: [Integrated Resource Plan](#)
- IRP Fact Sheets:
 - [Is Solar a Good Fit for Our Community's Energy Needs?](#)
 - [How can EWEB's IRP Incorporate Diversity, Equity, and Inclusion?](#)
 - [What are Considerations Around Utility-Scale Storage in EWEB's Future Portfolio?](#)
 - [IRP Next Steps: How and When Will EWEB Acquire New Resources?](#)
 - [Planning for Long-term Carbon Reduction Goals in the IRP](#)

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

While there has been annual variation in emissions over time due to several factors, EWEB has met its 2020 goal of 25% reduction over 2010 baseline emissions consistently since 2014. In 2020, emissions dipped below the 2030 goal of 50% reduction compared to our 2010 baseline, but some of those reductions were temporary due to the COVID-19 pandemic and work-from-home orders. In 2023, EWEB is pleased to report our emissions once again fell below the 2030 50% emissions reduction goal. **In 2023, EWEB is reporting aggregate emissions reductions of 54% compared to 2010 baseline performance.** The decrease in emissions between 2022 and 2023 is due to lower fleet emissions due to utilization of renewable fuels, lower natural gas emissions due to the sale of the headquarters building in June 2023, no recorded refrigerant or industrial gas recharge in 2023, and a lower electricity emissions factor, as calculated by Oregon DEQ for EWEB in 2022.

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](#)
- [March 7, 2023 Regular Board Meeting: Climate Guidebook Part 2: GHG Inventory and CAP2.0](#)

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 published in 2021, 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.

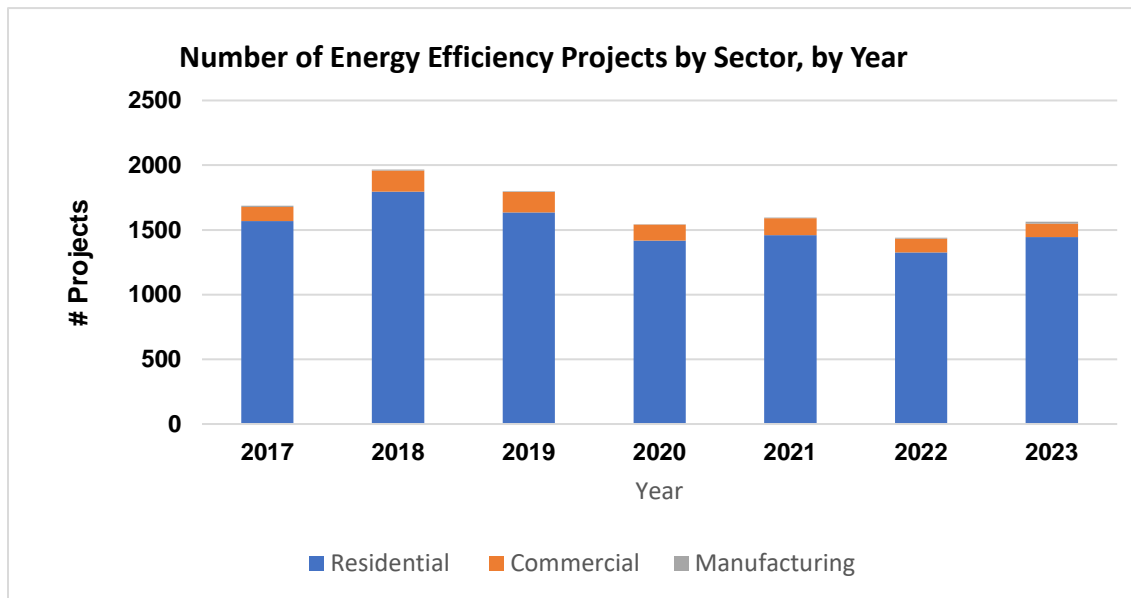
B10: EWEB Energy Efficiency Initiatives

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 highest number of projects are in the residential sector, due to the proportionally higher number of customers, yet the largest energy savings per project is in the commercial and manufacturing sectors.

