MEMORANDUM

EUGENE WATER & ELECTRIC BOARD

Rely on us.

TO:	Commissioners Brown, Carlson, Barofsky, McRae and Schlossberg
FROM:	Rodney Price, Assistant General Manager; Greg Kelleher, Customer Solutions Manager; Juan Serpa Muñoz, Business Line Manager; Frank Lawson, CEO & General Manager
DATE:	September 3, 2022 (September 6, 2022, Board Meeting)
SUBJECT:	Net Metering Program and Solar Policies – New Construction of Public Buildings
OBJECTIVE:	Background for Commissioner Discussion

Issue

At the March 1, 2022, EWEB Board Meeting, Commissioners agreed to allocate agenda time to discuss the economics of Oregon law that requires public agencies invest 1.5% in green energy technology in new building projects, or major renovations.

Background

Passed in 2007, Oregon HB2620 states that a *"contracting agency shall spend an amount equal to at least 1.5 percent of the total contract price on the inclusion of appropriate solar energy technology in a future public building project"*. In 2019, Oregon HB2496 made several amendments to the program, including the addition of battery storage and certain energy efficiency projects that can now qualify as green energy technology or eligible alternatives. The original intent of the bill was to foster new technology industries and jobs in Oregon, including manufacturing, engineering, construction, and installation, which would help bring down the cost of these emerging technologies, as well as encourage the reduction of greenhouse gas emissions in public buildings.

Discussion

EWEB's renewable energy customer generation policies and rates apply to technologies considered "renewable" by the State of Oregon and are described in EWEB's Customer Service Policies (Link). Since most customers associate renewable customer generation with solar technologies, additional details of solar incentives are described in EWEB's Solar Incentive Program (Link). While not fully inclusive of the terms and conditions, EWEB supports three forms of solar connections as summarized below.

Net-Metered Generation

Net metering allows customers to consume the energy generated onsite, offsetting retail power purchases. If the generation exceeds the consumption at any time, power flows back into the grid and is recorded by the electric meter separately from consumption. Both net kWh consumption, and generation flowing into the grid, are read from the meter monthly. The excess generation is then credited in the customer's monthly billing from EWEB at the Renewable Net-Metered Rate.

- 25 kW maximum connected capacity per site, aligning with the state minimum standard
- Qualified public and not for profit projects are eligible to receive up to $12,500 in EWEB Greenpower funded incentives. Qualified residential projects are eligible for up to $2,500.
- Net metering customers retain the Renewable Energy Certificates (RECs).

- The 2022 Renewable Net-Metered Rate is $0.0693 per kWh, up from the historical average and 2021 rate of $0.0360 per kWh.

Direct Generation

For customers wishing to sell solar energy directly to EWEB, the Annual Renewable Generation Purchase Rate Schedule will apply. This rate applies to systems up to 200 kW and is usually referred to as Direct Generation (DG).

- Qualified public and not for profit customers are eligible to receive up to $12,500 in EWEB Greenpower funded incentives for the first 25 kW of Direct Generation. Qualified residential projects are eligible for up to $2,500.
- Direct Generation systems are connected directly to the EWEB electric distribution system through a dedicated meter that does not measure customer consumption.
- Direct Generation customers have the option to retain the RECs.
- Direct Generation rates are paid per the Annual Renewable Generation Purchase Rate Schedule and vary based on whether the customer or EWEB takes ownership of the RECs. The rate, if EWEB retains the RECs, changed from $0.0369 in 2021 to $0.0724 per kWh in 2022 and is updated annually based on wholesale market and REC prices.

Other Generation

Generation projects over 200 kW go through an additional approval process by BPA and EWEB. Payments and requirements are governed by individual contracts.

Because of technical limitations, projects within the downtown network have the following additional requirements.

- Connections must be Net-Metered.
- Connections must have an inverter-based generator.
- The maximum size of the generator is limited to 25% of the minimum load of the facility, as determined by EWEB.
- Systems must have controls to monitor and control net load of the facility (more details in policy).

Customer Economics

Presently, customers have the capability to generate an economic return on solar-based renewable customer generation investments by offsetting retail charges (Net-Metered Generation), selling energy to EWEB (Direct Generation), and/or selling renewable energy credits. In the future, other opportunities will exist that reward renewable customer generation for its benefits to load shifting and/or peak reduction, time-based metering, available capacity value (mitigate times of grid scarcity), and/or carbon reduction value (cost of carbon offset).

Using economic tools and pricing available to customers today, EWEB staff recently developed a modeling tool that offers a simple cost and value overview for various solar installations (sample results attached). Model inputs include customer historical monthly consumption, Total Solar Resource Fraction (TSRF, which is installation specific), average expected construction costs based on generation size and potential rebates and incentives. Based on these inputs, the tool calculates various outputs such as, net system cost, simple return on investment (ROI), estimated years to payback, and cost per kWh installed. Table 1 summarizes the financial results from the modeling tool for several potential solar installations.

