



e-FILING REPORT COVER SHEET

COMPANY NAME: Portland General Electric Company

DOES REPORT CONTAIN CONFIDENTIAL INFORMATION? No Yes If yes, submit a redacted public version (or a cover letter) by email. Submit the confidential information as directed in OAR 860-001-0070 or the terms of an applicable protective order.

Select report type: RE (Electric) RG (Gas) RW (Water) RT (Telecommunications)
 RO (Other, for example, industry safety information)

Did you previously file a similar report? No Yes, report docket number: RE-182

Report is required by: OAR 860-030-0011

Statute

Order

Note: A one-time submission required by an order is a compliance filing and not a report (file compliance in the applicable docket)

Other

(For example, federal regulations, or requested by Staff)

Is this report associated with a specific docket/case? No Yes, docket number: UM 1893

List Key Words for this report. We use these to improve search results.

Energy Efficiency Avoided Cost Submission

Send the completed Cover Sheet and the Report in an email addressed to PUC.FilingCenter@state.or.us

Send confidential information, voluminous reports, or energy utility Results of Operations Reports to PUC Filing Center, PO Box 1088, Salem, OR 97308-1088 or by delivery service to 201 High Street SE Suite 100, Salem, OR 97301.



Portland General Electric
121 SW Salmon Street · Portland, Ore. 97204

September 15, 2022

Public Utility Commission of Oregon
Attn: Filing Center
201 High Street, S.E.
P.O. Box 1088
Salem, OR 97308-1088

RE: UM 1893 – PGE’s Energy Efficiency Avoided Cost Submission

Portland General Electric Company (PGE) submits this compliance filing under RE 182 pursuant to Oregon Administrative Rule (OAR) 860-030-0011. Please see the attached pages for PGE’s energy efficiency avoided cost submission. Included with this filing is an alternative submission with updated values from PGE’s last General Rate Case (UE 394), PGE’s recently filed Distribution System Plan and PGE’s latest draft Loss of Load Probability Heat Map presented to stakeholders at PGE’s August 2022 Roundtable.

PGE’s last acknowledged Integrated Resource Plan (IRP) was in 2019 and PGE expects to file a new IRP in Q1 2023 with the Commission. The alternative submission values PGE is including in this filing incorporate the impacts of House Bill 2021, which refines the expected role of energy efficiency in meeting HB 2021 targets and the values in PGE’s IRP action plan.

Please direct any questions or comments regarding this filing to Chris Pleasant at (503) 464-2555.

Please direct all formal correspondence and requests to the following email address pge.opuc.filings@pqn.com.

Sincerely,

\s\ Robert Macfarlane

Robert Macfarlane
Manager, Pricing & Tariffs

Enclosure
cc: Anna Kim, OPUC

Energy Efficiency Avoided Cost Submission Template - Electric

Utility Name: **PGE**

Submission Date: **15-Sep-22**

Instructions and Definitions

<> Please fill out this workbook completely and per the instructions and submit via electronic filing to docket UM 1893. Submissions are due October 15 of each year.

<> Inputs will be reviewed and approved by the OPUC before being sent to the Energy Trust of Oregon for use in Avoided Cost development

<> **Provide as much detail as possible when sourcing** data inputs, including the link to the source (if available), page number and table or graph number

This will increase the efficiency of this process and require less iteration during the OPUC review period

Required pages 1,2,3,4 refer to data presented in the most recently acknowledged IRP, IRP Update, or General Rate Case unless otherwise noted.

1) Global Inputs - IRP

<> Most components of the avoided costs are input into this tab including inflation/discount rates, line losses, risk reduction values, T&D deferral values, and generation deferral values

<> Identify the winter & summer peak periods for Transmission and Distribution. The Generation LOLP Map will be utilized for generation peak definitions.