B10: EWEB Energy Efficiency Initiatives

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

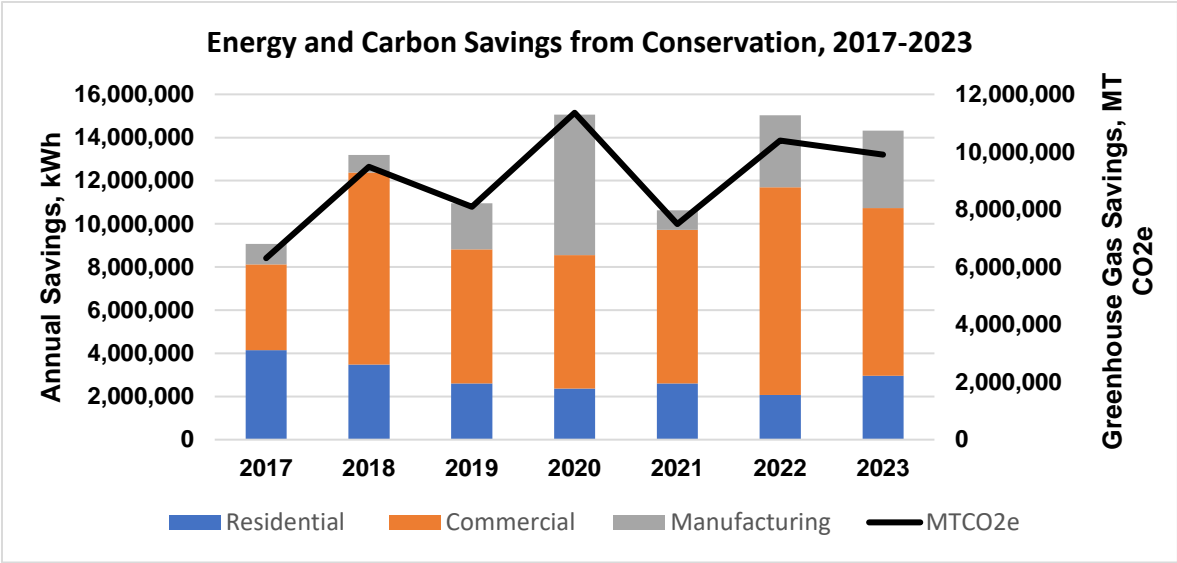
Figure 46: EWEB Energy Efficiency Projects by Customer Type, 2017-2023



The impact of energy savings from projects in the commercial and manufacturing sectors is typically higher than that of 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 2017-2023. The overlaid bar graph comparatively demonstrates savings in MWh 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 MWh of energy savings, which varies from year to year. EWEB used the EPA eGRID Non-Baseload Emissions Rate for the Northwest Power Pool (NWPP) in these calculations. EPA eGRID calculated emissions factors every two years until 2018 so for the chart below, 2017 is calculated using EPA eGRID emissions factors for 2016. Also, a new emissions factor for 2023 has not yet been released, so 2023 is calculated using the 2022 most recently available emissions factor.

Figure 47: Energy and Carbon Savings from EWEB Efficiency Projects, 2017-2023



B11: EWEB Limited Income Programs

Affordability is one of EWEB's stated values. We understand the financial challenges customers are facing, and we want to find solutions to help customers pay their bills.

Any customers struggling to pay their bills should call EWEB at 541-685-7000 from 8:30 a.m. to 5 p.m. Monday - Friday.

EWEB offers the following programs for customer financial support:

- EWEB Customer Care Program
- Community Partner Care Program
- Income-based Efficiency Rebates and Loans

Additionally, EWEB works with government partners to administer additional support through the following:

- Limited Income Home Energy Assistance Program (LIHEAP)
- Limited Income Home Water Assistance Program (LIHWAP)

EWEB Customer Care Program

[Income-eligible](#) customers can apply for bill assistance once per calendar year. Those who qualify will receive a \$280 bill credit. Social security numbers are not required on the application, as legal status is not an eligibility criterion. Applications for Customer Care open on the first business day of each month and funds are available on a first-come, first-served basis until fully committed for the month.