Table 1

Select Case Residential Net-Metered Tool Data

	Yearly Totals for Reference								
System Cases	**Year End Usage (kWh)**	**Estimated YE Energy Gen (kWh)**	**System Size (kW)**	**Net System Cost**	**Retail Rate ($/kWh)**	**NM or DG rate ($/kWh)**	**Simple ROI**	**Simple Pay Back (years)**	**Estimated Cost/20 yr Gen kWh**
Gas Heat - 4 kW System	7,847	4,081	4	$11,336	$0.0948	$0.0693	68%	29	$0.139
Elec Heat - 4 kW System	15,997	4,081	4	$11,336	$0.0948	$0.0693	68%	29	$0.139
Gas Heat - 8 kW System	7,847	8,161	8	$23,190	$0.0948	$0.0693	63%	32	$0.142
Elec Heat - 8kW System	15,997	8,161	8	$23,190	$0.0948	$0.0693	64%	31	$0.142
Gas Heat - 25 kW System	7,847	25,502	25	$76,400	$0.0948	$0.0693	52%	39	$0.150
Elec Heat - 25 kW System	15,997	25,502	25	$76,400	$0.0948	$0.0693	55%	37	$0.150
PUBLIC BUILDING SAMPLE SCENARIO (Discussed Below) Direct Generation- 50 kW - with max rebates, credits and standard rate	na	51,003	50	$157,250	na	**$0.0724**	47%	**43**	$0.154
PUBLIC BUILDING SAMPLE SCENARIO (Discussed Below) Direct Generation- 50 kW – no rebates or tax credits and test rate @$0.25	na	51,003	50	$225,000	na	**$0.2500 (Test Rate)**	113%	**18**	$0.22

Public Building Sample Scenario

As an example, a public building that costs $15 million to construct will require a green technology investment of $225,000 (1.5%), as stipulated by HB2620 (2007) and HB2496 (2019). This is adequate for the purchase and installation of a 50kW solar system, which is not currently eligible for Net Metering and must be connected as Direct Generation. Using EWEB's present Annual Renewable Generation Purchase Rate Schedule, the investment does not pay back for 43 years, which is well beyond the system's 20-year expected life. A return on investment within the useful equipment life of 20 years would require an EWEB Direct Generation Rate of $0.25 per kWh, almost 3.5 times higher than our existing rate. Additionally, because many buildings of this size fall within the Medium General Service Rate Schedule, expanding the Net Metering limit to 50kW would have little impact on the return because the present energy charge that would be offset by Net Metering is $0.065 per kWh, as compared to the $0.0724 per kWh received as payment under a Direct Generation Purchase Rate. When a large difference exists between consumption-driven variable retail charges and Direct Generation rates, Net Metering levels will be more impactful. It is possible that customers could also offset a portion of the monthly peak Demand Charge if they are a summer peaking operation, however this would likely have a de minimis impact on the return.

Summary

From a customer perspective, the financial viability of the 1.5% required green energy technology investment for new public agency construction is severely limited by EWEB's low rates (relative to high solar potential areas of the West), the low carbon content of the Pacific Northwest electrical grid, and present EWEB policy and rate structures. Over the next few years, EWEB will be working to determine the value of distributed customer renewable energy generation beyond avoided energy cost replacement. The integrated resource planning work, rate design, and new programs will create ways for customers to capture additional value, and thus financial return, by offsetting demand charges and through load shifting and/or peak reduction, time-based metering (market price arbitrage), available capacity value (mitigate times of grid scarcity), and/or

carbon reduction value (cost of carbon offset). In most cases, these programs will require a combination of customer generation and storage capability. Advanced metering, EWEB's Enterprise Solutions (Information Systems modernization), rate design reforms, and the BPA contract structure/analysis are all impactful to (and impacted by) customer generation.

Recommendation/Action

This information is provided as background for Commissioners to discuss potential policy guidance on EWEB's role in assisting local compliance with Oregon law that requires public agencies invest 1.5% in green energy technology in new building projects, or major renovations.

Attachment: Sample Model Calculator Results (Net Metered and Direct Generation)

Residential Net-Metered System - Simple Cost and Value Overview

This is a simple financial overview based on general assumptions and calculations. The values on this report are not guaranteed by EWEB in any way. Complete your own calculations and verifications for your specific project.

Input/edit values in fields in	light blue.