<> If necessary, Energy Trust will work with each utility about sector definitions for T&D for which values to provide for Res, Com, and Ind

<> **Ensure that the dollar years of the data inputs match the source** - Energy Trust will inflate to the proper year

<> Please provide the values in the most recently acknowledged IRP

2) Forward Market Prices - IRP

<> Provide forward market price forecast by month for both high load hours and low load hours

<> Please provide the dollar amount of these prices that is associated with carbon costs (or %). If it is a dollar value, this is a subset of the total prices provided - The total forward market prices should be the FULL price, including carbon

<> **Indicate if the forecast is in nominal or real dollars (and what dollar year if real)**

<> Please provide the values in the most recently acknowledged IRP

3) LOLP - IRP

<> input a 12x24 Loss of Load Probability heat map per the example in the worksheet

<> These will be potentially utilized in future iterations of avoided cost updates pending outcome of UM1893

<> Include heat maps for all days, weekdays only, and weekends only

<> Please provide the values in the most recently acknowledged IRP

4) RPS Compliance - IRP

<> Input RPS compliance costs by year

<> Please provide the values in the most recently acknowledged IRP

1a, 2a, 3a, 4a) Alternative Submissions

<> Use these worksheets to provide alternative values to the most recently acknowledged IRP values

<> Provide a rationale for submitting the alternative values in the box provided at the top of each alternative worksheet

<> If a second set of alternative values is submitted, simply copy the alt tabs necessary and rename to 1b, alt 2 in the tab name

Global Assumptions Inputs				SOURCING				
Provide as much detail as possible with sourcing including a link. Ensure that dollar years listed here are the same as the source.								
Avoided Cost Element	Units	Value	Dollar Year	Source	Source Page #	Table # (if applicable)	Source Link or File Name	Source Notes
Inflation Rate	Percent	2.11%	N/A	PGE Q2 2022 financial parameters			Q2 2022 Financial parameters "Financial Parameters 6-7-22"	Long-run inflation rate
Real Discount Rate	Percent	4.25%	N/A	PGE Q2 2022 financial parameters			Q2 2022 Financial parameters "Financial Parameters 6-7-22"	After-Tax Real Cost of Capital, calculated from Nominal Weighted After-Tax Cost of Capital and Long-Term General Inflation.
Regional Act Credit	Percent	10.00%	N/A					
Transmission Loss Factor (Summer)	Percent	2.31%	N/A	BPA Open Access Transmission Tariff, Effective Date: October 1, 2021	137		https://www.bpa.gov/-/media/Aep/transmission/open-access-transmission-tariff/bpa-open-access-transmission-tariff-20211001.pdf	Real Power Loss factor for one segment of BPA transmission. This factor is for the losses external to PGE's system for avoided energy purchases, generation capacity, and risk value. <i>This factor does not apply to the PGE Transmission in the</i>
Transmission Loss Factor (Winter)	Percent	1.95%	N/A	BPA Open Access Transmission Tariff, Effective Date: October 1, 2021	137		https://www.bpa.gov/-/media/Aep/transmission/open-access-transmission-tariff/bpa-open-access-transmission-tariff-20211001.pdf	Real Power Loss factor for one segment of BPA transmission. This factor is for the losses external to PGE's system for avoided energy purchases, generation capacity, and risk value. <i>This factor does not apply to the PGE Transmission in the</i>
Distribution Loss Factor, Commercial	Percent	4.02%	N/A	2022 GRC (UE 394) Line Loss Study			Workpaper "LineLoss2022GRC_Dist_Commercial.xlsx"	Internal loss factor for Commercial loads based on weighted average of primary and secondary losses from