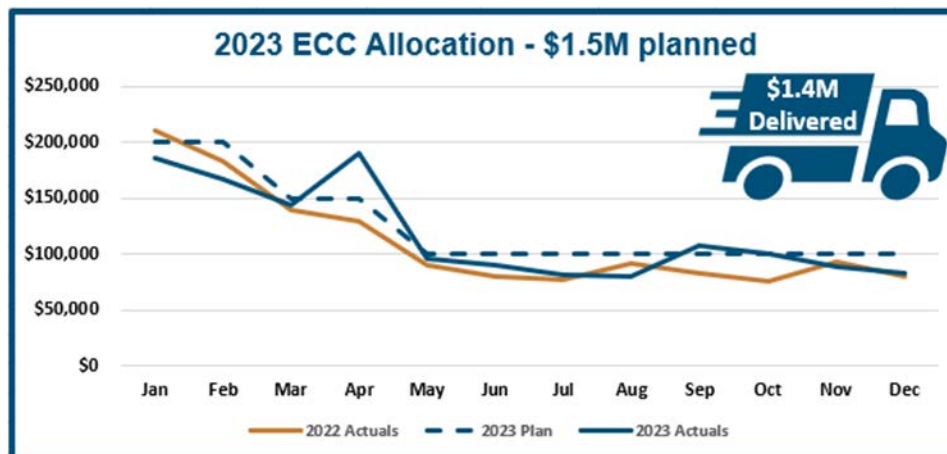
Figure 48: EWEB Customer Care Program Results, 2022-2023

EWEB Customer Care (ECC) Program Results					
	Q1	Q2	Q3	Q4	YTD
2023 Assistance	\$496,720	\$375,319	\$267,780	\$272,160	\$1,411,979
2023 Recipients	1,774	1,340	956	972	5,043
2022 Assistance	\$534,240	\$300,160	\$251,405	\$249,795	\$1,335,600
2022 Recipients	1,908	1,072	898	892	4,770

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.

Figure 49: EWEB Customer Care Funds Allocated in 2023



EWEB Customer Care (ECC) finished the year relatively on target with the planned allocation of \$1.5M. The 2023 working budget for ECC was \$1.2M but has been increased to \$1.3M for 2024.

The pacing of Customer Care activity was relatively consistent with higher numbers of customers applying in the first quarter as the program year renews. Consistent with 2022, EWEB was able to maintain continuous access to bill assistance through the end of the year. Even given a slight increase in ECC spending in 2023 compared to 2022, administrative fees for income verification in 2023 were just \$80k (25% under budget), representing an overhead cost of 6% of the total benefit distributed.

In addition to the Customer Care Program, EWEB collects community donations via the Energy Share program for funds to support customers who have difficulty paying their bills, and to supplement Customer Share's budget to assist additional customers. In 2023, the funds collected from Energy Share amounted to \$99,000 with 1,614 customers receiving assistance. These customers do not have the same eligibility requirements as the Customer Care Program.

Community Partner Care Program

Electricity is an essential service that enables local organizations to provide safe housing for those experiencing homelessness or extended outages. In addition to existing housing disparities, climate change is impacting our community beyond severe cold weather events. Extended fire seasons, hotter days, and air quality events impact the unhoused community disproportionately and will demand a larger community support system that targets resources outside of Warming Centers.

This is an opportunity for EWEB to proactively assist organizations that are on the front lines of providing services during a crisis or year-round. Beginning January 2023 eligible organizations can apply for EWEB bill credits to cover 10% of annual EWEB utility charges with a grant cap based on duration of operations.

Qualifications

- Organizations must have 501(c)(3) status and be able to provide proof upon request.
- The facility's primary focus must be assisting the unhoused population.
- The facility must have at least one year of energy consumption data.
- Part-time facilities are defined as those who operate as a crisis or emergency housing shelter for less than 120 days per calendar year.
- Full-time facilities are defined as those who operate a crisis or emergency housing shelter more than 120 days per calendar year.

Assistance is in the form of a bill credit, issued no more than one time per account per calendar year. Awards will be determined by 10% of the previous year's total utility charges, with caps based on duration of operations.

Launched in 2023, through Q2, EWEB served more than 16 Community Partner entities for a total of \$12,437.

