



INFORMATIONAL MEMORANDUM

TO: **Transportation & Infrastructure Committee**
FROM: **Laurel Humphrey, Council Analyst**
CC: **Mayor Ekberg**
DATE: **June 7, 2017**
SUBJECT: **Puget Sound Energy - Green Direct**

ISSUE

Presentation from Puget Sound Energy on Green Direct

DISCUSSION

The following information was provided by Puget Sound Energy:

Background

Schedule 139, Voluntary Long Term Renewable Energy Purchase Rider, was approved by the Washington Utilities and Transportation Commission (WUTC) and became effective on September 30, 2016. The tariff, referred to as Green Direct, falls under the rules governing utility green pricing options found in Washington RCW 19.29A – Voluntary Option to Purchase Qualified Alternative Energy Resources.

Puget Sound Energy (PSE) already offered three products consistent with the state law: the Green Power Program (Schedule 135) for residential and small-commercial customers; Large Volume Green Power (Schedule 136) which provides a volume discount for purchases of at least 1,000 MWh, annually; and Bulk Renewable Energy Credit (REC) Purchases whereby customers can acquire a minimum of 10,000 MWh of excess RECs from PSE's wind projects. All three of these products involve the sale of RECs.

However, PSE found that many of our large commercial and municipal customers were looking for something different to help them meet their goal of lowering their carbon footprint with cost-effective alternatives to the PSE portfolio. They wanted the benefit of long-term pricing and direct access to new renewable energy projects. As a result of numerous discussions and stakeholder input, PSE created Green Direct – a product that allows the utility to procure and sell fully bundled renewable energy to large commercial and municipal customers, from a specified wind resource, and within the Washington regulatory framework.

Defining Principles

During the creation of this product, PSE met with many commercial and municipal customers to gauge their interest and align the key components. In addition to customer discussions, PSE also conferred with representatives from the World Resources Institute (WRI) as well as the Edison Electric Institute (EEI). The WRI and the World Wildlife Fund (WWF) started a discussion with some of the country's best known commercial firms, which resulted in the "Corporate Renewable Energy Buyers' Principles." The principles are consistent with PSE's findings and provide support for PSE's plan to provide a few new choices. The top priorities in the principles are:

- Greater choice in procurement options for renewable energy,
- More access to cost competitive options,
- Access to longer-term and fixed price contracts,
- Access to new projects that reduce emissions beyond business as usual,
- Streamlined third-party financing, and
- Opportunity to work with utilities and regulators to ensure fairness in costs and benefits.

RECOMMENDATION

Discussion

ATTACHMENTS

- Green Direct PowerPoint
- Tukwila Model

Voluntary Renewable
Energy Option –
Green Direct



January, 2017

Customer Choices for Renewable Energy

Green Power Program – Retail RE



EXISTING GREEN POWER PROGRAM (SCH 135, 136)

- REC purchases
- 40,000 customers
- residential, commercial, municipal



BULK REC PURCHASES

- Excess PSE RECs
- 10,000,000 kWh
- large business



SOLAR CHOICE (SCH 135)

- Solar RECs from central plant with high productivity
- residential and small commercial



GREEN DIRECT (SCH 139)

- Long-term partnership with PSE for dedicated energy resources
- large commercial, municipal



Green Power Program at PSE

- UTC Approval of Schedule 135, December 12, 2001
 - Source: Stateline Wind RECs from Bonneville Environmental Foundation
 - Rates: \$0.02/kWh
 - Schedule 136 launched July, 2005
 - Initial rate: \$0.01/kWh
 - Minimum Purchase is 1,000,000 kWh/year, for minimum of 1 year
- Schedule 135 & 136 Rate Reduction effective April 1, 2007
 - Schedule 135: \$0.0125/kWh
 - Schedule 136: \$0.006/kWh
- Green-e Energy certified by the Center for Resource Solutions in May, 2007
- WREGIS tracking system utilized by PSE with 2013 sales
- Today : PSE contracts with 20 small, distributed northwest projects, including 18 in the PSE service area. Other regional RECs purchased through aggregators.
- Schedule 135 & 136 Rate Reduction proposed September 22, 2016
 - Schedule 135: \$0.010/kWh
 - Schedule 136: \$0.0035/kWh