Distribution Loss Factor, Industrial	Percent	1.96%	N/A	2022 GRC (UE 394) Line Loss Study	1		"2022 GRC loss report.pdf"	Internal loss factor from study for loads with subtransmission delivery voltage.
Distribution Loss Factor, Residential	Percent	4.20%	N/A	2022 GRC (UE 394) Line Loss Study	1		"2022 GRC loss report.pdf"	Internal loss factor for loads with secondary delivery voltage.
Risk Reduction Value	\$/MWh	\$3.00	2020	2019 IRP			Workpaper "EE_RiskCalc_2019IRP.xlsx"	Risk reduction value calculated from 2019 IRP values.
Transmission Deferral Credit	\$/kW-yr	\$55.93	2022	2022 GRC (UE 394) Transmission Marginal Cost Study			Workpaper "Ratespread_2022 GRC.xlsx"	2022 GRC, most recently approved GRC filing. TransmissionDeferralCredit = (TransmissionRevReq/MarginalSystemPeakGrowth)
Seasonal Capacity Split - Summer	Percent	50.00%	N/A	Per previous assumption.			Per previous assumption.	PGE analysis of month-hour average net system load
Seasonal Capacity Split - Winter	Percent	50.00%	N/A	Per previous assumption.			Per previous assumption.	PGE analysis of month-hour average net system load
Summer Peak Period Definition	Month/Day/Hour	N/A	N/A					Day is intended to be weekday or weekend
Winter Peak Period Definition	Month/Day/Hour	N/A	N/A					Day is intended to be weekday or weekend
Deficiency start year	Year	2024	N/A	See Source Note				The year 2024 reflects PGE's understanding of the default value being the first year of Energy Trust's EE calculations. PGE may calculate an alternative transmission deficiency start year for future filings, but did not for this filing.
Distribution Deferral Credit	\$/kW-yr	\$14.85	2022	2022 GRC (UE 394) Distribution Marginal Cost Study			Workpaper "Ratespread_2022 GRC.xlsx"	2022 GRC, most recently approved GRC filing. DistributionDeferralCredit = (SubtransmissionMarginalCostRevenues/SubtransmissionRateclassPeak)+(SubstationMarginalCostRevenues/SubstationRateclassPeak) Subtransmission MCOS - \$4.17/kW-year Substation MCOS - \$10.68/kW-year
Seasonal Capacity Split - Summer	Percent	50.00%	N/A	Per previous assumption.			Per previous assumption.	PGE analysis of month-hour average net system load
Seasonal Capacity Split - Winter	Percent	50.00%	N/A	Per previous assumption.			Per previous assumption.	PGE analysis of month-hour average net system load
Summer Peak Period Definition	Month/Day/Hour	N/A	N/A					Day is intended to be weekday or weekend
Winter Peak Period Definition	Month/Day/Hour	N/A	N/A					Day is intended to be weekday or weekend
Deficiency start year	Year	2024	N/A	See Source Note				The year 2024 reflects PGE's understanding of the default value being the first year of Energy Trust's EE calculations. PGE may calculate an alternative distribution deficiency start year for future filings, but did not for this filing.
Generation Capacity Credit	\$/kW-yr	\$109.74	2020	2019 IRP Update	Appendix D pg. 66			2019 IRP Update net cost of capacity.
Seasonal Capacity Split - Summer	Percent	50.00%	N/A	Per previous assumption.				This is the seasonal capacity split used by Staff in the December 2018 process. PGE may calculate an alternative seasonal capacity split for future filings, but did not for this filing.
Seasonal Capacity Split - Winter	Percent	50.00%	N/A	Per previous assumption.				This is the seasonal capacity split used by Staff in the December 2018 process. PGE may calculate an alternative seasonal capacity split for future filings, but did not for this filing.
Deficiency start year	Year	2022	N/A	2019 IRP	288	Table G-2		2019 IRP Reference Case and not before the first year of Energy Trust's calculations.
RPS Compliance Cost	\$/MWh	\$ -	2020	2019 IRP Errata Filing	5	Figure ES-3		In the 2019 IRP, there was no incremental cost of wind (SE Washington) net of capacity value and energy value. Figure ES-3 is a correction to Figure 6-8 (2019 IRP, pg 169).
Avoided RPS Compliance Obligation	%	0.00%	N/A					