Income-based Efficiency Rebates and Loans

The best way to reduce your overall utility bill is to use less energy and water. Efficient appliances and weatherization upgrades can help. EWEB's rebate and loan programs support efficiency investments. Income-qualifying customers may be eligible for expanded rebates or loans to upgrade home systems (HVAC, water heating, windows, and insulation). Qualifications are as follows:

- Qualification is based on household income and size. View the [income guidelines](#). Total household income includes gross income for all adults over the age of 18, including roommates.
- Documented qualifying income level for the previous month is required.
- For owner-occupied homes, only the qualifying account holder's primary residence may qualify. For rentals, the tenant must be income qualified and be the current EWEB account holder.
- Maximum aggregated income-based rebates are \$10,000 per customer (recipient) and \$8,000 per premises (residence) over a 10-year period. Each individual product may have a limit as well.
- Applications may be denied for closed accounts, abusive behavior toward EWEB, tampering with any EWEB property, or any evidence of fraud.
- Income-based efficiency rebates & loans are for homes with existing electric heating and water heating.

Rebates and Loans are available for the following energy efficiency products:

PRODUCT	REBATE	ZERO INTEREST LOAN
Ductless Heat Pump	Owner Occupied: \$4,500 Rental \$1,000	Up to \$6,000, plus \$2,000 for each additional head installed (maximum 5 total heads)
Insulation	100 percent of eligible program costs	NA
Windows	Owner Occupied: \$20/sq ft of windows Rental \$10 sq ft of window	Up to \$6,000
Heat Pump Water Heater	Owner Occupied: \$1,700 Rental: \$1,000	Up to \$2,500
Water Leak Repair	100 percent of eligible costs	NA

Low-Income Home Energy Assistance Program & Low-Income Home Water Assistance Program

In addition to EWEB's Customer Care Program, customers may also qualify for the federal LIHEAP and LIHWAP programs. Under LIHEAP, EWEB distributes federal money to limited income households for home heating and energy bills and payments can be applied to electricity, gas, wood, pellets, and propane. **The LIHEAP program year begins the first working day of November.** Funds are distributed on a monthly cycle until depleted. Under LIHWAP, EWEB distributes federal money to limited income households for water bills.

In 2023, between LIHEAP and LIHWA, EWEB distributed \$1.7M of federal money to over 3,116 customers.

Links and Relevant Resources:

- [EWEB Income-Based Assistance Programs](#)
- [EWEB Income Assistance Income Eligibility](#)
- [March 7, 2023 Regular Board Meeting: State of the Utility Address & Prior Year-End Operational & Strategic Goals Report](#) – See page 16 of 119 of PDF
- [EWEB Community Partner Care Application](#)

B12: Load Growth via Conservation

Over the last 13 years, EWEB's load has remained fairly constant, with a peak in 2017 at 2.454 million MWh and a low in 2020 of 2.261 million MWh, presumably due to consequences of the COVID-19 pandemic. Compared to the 2010 baseline, 2023 total load has gone down 3.6%, while commercial/industrial load had gone down 7.8% and residential load has gone up 2.7%.

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 a customer of 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 50: Chart - EWEB Annual Retail Electric Sales (MWh) by Customer Category, 2010-2023