Renewable Energy Buyers Alliance

New Resources, Cost Competitive, Long Term Price, Utility-Based



WORLD
RESOURCES
INSTITUTE



King County
Bellevue
Redmond
Kirkland
Issaquah
Snoqualmie

Sammamish
Tukwila
Mercer Island
Normandy Park
Burien
Bainbridge Island

Anacortes
Bellingham
WWU
Olympia
Lacey
Evergreen



Green Direct Billing (Schedule 139)

Electric Detail Information: 12345 POWER AVE S, Bellevue

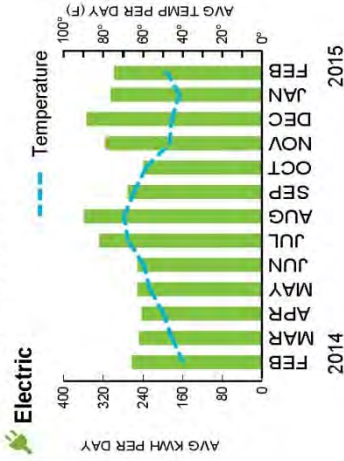
Rate Schedule	Meter #	Start Date		End Date		Multiplier	Kilowatt Hours (kWh)	Electric Demand (kVA)	Reactive Power (kVAR)	Meter Read Type
		Read	12456	Read	12686					
Commercial 24	Z012345678	1/21	12456	2/20	12686	10	2,300	—	—	Actual Read

Your Electric Charge Details (30 days)

2,300 kWh used for service 1/22/2015 - 2/20/2015

	Rate x Unit	=	Charge
Basic Charge	\$25.81 per month	\$	25.81
Electric Energy Charge	0.095073 2,300 kWh		218.67
Other Electric Charges & Credits			
Electric Cons. Program Charge	0.004620 2,300 kWh		10.63
Power Cost Adjustment	-0.001375 2,300 kWh		-3.16
Merger Credit	-0.000315 2,300 kWh		-0.72
Federal Wind Power Credit	-0.002478 2,300 kWh		-5.70
Renewable Energy Credit	-0.000165 2,300 kWh		-0.38
Premium Green Energy Credit	-0.047010 2,300 kWh		-108.12
Premium Green Charge (139,101 Wind Blend)	0.048500 2,300 kWh		111.55
Subtotal			248.58
Taxes			
State Utility Tax (\$10.23 included in above charges) Effect of Bellevue City Tax	3.873%		15.54
	6.250%	\$248.58	
Current Electric Charges			\$ 264.12

Your Usage Information



Green Direct Energy Credit

INCLUDED

Energy-Related
Power Costs

NOT INCLUDED

Demand-Related
Power Costs

Transmission and
Distribution
Billing, Meters, Meter
Reading, Customer
Accounting and
Services



