



MEMORANDUM
EUGENE WATER & ELECTRIC BOARD

Rely on us.

TO: Commissioners Brown, Carlson, Barofsky, McRae and Schlossberg
FROM: Megan Capper, Energy Resources Manager; Matthew Schroettig, Power Planning Supervisor & Staff Counsel
DATE: January 25, 2022
SUBJECT: 2022 Integrated Resource Plan
OBJECTIVE: Information and Board Direction

Issue

In response to a rapidly changing utility environment, staff is continuing to modernize our approach to Electricity Supply Planning (ESP). The goal is to make it more robust, dynamic, routine, and useful. A key part of the ESP framework is to develop the 2022 Integrated Resource Plan (IRP), which will be the first in an iterative, biennial process as EWEB re-assembles an electric supply portfolio for the long-term economic, environmental and social benefit of our community.

Background & Discussion

An IRP is a data-driven report which can inform EWEB's long-term (5-20 years) electricity supply decisions. The IRP features a study that is designed to evaluate different electricity supply options under different possible futures. EWEB will meet customers' current and future electricity supply needs with a variety of sources. Examples include:

- Supply side:
 - Electricity generation from EWEB-owned projects
 - Access to power from federal resources (Bonneville Power Administration)
 - Long-term power purchase agreements
 - Market purchases from other wholesale sellers
- Demand side:
 - Conservation through consumer incentives to use less electricity
 - Demand response through reducing demand at peak times
 - Distributed/Customer generation options

Consistent with the values of our customer-owners, EWEB will need to align our electricity supply portfolio with the evolving energy needs of our community, considering the potential effects of climate change, economic conditions, new technologies, customer behavior, and policy changes. The goal of the IRP is to help inform decisions involving EWEB's electricity supply contracts, EWEB-owned electricity generation, demand-side energy services and electric resource management and energy trading.

The draft IRP report will present a series of theoretical portfolio options that meet EWEB's needs

and comply with the constraints identified by the Board as well state laws and other regulations. These portfolios will be optimized to minimize risk and cost. Along with these portfolio options, the IRP will provide additional qualitative and quantitative information about the benefits and tradeoffs of specific resources and how these align with EWEB’s needs and values.

Key questions that the 2022 IRP intends to address:

1. How much energy and capacity does EWEB need and when?
2. How much energy efficiency and demand response should EWEB pursue in the future?
3. How do we define “best fit” and what supply and demand side resources provide the “best fit”?
4. How do we address potential trade-offs between EWEB’s values, priorities and principles when making resource decisions?
5. What are the risks and rewards associated with various combinations of energy resources (portfolios)?

IRP Scope

The 2022 IRP is the first full IRP EWEB has undertaken in approximately a decade. Additionally, it is being conducted under a compressed timeframe since it was put on hold while EWEB staff completed the 2021 electrification study. The 2022 IRP will utilize the findings of the 2021 electrification study and will serve as a foundation for the utility’s shift to an iterative IRP process. This scope will reflect priority themes and questions identified in fall 2019 by the IRP project team. The themes in the table below were selected because they were clearly *meaningful* to stakeholders, *relevant* to the current landscape, and *timely* for the 2022 IRP cycle.

2022 IRP Scope Themes	
1	Electrification – the increased electric demand caused by electric vehicle adoption and changes to space and water heating
2	Carbon Mitigation – the need to reduce carbon emissions because of legislative mandates or market pressures
3	Evolving Technology – renewable energy generation, battery storage, distributed generation, demand response and changes in end-use electricity consumption.

Because the IRP is an iterative process, EWEB will have opportunities to build on the initial exploration of these themes. The Board may decide to explore specific resources or themes in greater detail in future IRPs based on the findings of the 2022 IRP.

2022 IRP Scenario and Sensitivities

Building on the IRP scope and themes, EWEB staff have identified several key variables and assumptions for use in modeling possible energy resource portfolios in the 2022 IRP. Examples of these key variables include but are not limited to water supply for hydro generation, natural gas prices, GHG emissions limits, legislative mandates like Renewable Portfolio Standards, and EWEB’s future load growth including influences from electrification and customer dynamics. These variables will be used as inputs in scenarios that represent potential future conditions beyond EWEB’s control and may impact the performance of an electricity supply portfolio (i.e., a mix of supply-side and demand-side resources).