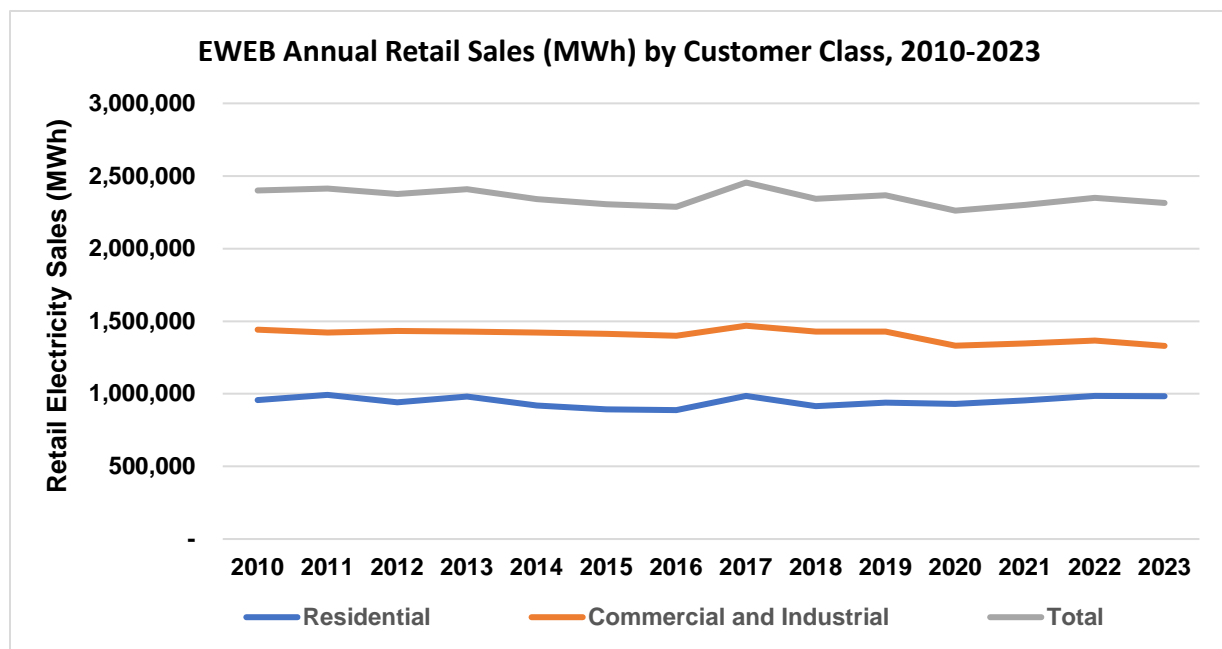


Figure 51: Table - EWEB Annual Retail Electric Sales (MWh) by Customer Category, 2010-2023

		2023	2022	2021	2020	2019	2018	2017
Residential	Residential	983,522	984,715	955,353	929,317	938,625	914,754	986,093
Commercial & Industrial	GS Small	174,349	180,869	172,150	158,630	166,770	174,198	180,823
	GS Medium	470,984	489,778	484,653	458,948	494,513	490,980	496,949
	GS Large	207,576	205,957	203,099	211,172	215,024	218,900	221,787
	Contract	464,806	476,155	472,941	490,079	540,316	530,237	555,286
	Street Lighting	9,173	8,587	8,861	8,891	8,257	9,141	9,118
	Private Lighting	1,078	974	878	906	887	781	786
	Electric Utility	1,919	3,307	3,295	3,352	3,275	3,645	4,059
Commercial & Industrial Subtotal								
Total	Total Retail Sales (MWh)	2,313,407	2,350,341	2,301,228	2,261,295	2,367,667	2,342,636	2,454,901

		2016	2015	2014	2013	2012	2011	2010
Residential	Residential	887,738	893,001	919,175	980,515	941,922	992,547	957,844
Commercial & Industrial	GS Small	171,944	167,836	166,663	163,554	157,391	151,896	150,842
	GS Medium	490,114	486,307	492,310	494,981	493,357	491,413	490,357
	GS Large	212,457	202,285	204,684	205,474	218,392	203,521	212,233
	Contract	513,293	542,581	544,791	550,904	550,270	561,034	573,671
	Street Lighting	7,927	8,519	7,884	8,260	8,982	8,991	9,083
	Private Lighting	666	724	788	835	641	699	723
	Electric Utility	3,916	3,767	4,030	3,872	4,115	4,376	5,048
Commercial & Industrial Subtotal								
Total	Total Retail Sales (MWh)	2,288,055	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).

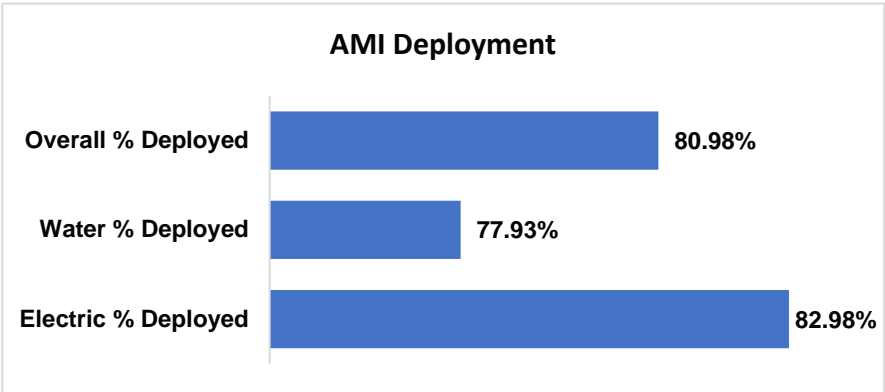
AMI can deliver better service to EWEB customers through the delivery of four core benefits:

- 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.