Green Direct Charge

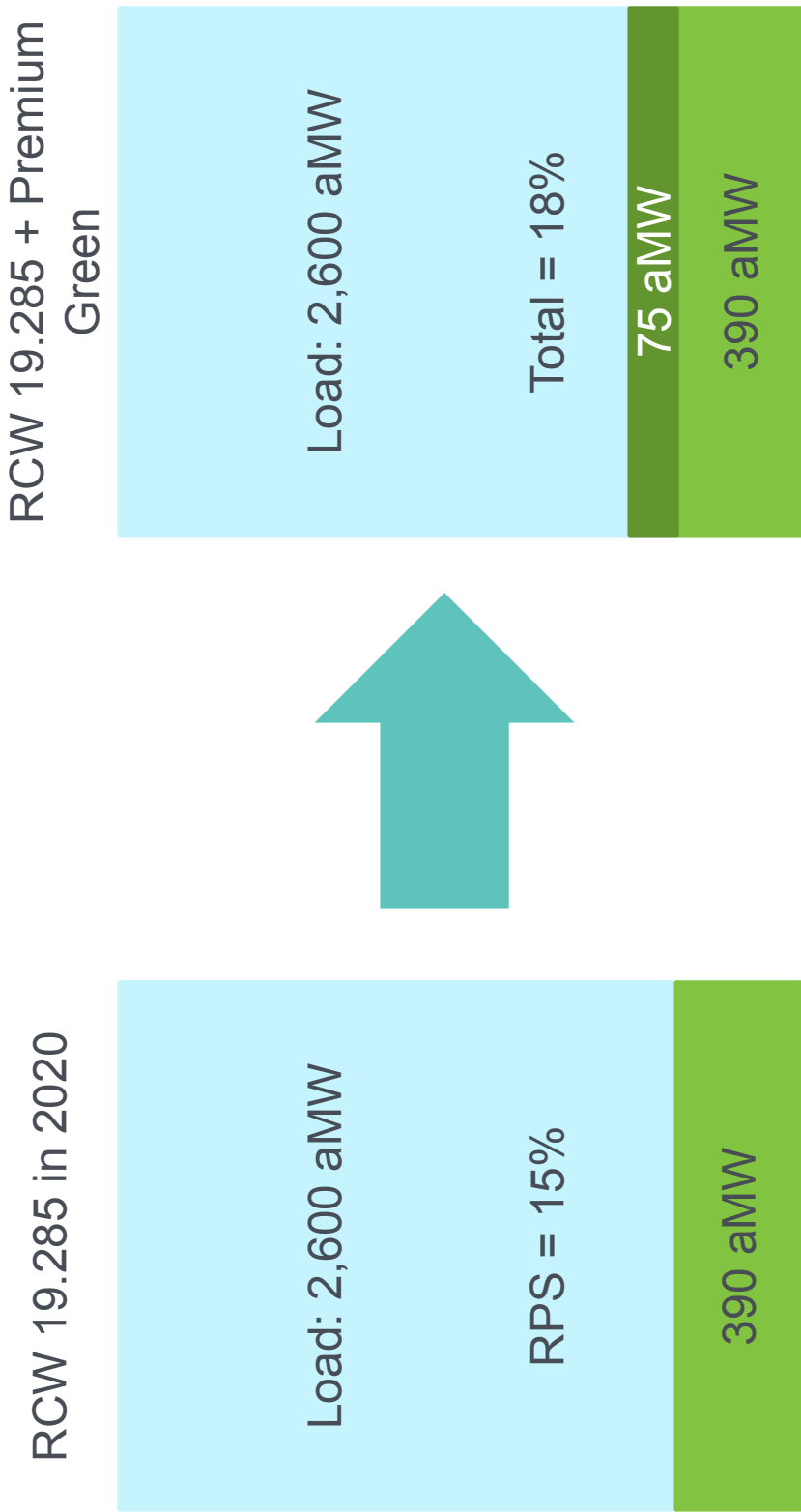
Cost of Energy and
RECs

Losses
Taxes

Billing system updates

Annual reporting of
Renewable Energy
Certificates for
customers, WREGIS,
Green-e

REC Tracking & RCW 19.285



PSE will retire the RECs on behalf of the customers, or if the customer has a WREGIS account PSE will transfer the RECs for them to retire.



Power Prices – Past and Future

PSE Rate History	
Schedule	2000-2013
24	3.4%
25	2.8%
26	2.8%
31	4.3%
43	3.6%
49	4.7%
Average	3.6%

- Full volumetric rate -- \$/kWh
- Includes some demand and delivery costs

Source	Resource	Period	Annual Increase
PSE IRP 2015	Electricity	20 Yr	6.0%
EIA 2015	Electricity	28 Yr	2.4%
PSE IRP 2015	Nat Gas	20 Yr	4.3%
EIA 2015	Nat Gas	28 Yr	4.7%