Forward Price Inputs

Real or Nominal?	Nominal
Dollar Year:	n/a
Carbon Prices Additive?	Embedded in Market Prices
Carbon Value Units (\$/MWh)	\$/metric ton
Source and Pg #:	DSP Chapter 3. Load and DER forecasting
Source Link or File Name:	Monthly and annual energy prices - "Monthly Electricity Prices_2021H2_TCMarch22_for AvoidedCost" Carbon data - "PGE_Internal_UseOnly_ELE_AECO_Carbon_2023IRPrevised_2021H2_033122TC_052322.xlsx"
Source Notes:	Avoided cost of energy used in the DSP in section 3.5. DER locational forecast Reference Case wholesale market energy prices. Reference Case carbon prices based on revised 2019 IEPR GHG Price Projections published 1-13-20. Monthly wholesale electricity prices provided in a separate confidential file.

NOTES:
Please provide notes as to how this value relates to forward market prices. It can be expressed as a percentage of forward market prices, a set \$/MWh, or \$/ton. Please identify the units in the box to the left

Year	Date	MONTHLY		MONTHLY	MONTHLY	ANNUAL		
		Wholesale Market Energy HLH Total (\$/MWh)	Wholesale Market Energy LLH Total (\$/MWh)	HLH Carbon Cost (\$/MWh) (OR % of HLH Price that accounts for Carbon?)	LLH Carbon Cost (\$/MWh) (OR % of LLH Price that accounts for Carbon?)	Wholesale Market Energy HLH Total (\$/MWh)	Wholesale Market Energy LLH Total (\$/MWh)	Carbon emissions price (nominal 2020CEC \$ per metric ton)
2021	1/1/2021	See annual values in column J.	See annual values in column K.	See annual values in column L.	See annual values in column L.			\$ -
2021	2/1/2021							\$ 23.39
2021	3/1/2021					\$ 41.74	\$ 39.125	\$ 26.94
2021	4/1/2021					\$ 35.88	\$ 33.625	\$ 31.03
2021	5/1/2021					\$ 36.36	\$ 34.025	\$ 35.77
2021	6/1/2021					\$ 40.01	\$ 37.412	\$ 41.23
2021	7/1/2021					\$ 39.07	\$ 37.080	\$ 47.51
2021	8/1/2021					\$ 39.62	\$ 37.741	\$ 54.74
2021	9/1/2021					\$ 41.32	\$ 39.817	\$ 63.05
2021	10/1/2021					\$ 42.30	\$ 41.790	\$ 72.64
2021	11/1/2021					\$ 42.88	\$ 42.718	\$ 74.19
2021	12/1/2021					\$ 41.83	\$ 41.817	\$ 75.77
2022	1/1/2022					\$ 42.71	\$ 43.557	\$ 77.39
2022	2/1/2022					\$ 42.21	\$ 43.266	\$ 79.04
2022	3/1/2022					\$ 43.68	\$ 45.109	\$ 80.73
2022	4/1/2022					\$ 42.68	\$ 45.469	\$ 82.45
2022	5/1/2022					\$ 43.14	\$ 45.202	\$ 84.21
2022	6/1/2022					\$ 42.82	\$ 45.901	\$ 86.00
2022	7/1/2022					\$ 42.80	\$ 46.104	\$ 87.84
2022	8/1/2022					\$ 42.61	\$ 45.656	\$ 89.71
2022	9/1/2022					\$ 44.37	\$ 46.630	\$ 91.63
2022	10/1/2022					\$ 45.74	\$ 47.569	\$ 93.58
2022	11/1/2022					\$ 44.72	\$ 47.428	\$ 95.58
2022	12/1/2022					\$ 43.42	\$ 46.566	\$ 97.62
2023	1/1/2023					\$ 43.95	\$ 48.492	\$ 99.70
2023	2/1/2023					\$ 43.96	\$ 47.758	\$ 101.82
2023	3/1/2023					\$ 45.27	\$ 49.246	\$ 104.00
2023	4/1/2023					\$ 43.71	\$ 48.404	\$ 106.22
2023	5/1/2023					\$ 45.01	\$ 50.112	\$ 108.48
2023	6/1/2023					\$ 49.35	\$ 54.134	\$ 110.80

RPS Compliance Inputs IRP

Real or Nominal?	Real
Dollar Year:	2020
Source and Pg #:	2019 IRP Errata Filing, pg 5, Figure ES-3. This is a correction to Figure 6-8 in the 2019 IRP (pg 169).
Source Link or File Name:	https://www.portlandgeneral.com/-/media/public/our-company/energy-strategy/documents/2019-integrated-resource-plan.pdf?la=en
Source Notes:	In the 2019 IRP, there was no incremental cost of wind (SE Washington) net of capacity value and energy value.