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 52: Advanced Metering Infrastructure Deployment by Utility, as of March 25, 2024



In October of 2021 supply chain constraints caused EWEB's smart meter installations to be reduced for Water and halted for Electric. As of March 25, 2024, AMI has been deployed to a total of nearly 78% of Water Utility customers, and nearly 83% of Electric Utility customers with an overall deployment rate of nearly 81%. EWEB expects to be finished with AMI installation for electric by August 2024 and for water by mid- to late-2025.

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

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.

R20: Emergency Water Stations

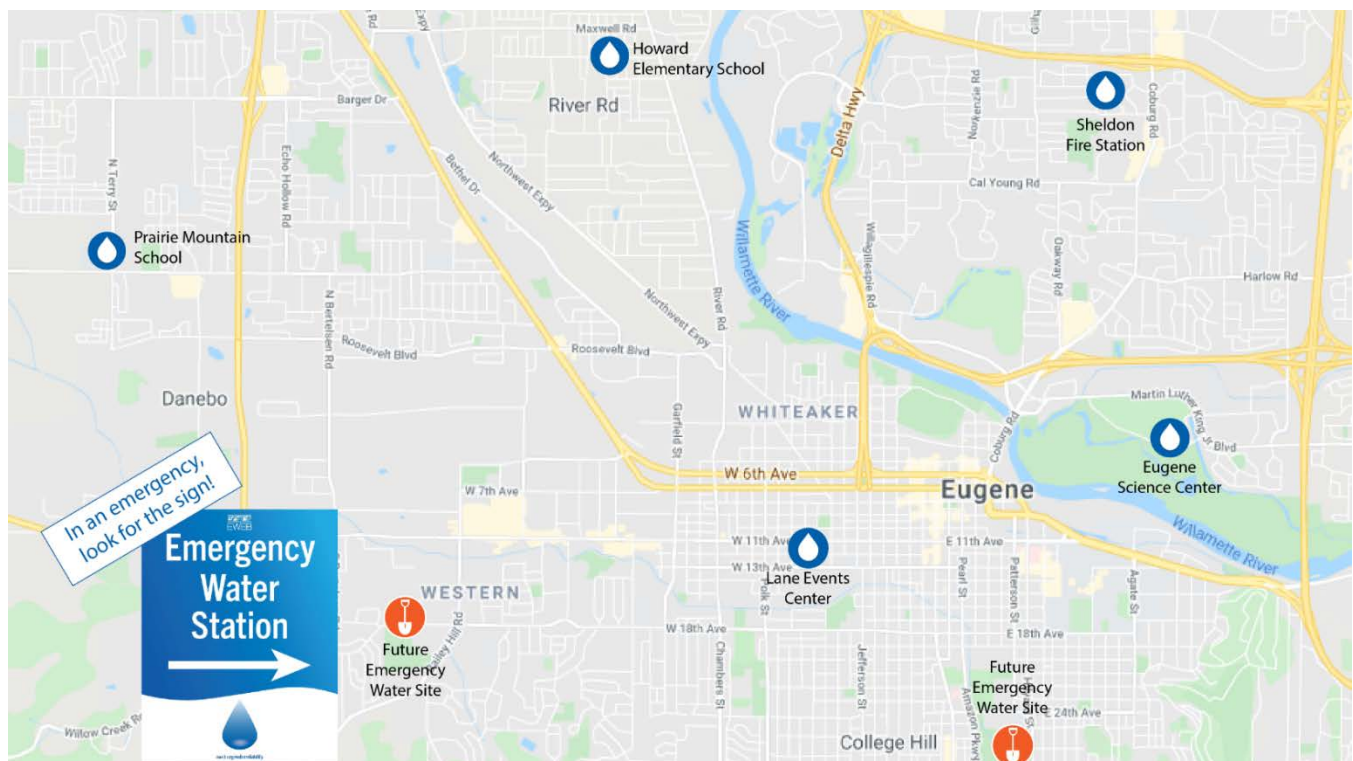
EWEB is making investments to prepare, replace and maintain our community's water system.

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.

Figure 53: EWEB Emergency Water Station Map



Links and Relevant Resources:

- [EWEB Emergency Water Stations](#)

R20: Emergency Water Stations

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.

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](#)
- [EWEB Website: Fire Recovery and Watershed Restoration](#)
- [2022 EWEB State of the Watershed Report](#)

R21: Pure Water Partners Program

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.