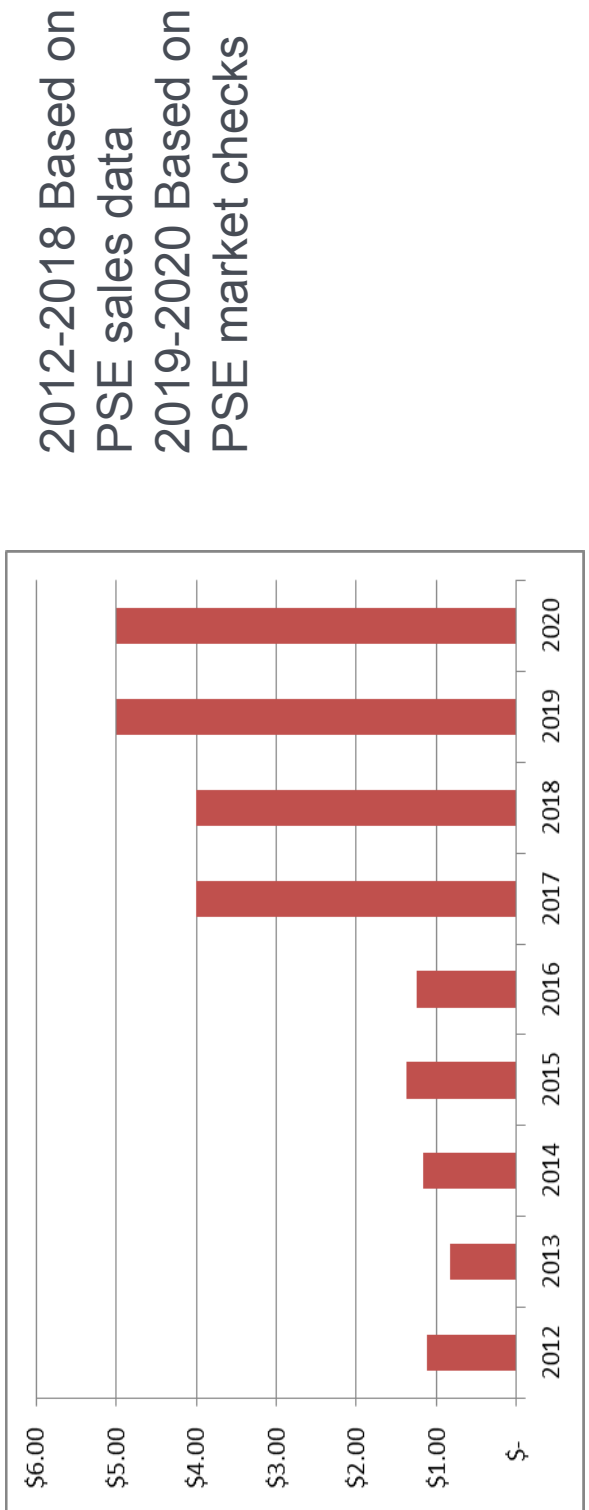
Energy Bears
 Low Gas Prices
 Flat Demand

Energy Bulls
 Federal CPP
 Washington CAR
 Coal Plant shut downs
 (135 in 2015-16)
 Climate Change:
 Snow Pack & Summer
 NG Drilling + Exports

Renewable Energy Bulls
 RPS in OR: 15% today,
 20% by 2020, 50% by 2040
 RPS in CA
 State and federal rules link
 price of carbon (\$/ton) to
 price of RECs



NW Wind RECs – Trending Market

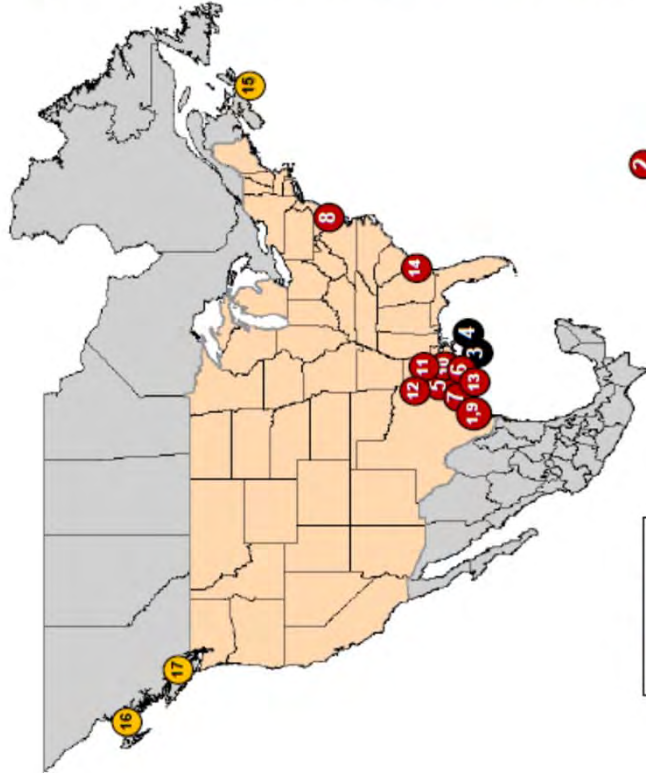


Washington Clean Air Rules link RECs to carbon reductions
Oregon RPS: 15% today; 20% by 2020; 50% by 2040



Low-priced US gas to be exported to high-price world markets

North American LNG Import/Export Terminals Approved



As of August 3, 2016

US Jurisdiction

- FERC
- MARAD/USCG

Import Terminals

U.S.

