



City Council/EWEB Work Session

Energy Efficiency & Electrification

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September 27, 2021

Eugene Water & Electric Board 

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Presentation Outline

- Background & Context
(Energy Efficiency & Conservation Programs/Results)
- Electrification Impact Analysis
- Water Resiliency



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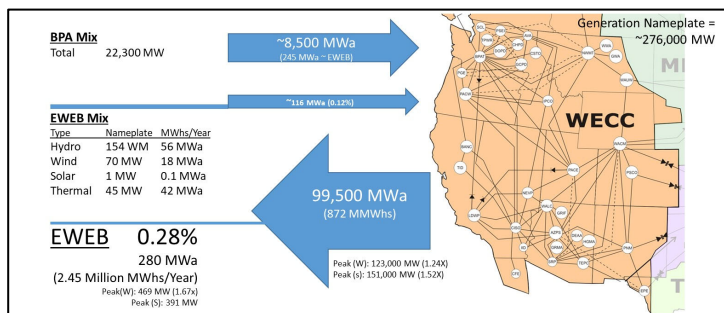
Partnerships



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Background & Context

1. Society is in “debt” to the climate
2. “We’re all in this together...”
3. Energy - It’s about the grid
4. Grid – Increasing Scarcity and Volatility
5. Time Matters
6. Conservation & Efficiency



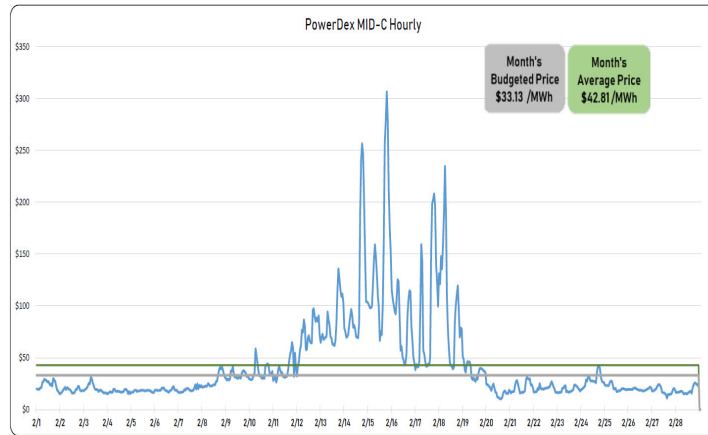
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Cold Weather Peak Event...

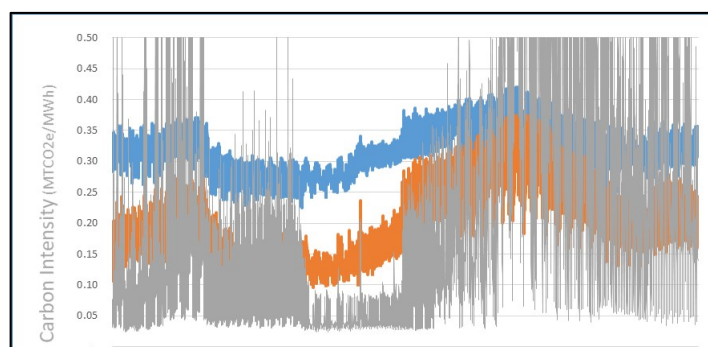
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Annual Carbon Intensity
(WECC-Blue, NWPP/NW-Orange, BPA-Gray)

Resource	Average/ Peak Carbon Content* (MTCO ₂ e/MWh)
EWEB	0.02 / 0.34-0.38 (Oregon 0.428 "Unspecified")
NWPP Region	0.19 / 0.34
Western Interconnect	0.29 / 0.38

Carbon emissions vary with time...

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EWEB Efficiency & Conservation Programs

Program Goals

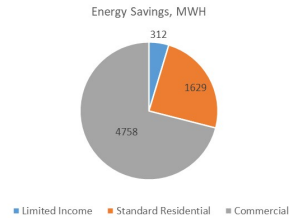
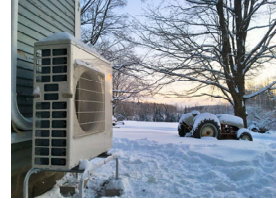
Offset Organic Load Growth
Limited Income Access
Environmental Benefit

Residential Rebates & Loans

Business/Commercial Rebates & Loans

Coming Soon – New Environmental Product Line!