Understanding how different electricity supply portfolios perform under various assumptions will help the utility select a set of actions and resources that address the needs of our customer-owners regardless of which future may occur. Based on the IRP Scope Themes, staff have identified key assumptions for the 2022 IRP modeling work’s Base Case which will serve as a comparison tool as EWEB explores variables/uncertainties which will impact our portfolio choices.

Base Case (Expected) Key Assumptions & Variables	
Assumptions	Historical load growth trends continue into future Modest rate of electrification ¹ Existing regulatory and other policies continue into future Renewable resources developed to meet existing RPS ² requirements Resource options include existing technologies
Variables	Future regional grid composition (renewables development, coal retirements) Water supply (low, medium, high hydro generation) Natural gas prices Electricity market prices

Understanding these key assumptions and variables in the Base Case will lay the foundation for developing sensitivities and scenarios. Over the next 12-18 months, staff will work with the Board and public to explore the impact that these variables and assumptions have on our modeling results.

IRP Structure and Modeling Approach

As described above, the IRP will include qualitative and quantitative analysis of EWEB’s electric supply needs and resource options over the next 20 years. Below is a breakdown of several of the key components of the IRP.

EWEB’s Needs and Existing Resources

The 2022 IRP will include an analysis of EWEB’s historical loads, and a forecast of what these loads will be over the next 20 years. This analysis will show EWEB’s average energy needs through the course of a year, as well as peak needs, which typically occur during extreme weather events. The IRP will demonstrate how EWEB’s existing resources match these needs, plus any gaps that may exist.

Leaburg/Waltermville Asset Valuation

Leaburg/Waltermville is an example of a specific generation resource that requires action before the 2022 IRP is finalized. The analysis will be a coordinated effort between EWEB teams in generation, power planning and finance to share information and maintain alignment with EWEB’s long-term electricity supply planning.

EWEB’s Resource Options

EWEB staff will generate a list of both supply-side and demand-side energy resources that can be analyzed through the modeling process. Only resources that rely on existing technology and have

1 Base Case scenario from the Phase 2 Electrification Study

2 <https://www.oregon.gov/energy/energy-oregon/pages/renewable-portfolio-standard.aspx>


been previously deployed at a utility scale will be analyzed in this IRP cycle. Staff will use industry-leading data to inform cost curves, capacity factors and other input metrics for these resources. An example of an emerging technology resource that will be analyzed is battery energy storage, since batteries are currently being deployed by utilities across the West. However, an example of a resource that will not be analyzed is renewable hydrogen that uses power-to-gas electrolysis. While that technology does exist, it is not yet commercially deployed.

Modeling Results

Staff will use the Aurora modeling software to create an array of potential portfolios based on the needs and resource options discussed above. The Aurora model simulates the loads, generation and transmission availability of the electric power system on an hourly basis. This simulation allows the model to select the most cost-effective resources to meet load obligations given certain constraints, such as transmission availability and carbon emissions requirements.

In the end, EWEB will have a set of portfolio options that demonstrates the tradeoffs between various resource mixes. The chart below shows how theoretical portfolios (on the left) compare to each other across a variety of metrics such as peak fit, energy fit, carbon intensity and other metrics determined by the Board. These portfolio options will serve as launching points for board discussion and direction and will ultimately help inform the Board’s action plan.

Optimized Portfolio Metrics (Example)

Portfolio	Peak Fit	Energy Fit	Carbon	Local Resilience	Affordability	Deliverability	Other
#1 	9	10	6	8	7	9	5
#2 	10	8	5	6	8	7	4
#3 	7	10	10	5	6	5	1
#4 	10	9	4	7	8	5	8
#n 	10	10	10	4	3	3	7

Triple Bottom Line (TBL) Assessment

Future portfolio options will be evaluated based on these TBL attributes (environmental, social, economic), as well as other characteristics that are important to the utility and our customers (e.g., peak fit, local resilience, equity and climate impacts). For example, the Board recently amended the SD15 Climate Change Policy to support 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. The Board has committed to working with the General Manager to establish principles, priorities and goals to support this directive. The Board will have opportunity to weigh in on these Optimized Portfolio Metrics to ensure that EWEB’s values are considered when evaluating portfolios.