APPROVED - UNDER CONSTRUCTION - FERC
1. Corpus Christi, TX: 0.4 Bctd (Cheniere – Corpus Christi LNG) (CP12-507)

APPROVED – NOT UNDER CONSTRUCTION - FERC

2. Salinas, PR: 0.6 Bctd (Aguirre Offshore GasPort, LLC) (CP13-193)

APPROVED - NOT UNDER CONSTRUCTION - MARAD/Coast Guard

3. Gulf of Mexico: 1.0 Bctd (Main Pass McMoran Exp.)
4. Gulf of Mexico: 1.4 Bctd (TORP Technology-Blenville LNG)

Export Terminals

U.S.

APPROVED - UNDER CONSTRUCTION - FERC

5. Sabine, LA: 2.1 Bctd (Cheniere/Sabine Pass LNG) (CP11-72 & CP14-12)
6. Hackberry, LA: 2.1 Bctd (Sempra-Cameron LNG) (CP13-25)
7. Freeport, TX: 2.14 Bctd (Freeport LNG Dev/Freeport LNG Expansion/FLNG Liquefaction) (CP12-509) (CP15-518)
8. Cove Point, MD: 0.82 Bctd (Dominion-Cove Point LNG) (CP13-113)
9. Corpus Christi, TX: 2.14 Bctd (Cheniere – Corpus Christi LNG) (CP12-507)
10. Sabine Pass, LA: 1.40 Bctd (Sabine Pass Liquefaction) (CP13-552)

APPROVED – NOT UNDER CONSTRUCTION - FERC

11. Lake Charles, LA: 2.2 Bctd (Southern Union – Lake Charles LNG) (CP14-120)
12. Lake Charles, LA: 1.08 Bctd (Magnolia LNG) (CP14-347)
13. Hackberry, LA: 1.41 Bctd (Sempra - Cameron LNG) (CP15-560)
14. Elba Island, GA: 0.35 Bctd (Southern LNG Company) (CP14-103)