Commodities (Renewable Energy Credits,
Carbon Offsets, Sequestration in
Watershed
Smart Controls, Peak Hero)



2021 YTD Investments & Results

Incentives: \$1.7 million (budget ~ \$2.6 million)
Energy Saved: 6,700 MWhs (annual target ~10,000 MWhs)
Residential Projects: 1,037 Completed
Non-Residential Projects: 91 Completed
Multifamily Activity in 2021:

Limited Income Nonprofits	105 units Completed
Limited Income Nonprofits	138 units In progress
Others	382 units In progress

Electrification Impact Analysis

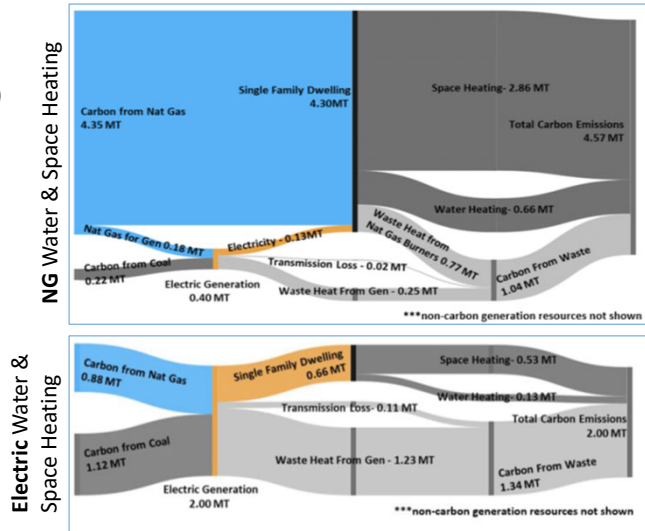
Electrification Impact Analysis (Nov. 2020)

Study: Residential & Commercial (No Industrial)
 Electric Vehicles, Water Heating, Space Heating
 Existing Application Only (No New Construction)
 Assumed Conversion Rates:
 Low (20%), Medium (50%), High (80%)
 Used Energy Cycle Analysis (See Diagram)
 No Cost/Value Analysis*
 No Sensitivity Analysis*

Conclusions:

EWEB Impact: 20% Average Energy, 50-70% Peak (1:10)
 EVs: 75% (2.75MTCO₂e/Vehicle) Annual Carbon Savings
 Residential Water & Space Heating: 56%
 (2.57MTCO₂e/Home) Annual Carbon Savings

* Enhanced Analysis (Phase 2, Nov. 2021)



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Enhanced Electrification Impact Analysis (Nov. 2021)

Study/Modeling Parameters

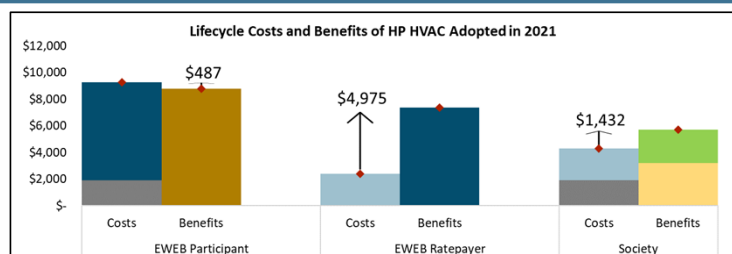
Impacts: "Marginal" Value (Benefit/Cost)

Perspectives: Participant, EWEB/Ratepayers, Society

Period(s): 2021, 2030, 2040, 2050

Variables/Sensitivities: Electricity Prices, Gas Prices, Carbon Intensity, RNG Mix, Technology)

Scenarios: Combinations of Likely Variables ("Likely" Base-Case, Aggressive Carbon Reduction)



Technology:	Residential Benefit-Cost Ratio (without EWEB incentives)		
	EWB participant	EWB ratepayer	Society
Standard HP	0.9	3.1	0.9
Cold Climate HP	0.6	3.1	0.6
Dual Fuel	0.8	3.7	0.9
Heat pump WH	0.7	2.8	0.6

Cost(s)
 Incremental
 Appliance Cost,
 Electricity Bill
Benefit(s)
 NG Bill Reduction

Cost(s)
 Additional Energy
 & Demand Costs
Benefit(s)
 Additional
 Revenue

Cost(s)
 Electricity
 Appliance
 Social Incentives
Benefit(s)
 Avoided Gas
 Supply Costs,
 Avoided Carbon
 Emissions

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Enhanced Electrification Impact Analysis (2021) High-Level Results