Communications and Engagement Plan

Goals

1. Build customer trust and confidence in the IRP process by supporting transparency.
2. Grow customer knowledge about the need for consumption flexibility programs that will improve grid resilience, such as demand response.
3. Demonstrate that EWEB is a climate and energy leader that still achieves reliability and affordability for customers.

Key Audiences

- Customers, including civic groups and key partners such as the City of Eugene
- Utility peers and the broader public across the Northwest

Deliverables

- Project website: a clearinghouse for updates, meeting links and other materials
- Email: regular updates about the IRP process for interested customers
- Print collateral: brochures and handouts
- Key messages documents: priority messages for the board
- Newsroom stories: articles diving into topics related to the IRP
- Slide deck (*optional*): slides for public presentations
- Email templates (*optional*): templates for commissioners to communicate with constituents

Key Messages

- This IRP is the first step in an iterative process that will ensure EWEB can continue to provide safe, reliable, affordable and environmentally responsible power as we prepare to reassemble our electricity supply portfolio by 2028. Additional IRPs will be completed every couple of years.
- This IRP process will help EWEB identify a roadmap to prepare for a dynamic future of clean energy mandates, rapid technological developments and evolving customer expectations.
- As elected representatives of our community, the board of commissioners will play a key role in determining EWEB's energy resource mix of the future. The public will be invited to participate just as they are in all major utility decisions.

Public Involvement

While we will expect and encourage public engagement as the IRP is developing, a formal public involvement process will begin after the release of the public preliminary draft in December 2022 and might include working sessions and public presentations to various local groups.

Milestones

EWEB's IRP will take more than a year to complete. Throughout the process, EWEB staff will give a series of informational presentations to the Board that focus on different elements of the process and that detail different IRP-related topics. Board discussion, direction and approval of the

IRP action plan will begin in late 2022 and run mid-way through 2023.

Year	Board Meeting	Requested Board Action	IRP Topic	Description
2022	April	Information Only	Customer Load Characteristics	Exploration of existing customer demand profiles and potential future load growth.
	August	Information Only	Resource Characteristics	Resource options and metrics for assessing “best fit”. Understanding tradeoffs between resource types.
	November	Discussion & Guidance	Portfolio Alternatives	Reviewing modeling results from possible future portfolios and considering metrics for further evaluation.
	December	Discussion & Guidance	Preliminary Results	Preliminary draft of final report. Discussion of results, recommendations, and draft action plan.
2023	March	Discussion & Guidance	Feedback & Draft Action Plan	Board discussion of core themes from public feedback. Guidance sought on draft action plan.
	June	Discussion & Guidance	Final Report & Action Plan	Final report published. Action plan finalized.

Recommendation

At the end of this IRP process, the Board will be responsible for determining an action plan of next steps and priorities to be undertaken by the utility leading up to the next IRP cycle. These action plans can include directing management to look into procuring long-term resources, developing new or enhancing demand-side programs such as conservation or demand response, and/or directing staff to analyze new topics or questions for the next IRP cycle. For the next year, the Board will engage with EWEB staff while we develop modeling tools and begin a new, iterative IRP process. To guide this work, the Board can establish principles which can serve as a guidepost to our efforts.

Staff propose the following guiding principles for EWEB’s 2022 IRP:

1. Build an integrated electric resource portfolio consistent with EWEB’s Strategic Plan.
2. Comply with all applicable Board policies, state laws, and regulations.
3. Meet all existing and future EWEB load through an integrated, least-cost solution within the established constraints.
4. Preserve and maintain EWEB’s flexibility to adapt to changing regulatory and market conditions.

Requested Board Action

Seeking Board direction on the guiding principles recommended by staff and any feedback on the key components of the IRP discussed in the memo.