Canada

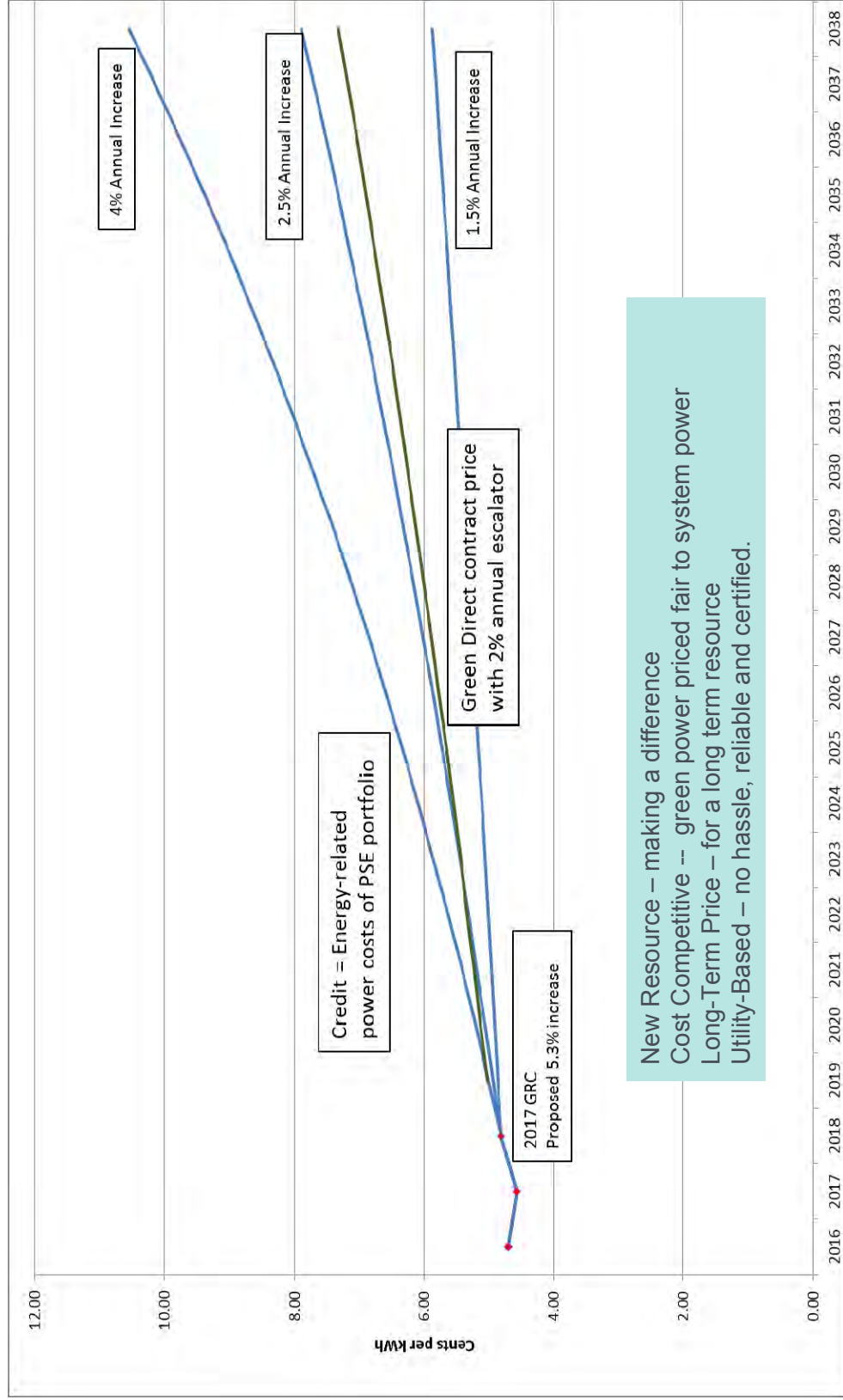
APPROVED – NOT UNDER CONSTRUCTION

15. Port Hawkesbury, NS: 0.5 Bctd (Bear Head LNG)
16. Kitimat, BC: 3.23 Bctd (LNG Canada)
17. Squamish, BC: 0.29 Bctd (Woodfibre LNG Ltd)

★ Trains 5 & 6 with Train 5 under construction



Green Direct Charge and Credit



TUKWILA 71 Accounts

2016	
Total Electricity	2,725,125 kWh
Annual Cost	\$ 292,134
Green Direct ¹	2,658,103 kWh

Scenario Tester

Change the assumptions in the orange cells to compare future cases for electric rates and RECs.

Assumptions	Rate
Load Growth ²	0.0%
Elec Cost ³	3.0%
Green Direct	2.0%
REC Price ⁴ (2017-18)	\$1.00 per MWh
2018 GRC "Credit" ⁵	\$0.048 per kWh

Green Direct Charge ⁶ \$/kWh		10 Year							
2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
\$ 0.05111	\$ 0.05213	\$ 0.05318	\$ 0.05424	\$ 0.05532	\$ 0.05643	\$ 0.05756	\$ 0.05871	\$ 0.05989	\$ 0.06108
Credit ⁵									
\$ (0.0496)	\$ (0.0511)	\$ (0.0526)	\$ (0.0542)	\$ (0.0558)	\$ (0.0575)	\$ (0.0592)	\$ (0.0610)	\$ (0.0628)	\$ (0.0647)