Report Date	8/1/20

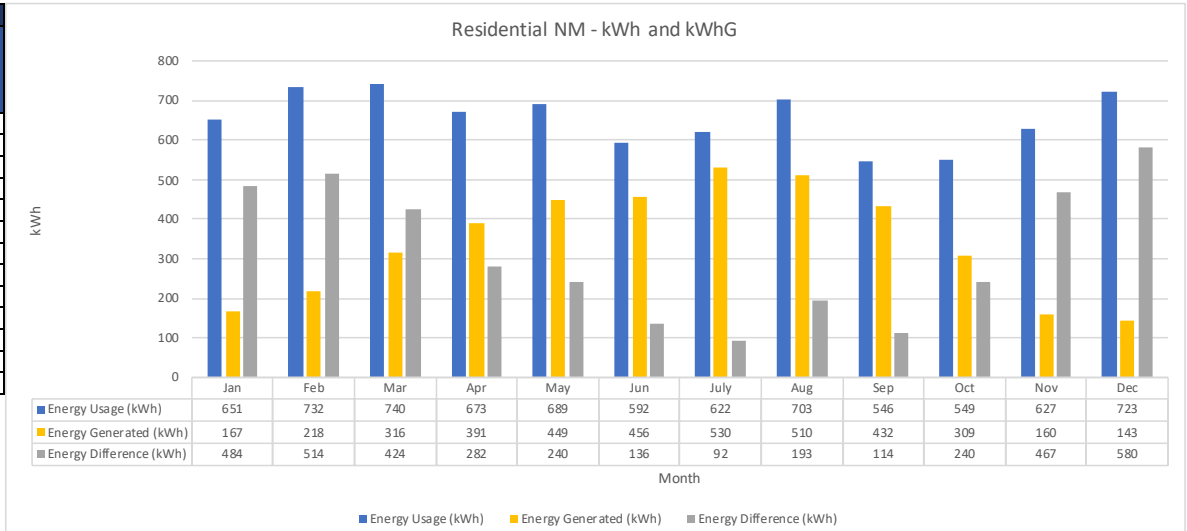
Customer	John Customer

Address	123 Test St

Premises	123456

Consumption and Generation Values - Inputs and Calculations

Month	Energy Usage (kWh)	Energy Generated (kWh)	Energy Difference (kWh)	Energy Generated - Retail Rate Offset Value	Energy Generated - Sold at NM Rate Value	Total Energy Generated Value
Jan	651	167	484	$15.83	$0.00	$15.83
Feb	732	218	514	$20.67	$0.00	$20.67
Mar	740	316	424	$29.96	$0.00	$29.96
Apr	673	391	282	$37.07	$0.00	$37.07
May	689	449	240	$42.57	$0.00	$42.57
Jun	592	456	136	$43.23	$0.00	$43.23
July	622	530	92	$50.24	$0.00	$50.24
Aug	703	510	193	$48.35	$0.00	$48.35
Sep	546	432	114	$40.95	$0.00	$40.95
Oct	549	309	240	$29.29	$0.00	$29.29
Nov	627	160	467	$15.17	$0.00	$15.17
Dec	723	143	580	$13.56	$0.00	$13.56
Total	7,847	4,081	Total	$386.89	$0.00	$386.89
Gen % of Needed E		52%				



EWEB Rates	NM & DG Rate Per kWh	Residential Retail Rate Per kWh
	$0.0693	$0.0948

System Details	System Size (kW)	4	TSRF (%)	85
	System Life (yr)	20	Sft Needed	268

Gen Per Year	kWh Offset Retail	4,081	Value	$387	100%
	kWh Sold to EWEB	0	Value	$0	0%
	System Generation Value Per Year			$387	
Gen per System Life	kWh Offset Retail	81,620	Value	$7,738	
	kWh Sold to EWEB	0	Value	$0	
	System Generation Value Over its Life			$7,738	

System Cost	Avg Cost Per Watt	$4.50	Total Cost	$18,000
	Total Cost From Contractor Quote			

Rebates and Credits	Qualifies for an EWEB Incentive	$1,600
	2022 OR State Reb - Non LI/MI and EWEB Reb	$800
	2022 Federal Tax Credit	$4,264
	Total Rebates and Credits	$6,664

Solar Sytem Financial Overview and Value	System Cost Without Reductions	$18,000
	Total Rebates and Credits	($6,664)
	Not Including Gen Value	$0
	System Cost after Reductions	$11,336
	Simple Return on Investment	68%
	Simple Payback in Years	29
	Cost per Generated kWh	$0.1389