	RPS Compliance Cost (\$/MWh)	Avoided RPS Compliance Obligation (%)
2021 \$	-	20.00%
2022 \$	-	20.00%
2023 \$	-	20.00%
2024 \$	-	20.00%
2025 \$	-	27.00%
2026 \$	-	27.00%
2027 \$	-	27.00%
2028 \$	-	27.00%
2029 \$	-	27.00%
2030 \$	-	35.00%
2031 \$	-	35.00%
2032 \$	-	35.00%
2033 \$	-	35.00%
2034 \$	-	35.00%
2035 \$	-	45.00%
2036 \$	-	45.00%
2037 \$	-	45.00%
2038 \$	-	45.00%
2039 \$	-	45.00%
2040 \$	-	50.00%
2041 \$	-	50.00%
2042 \$	-	50.00%
2043 \$	-	50.00%
2044 \$	-	50.00%
2045 \$	-	50.00%
2046 \$	-	50.00%
2047 \$	-	50.00%
2048 \$	-	50.00%
2049 \$	-	50.00%
2050 \$	-	50.00%

Alternative Submissions				Rationale for alternative submission: The updated values are shaded in green. These values reflect a more current assessment of customer value and are primarily based on PGE's last GRC and recently filed DSP.						
Global Assumptions Inputs				SOURCING						
				Provide as much detail as possible with sourcing including a link. Ensure that dollar years listed here are the same as the source.						
Avoided Cost Element	Units	Value	Dollar Year	Source	Source Page #	Table # (if applicable)	Source Link or File Name	Source Notes	Update Status	
Inflation Rate	Percent	2.11%	N/A	PGE Q2 2022 financial parameters			Q2 2022 Financial parameters "Financial Parameters 6-7-22"	Long-run inflation rate	Update	
Real Discount Rate	Percent	4.25%	N/A	PGE Q2 2022 financial parameters			Q2 2022 Financial parameters "Financial Parameters 6-7-22"	After-Tax Real Cost of Capital, calculated from Nominal Weighted After-Tax Cost of Capital and Long-Term General Inflation.	Update	
Regional Act Credit	Percent	10.00%	N/A						No change	
Transmission Loss Factor (Summer)	Percent	2.31%	N/A	BPA Open Access Transmission Tariff, Effective Date: October 1, 2021	137		https://www.bpa.gov/-/media/Aep/transmission/open-access-transmission-tariff/bpa-open-access-transmission-tariff-20211001.pdf	Real Power Loss factor for one segment of BPA transmission. This factor is for the losses external to PGE's system for avoided energy purchases, generation capacity, and risk value. This factor does not apply to the PGE Transmission in the Transmission Deferral Credit.	Update	
Transmission Loss Factor (Winter)	Percent	1.95%	N/A	BPA Open Access Transmission Tariff, Effective Date: October 1, 2021	137		https://www.bpa.gov/-/media/Aep/transmission/open-access-transmission-tariff/bpa-open-access-transmission-tariff-20211001.pdf	Real Power Loss factor for one segment of BPA transmission. This factor is for the losses external to PGE's system for avoided energy purchases, generation capacity, and risk value. This factor does not apply to the PGE Transmission in the Transmission Deferral Credit.	Update	
Distribution Loss Factor, Commercial	Percent	4.02%	N/A	2022 GRC (UE 394) Line Loss Study			Workpaper "LineLoss2022GRC_Dist_Commercial.xlsx"	Internal loss factor for Commercial loads based on weighted average of primary and secondary losses from the 2019 GRC Line Loss Study.	Update	
Distribution Loss Factor, Industrial	Percent	1.96%	N/A	2022 GRC (UE 394) Line Loss Study	1		"2022 GRC loss report.pdf"	Internal loss factor from study for loads with subtransmission delivery voltage.	Update	
Distribution Loss Factor, Residential	Percent	4.20%	N/A	2022 GRC (UE 394) Line Loss Study	1		"2022 GRC loss report.pdf"	Internal loss factor for loads with secondary delivery voltage.	Update	
Risk Reduction Value	\$/MWh	\$3.00	2020	2019 IRP			2019 IRP	Risk reduction value calculated from 2019 IRP values.	No Change	
Transmission Deferral Credit	\$/kW-yr	\$55.93	2022	2022 GRC (UE 394) Transmission			Workpaper "Ratespread_2022 GRC.xlsx"	2022 GRC, most recently approved GRC filing.	Update	
Seasonal Capacity Split - Summer	Percent	50.00%	N/A	Per previous assumption.			Per previous assumption.	PGE analysis of month-hour average net system load	No change	
Seasonal Capacity Split - Winter	Percent	50.00%	N/A	Per previous assumption.			Per previous assumption.	PGE analysis of month-hour average net system load	No change	
Summer Peak Period Definition	Month/Day/Hour	N/A	N/A					Day is intended to be weekday or weekend	No change	
Winter Peak Period Definition	Month/Day/Hour	N/A	N/A					Day is intended to be weekday or weekend	No change	
Deficiency start year	Year	2024	N/A	See Source Note				The year 2024 reflects PGE's understanding of the default value being the first year of Energy Trust's EE calculations. PGE may calculate an alternative transmission deficiency start year for future filings, but did not for this filing.	Update	
Distribution Deferral Credit	\$/kW-yr	\$14.85	2022	2022 GRC (UE 394) Distribuion			Workpaper "Ratespread_2022 GRC.xlsx"	2022 GRC, most recently approved GRC filing.	Update	
Seasonal Capacity Split - Summer	Percent	50.00%	N/A	Per previous assumption.			Per previous assumption.	PGE analysis of month-hour average net system load	Update	
Seasonal Capacity Split - Winter	Percent	50.00%	N/A	Per previous assumption.			Per previous assumption.	PGE analysis of month-hour average net system load	No change	
Summer Peak Period Definition	Month/Day/Hour	N/A	N/A					Day is intended to be weekday or weekend	No change	
Winter Peak Period Definition	Month/Day/Hour	N/A	N/A					Day is intended to be weekday or weekend	No change	
Deficiency start year	Year	2024	N/A	See Source Note				The year 2024 reflects PGE's understanding of the default value being the first year of Energy Trust's EE calculations. PGE may calculate an alternative distribution deficiency start year for future filings, but did not for this filing.	Update	
Generation Capacity Credit	\$/kW-yr	\$143.29	2020	DSP Chapter 3. Load and DER forecasting			https://edocs.puc.state.or.us/efdocs/HAD/um2197had151613.pdf	Avoided cost of capacity used in the DSP in section 3.5. DER locational forecast	Update	
Seasonal Capacity Split - Summer	Percent	N/A	N/A	See Source Note				PGE understands that Energy Trust is transitioning to a different method based on the LOLE heatmap as provided in the "LOLP IRP" tab	Update	
Seasonal Capacity Split - Winter	Percent	N/A	N/A	See Source Note				PGE understands that Energy Trust is transitioning to a different method based on the LOLE heatmap as provided in the "LOLP IRP" tab	Update	
Deficiency start year	Year	2024	N/A	See Source Note				The year 2024 reflects PGE's understanding of the default value being the first year of Energy Trust's EE calculations. PGE may calculate an alternative generation deficiency start year for future filings, but did not for this filing.	Update	
RPS Compliance Cost	N/A	N/A	N/A	See source notes				HB 2021 sets a more stringent carbon standard than previous RPS policies.	Update	
Avoided RPS Compliance Obligation	N/A	N/A	N/A	See source notes				Implication of HB 2021 on EE avoided costs will be realized through an increase in avoided costs of capacity	Update	