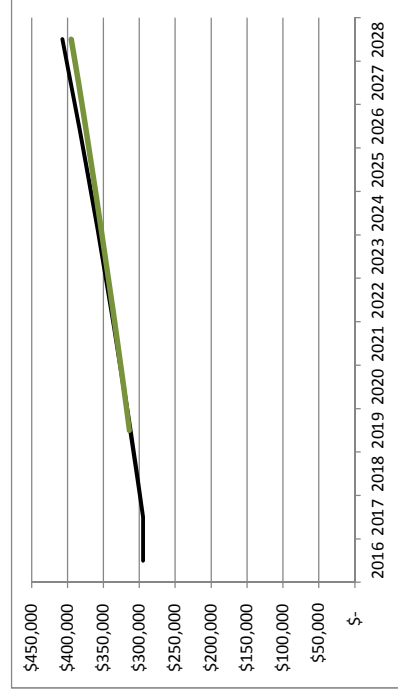
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Baseline Case													
Electricity	\$ 292,134	\$ 292,134	\$ 300,898	\$ 309,924	\$ 319,222	\$ 328,799	\$ 338,663	\$ 348,823	\$ 359,287	\$ 370,066	\$ 381,168	\$ 392,603	\$ 404,381
RECs	\$ 2,725	\$ 2,725	\$ 2,725	\$ 2,725	\$ 2,725	\$ 2,725	\$ 2,725	\$ 2,725	\$ 2,725	\$ 2,725	\$ 2,725	\$ 2,725	\$ 2,725
Total	\$ 294,859	\$ 294,859	\$ 303,623	\$ 312,650	\$ 321,947	\$ 331,524	\$ 341,388	\$ 351,548	\$ 362,013	\$ 372,791	\$ 383,893	\$ 395,328	\$ 407,106

	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Green Direct													
Electricity	\$ 292,134	\$ 292,134	\$ 300,898	\$ 309,924	\$ 319,222	\$ 328,799	\$ 338,663	\$ 348,823	\$ 359,287	\$ 370,066	\$ 381,168	\$ 392,603	\$ 404,381
Credit ⁵													
Charge ⁶	\$ (131,767)	\$ (135,720)	\$ (139,792)	\$ (143,985)	\$ (148,305)	\$ (152,754)	\$ (157,337)	\$ (162,057)	\$ (166,919)	\$ (171,926)	\$ (177,077)	\$ (182,377)	\$ (187,926)
Total	\$ 160,367	\$ 156,414	\$ 161,106	\$ 165,939	\$ 170,937	\$ 176,045	\$ 181,678	\$ 186,766	\$ 192,332	\$ 197,640	\$ 203,091	\$ 208,626	\$ 214,255

Delta (Savings)	\$ 1,363	\$ 122	\$ (1,159)	\$ (2,535)	\$ (3,984)	\$ (5,483)	\$ (7,061)	\$ (8,725)	\$ (10,450)	\$ (12,294)
Percent Change	0.440%	0.038%	-0.352%	-0.749%	-1.142%	-1.526%	-1.908%	-2.289%	-2.662%	-3.040%

Notes

- Green Direct -- not all accounts are eligible to participate, such as Schedule 7 and 8.
- Load Growth -- future load growth is offset by energy efficiency improvements on average
- Electric Costs -- 3% is assumed by Northwest Power and Conservation Council.
- REC Price -- \$1.50 reflects current price for national RECs. Local RECs are priced significantly higher. There is no long-term market for RECs so assume price stability.
- Credit -- Energy-Related Power Costs of PSE portfolio of energy supplies
- Charge -- Cost of Wind power purchase agreement, plus losses and taxes, and administration



Total Electricity	2,725,125	kWh
Annual Cost	292,134	
Green Direct ¹	2,558,103	kWh

Scenario Tester

Change the assumptions in the orange cells to compare future cases for electric rates and RECs.

Assumptions	Rate	Annual
Load Growth ²	0.0%	Annual
Elec Cost ³	2.5%	Annual
Green Direct	2.0%	Annual
REC Price ⁴ (2017-18)	\$0.00	per kWh
2018 GRCC Credit ⁵	\$0.048	per kWh

Green Direct Charge ⁶ \$/kWh	20 Year																				
	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	
\$ 0.05021	\$ 0.05122	\$ 0.05224	\$ 0.05329	\$ 0.05435	\$ 0.05544	\$ 0.05655	\$ 0.05768	\$ 0.05883	\$ 0.05999	\$ 0.06116	\$ 0.06234	\$ 0.06353	\$ 0.06473	\$ 0.06593	\$ 0.06714	\$ 0.06835	\$ 0.06956	\$ 0.07077	\$ 0.07198	\$ 0.07319	\$ 0.07440
Credit ⁷																					
\$ (0.0493)	\$ (0.0506)	\$ (0.0518)	\$ (0.0531)	\$ (0.0545)	\$ (0.0558)	\$ (0.0572)	\$ (0.0586)	\$ (0.0601)	\$ (0.0616)	\$ (0.0631)	\$ (0.0647)	\$ (0.0663)	\$ (0.0680)	\$ (0.0697)	\$ (0.0714)	\$ (0.0732)	\$ (0.0751)	\$ (0.0769)	\$ (0.0789)		