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USAGE = 0 TO SIMULATE DIRECT GENERATION EXAMPLE

Residential Net-Metered System - Simple Cost and Value Overview

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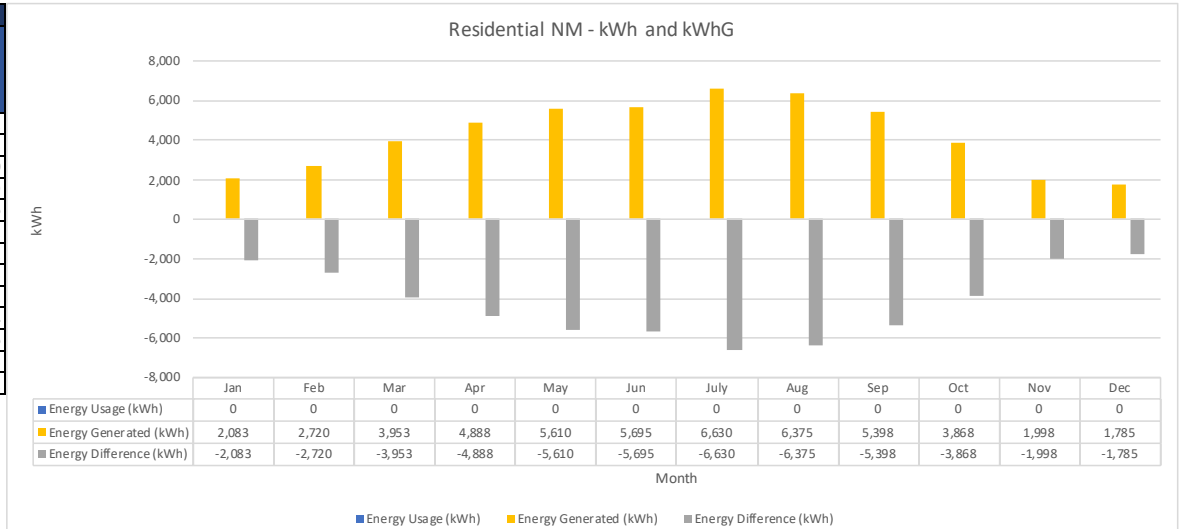
Input/edit values in fields in	light blue.	Report Date	8/1/20	Customer	John Customer	Address	123 Test St	Premises	123456

Consumption and Generation Values - Inputs and Calculations

Month	Energy Usage (kWh)	Energy Generated (kWh)	Energy Difference (kWh)	Energy Generated - Retail Rate Offset Value	Energy Generated - Sold at NM Rate Value	Total Energy Generated Value
Jan	0	2,083	-2,083	$0.00	$150.81	$150.81
Feb	0	2,720	-2,720	$0.00	$196.93	$196.93
Mar	0	3,953	-3,953	$0.00	$286.20	$286.20
Apr	0	4,888	-4,888	$0.00	$353.89	$353.89
May	0	5,610	-5,610	$0.00	$406.16	$406.16
Jun	0	5,695	-5,695	$0.00	$412.32	$412.32
July	0	6,630	-6,630	$0.00	$480.01	$480.01
Aug	0	6,375	-6,375	$0.00	$461.55	$461.55
Sep	0	5,398	-5,398	$0.00	$390.82	$390.82
Oct	0	3,868	-3,868	$0.00	$280.04	$280.04
Nov	0	1,998	-1,998	$0.00	$144.66	$144.66
Dec	0	1,785	-1,785	$0.00	$129.23	$129.23
Total	0	51,003	Total	$0.00	$3,692.62	$3,692.62
Gen % of Needed E		#DIV/0!				



EWEB Rates	NM & DG Rate Per kWh	Residential Retail Rate Per kWh
	$0.0724	$0.0948

System Details					
	System Size (kW)	50	TSRF (%)	85	
	System Life (yr)	20	Sft Needed	3,350	

Gen Per Year					
	kWh Offset Retail	0	Value	$0	0%
	kWh Sold to EWEB	51,003	Value	$3,693	100%
	System Generation Value Per Year			$3,693	
Gen per System Life	kWh Offset Retail	0	Value	$0	
	kWh Sold to EWEB	1,020,060	Value	$73,852	
	System Generation Value Over its Life			$73,852	

System Cost				
	Avg Cost Per Watt	$4.50	Total Cost	$225,000
	Total Cost From Contractor Quote			

Rebates and Credits		
	Does not Qualify for an EWEB Incentive	$12,500
	No OR State Rebate	$0
	2022 Federal Tax Credit	$55,250
	Total Rebates and Credits	$67,750

Solar Sytem Financial Overview and Value		
	System Cost Without Reductions	$225,000
	Total Rebates and Credits	($67,750)
	Not Including Gen Value	$0
	System Cost after Reductions	$157,250
	Simple Return on Investment	47%
	Simple Payback in Years	43
	Cost per Generated kWh	$0.1542

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