Smart Electrification Scorecard	Carbon Reduced	Base Case 2030			1-in-10 Peak Adder	Peak Management Potential	
		EWEB Participant	EWEB Ratepayer	Society			
Electric Vehicle	🍃🍃🍃	👍	👍	👍	⚡⚡⚡	🔧🔧🔧	Peaks can be mitigated
Heat Pump Water Heater	🍃	👍	👍	👍	⚡	🔧🔧	
SFD - Standard Heat Pump	🍃🍃	👎	👍	👍	⚡⚡⚡	🔧	
SFD - Cold Climate Heat Pump	🍃🍃🍃	👎	👍	👎	⚡⚡	🔧🔧	
SFD - Dual Fuel Heat Pump	🍃🍃	👎	👍	👍	⚡	🔧🔧🔧	Low Peak Impact
Multi-Family Dwelling Space Heat	🍃	👎	👍	👎	⚡	🔧🔧	
Small Office Space Heat	🍃🍃	👎	👍	👍	⚡⚡	🔧🔧	

"Smart & Likely" - Reduces carbon emissions while maintaining affordability and reliability

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Enhanced Electrification Impact Analysis (2021) Conclusions

EV (Electric Mobility)

...beneficial for everyone increasing rate of adoption, but peaks will need to be managed as adoption expands

Water Heating

...limited carbon emissions & participant benefits, and needs incentives to increase adoption

Space Heating –

Conventional

...does not create enough shared “value” to drive electrification, and creates challenging peak impacts

Space Heating – Dual

Fuel

...highest potential for leadership



EWEB Electric Mobility Investments/Priorities

1. EWEB-Owned Electric Vehicle Supply Equipment (EVSE, Charging Station) Infrastructure
2. Social Equity Expansion Program (COE)
3. Customer EVSE Infrastructure Rebates, Loans and Efforts
4. Electric Mobility Rebates
5. Marketing
6. Partnerships and Other Efforts

Policy Opportunities

1. Promote/Expand Electric Mobility - Multi-Family/Limited Income EV adoption (Charging, Ride-Share)
2. Invest/Incentivize Potential Off-Peak Charging (Convenience Locations)
3. Efficiency (Home Energy Scores – Sales and Rental Agreements)
4. Continue Heat Pump Water Heating Incentives (Drive Participant ROI) – EWEB
5. Develop innovative approach to Space Heating (coming proposal)
6. Develop “formal” COE-EWEB informational exchange process

New Natural Gas Infrastructure Considerations

Personal Perspective (Respect Councilors, Commissioners, Other's Opinions)

Goal: Accelerate (now) meaningful significant carbon emissions reductions while maintaining (or improving) affordability, reliability, and equity

Energy/Electricity Consequences

1. Electrification Analysis – Existing Stock & Fuel Switching (Not New Construction) - unknown “absolute scale” of the impact of new construction only
2. EWEB has a “duty to serve”
3. Eugene has little/no overall impact on the grid
4. Electrification that increases the coincident electricity peak will have detrimental impact on cost, reliability, and carbon
5. Some Electrification will have detrimental impacts on a grid struggling to build capacity
6. Electricity Sector and Natural Gas Sector need each other for both to decarbonize affordably and reliably

Non-Energy Local Consequences

1. All electrification will provide de-carbonization (amounts may vary)
2. Detrimental impact on Eugene's housing crisis – increased construction costs/tighten the market
3. Creates incentive for economic (carbon) leakage to other communities
4. Detrimental impacts on electric grid reliability (capacity)
5. Eliminates Consumer Choice
6. Increases “Utility Burden” (regressive) subsistence costs (limited income, equity impact) – contrast with climate equity

Proposal: A team approach that immediately cuts carbon emissions, minimizes reliability and affordability impacts

- Eugene will lead the nation in the most innovative approach to carbon reduction!
(Two Canadian utilities – 70% NG reduction...immediate carbon impact which improves as both grids de-carbonize)
- It will get a Dual Fuel Heat Pump in every new building/home!
- Two Primary Components...“you get what you measure”
“Dual Energy Agreement” (NW Natural & EWEB)
“Carbon Intensity of Forecasted Energy Delivered” Carbon Building Standard
(Similar – Matt McRae/Joshua Skov Proposal)
- Require electricity and gas sectors to de-carbonize and innovate



The Ask: **6 Weeks to Prepare a Proposal (NW Natural, Chamber of Commerce (HBA))**
Demonstration Pilot this winter! (Results in March)

EWEB Rates History & Trajectory

Thank You
Questions & Comments