Baseline Case	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
Electricity	\$ 292,134	\$ 292,134	\$ 299,437	\$ 306,923	\$ 314,596	\$ 322,461	\$ 330,522	\$ 338,785	\$ 347,255	\$ 355,936	\$ 364,835	\$ 373,956	\$ 383,305	\$ 392,887	\$ 402,709	\$ 412,777	\$ 423,096	\$ 433,674	\$ 444,516	\$ 455,629	\$ 467,019	\$ 478,695	\$ 490,662
RECs	\$ 2,725	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Total	\$ 294,859	\$ 292,134	\$ 299,437	\$ 306,923	\$ 314,596	\$ 322,461	\$ 330,522	\$ 338,785	\$ 347,255	\$ 355,936	\$ 364,835	\$ 373,956	\$ 383,305	\$ 392,887	\$ 402,709	\$ 412,777	\$ 423,096	\$ 433,674	\$ 444,516	\$ 455,629	\$ 467,019	\$ 478,695	\$ 490,662
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Electricity	\$ 292,134	\$ 292,134	\$ 299,437	\$ 306,923	\$ 314,596	\$ 322,461	\$ 330,522	\$ 338,785	\$ 347,255	\$ 355,936	\$ 364,835	\$ 373,956	\$ 383,305	\$ 392,887	\$ 402,709	\$ 412,777	\$ 423,096	\$ 433,674	\$ 444,516	\$ 455,629	\$ 467,019	\$ 478,695	\$ 490,662
Credit ⁵				\$ (131,127)	\$ (134,406)	\$ (137,766)	\$ (141,210)	\$ (144,740)	\$ (148,359)	\$ (152,068)	\$ (155,869)	\$ (159,766)	\$ (163,760)	\$ (167,854)	\$ (172,051)	\$ (176,352)	\$ (180,761)	\$ (185,280)	\$ (189,912)	\$ (194,659)	\$ (199,526)	#####	#####
Charge ⁶				\$ 133,463	\$ 136,148	\$ 138,871	\$ 141,648	\$ 144,468	\$ 147,357	\$ 150,304	\$ 153,310	\$ 156,377	\$ 159,504	\$ 162,694	\$ 165,972	\$ 169,348	\$ 172,812	\$ 176,374	\$ 179,934	\$ 183,492	\$ 187,049	\$ 190,606	\$ 194,163
Total				\$ 309,259	\$ 316,338	\$ 323,566	\$ 330,961	\$ 338,513	\$ 346,254	\$ 354,173	\$ 362,276	\$ 370,566	\$ 379,049	\$ 387,727	\$ 396,631	\$ 405,693	\$ 415,006	\$ 424,518	\$ 434,250	\$ 444,192	\$ 454,381	\$ 464,820	\$ 475,487
Delta (Savings)	\$ 2,336	\$ 1,742	\$ 1,105	\$ 439	\$ (272)	\$ (1,001)	\$ (1,763)	\$ (2,559)	\$ (3,389)	\$ (4,256)	\$ (5,160)	\$ (6,079)	\$ (7,084)	\$ (8,090)	\$ (9,156)	\$ (10,269)	\$ (11,436)	\$ (12,638)	\$ (13,875)	\$ (15,175)			
Percent Change	0.761%	0.554%	0.343%	0.133%	-0.080%	-0.288%	-0.495%	-0.701%	-0.906%	-1.110%	-1.313%	-1.509%	-1.716%	-1.912%	-2.111%	-2.309%	-2.510%	-2.706%	-2.898%	-3.093%			

Notes

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2. Load Growth -- future load growth is offset by energy efficiency improvements on average
3. Electric Costs -- 3% is assumed by Northwest Power and Conservation Council.
4. REC Price -- \$1.50 reflects current price for national RECs. Local RECs are priced significantly higher. There is no long-term market for RECs so assume price stability
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