Forward Price Inputs

Real or Nominal?	Nominal
Dollar Year:	n/a
Carbon Prices Additive?	Embedded in Market Prices
Carbon Value Units (\$/MWh)	\$/metric ton
Source and Pg #:	DSP Chapter 3. Load and DER forecasting
Source Link or File Name:	Monthly and annual energy prices - "Monthly Electricity Prices_2021H2_TCMarch22_for AvoidedCost" Carbon data - "PGE_Internal_UseOnly_ELE_AECO_Carbon_2023IRPrevised_2021H2_033122TC_052322.xlsx"
Source Notes:	Avoided cost of energy used in the DSP in section 3.5. DER locational forecast Reference Case wholesale market energy prices. Reference Case carbon prices based on revised 2019 IEPR GHG Price Projections published 1-13-20. Monthly wholesale electricity prices provided in a separate confidential file.

NOTES:
Please provide notes as to how this value relates to forward market prices. It can be expressed as a percentage of forward market prices, a set \$/MWh, or \$/ton. Please identify the units in the box to the left

Year	Date	MONTHLY		MONTHLY	MONTHLY	ANNUAL		
		Wholesale Market Energy HLH Total (\$/MWh)	Wholesale Market Energy LLH Total (\$/MWh)	HLH Carbon Cost (\$/MWh) (OR % of HLH Price that accounts for Carbon?)	LLH Carbon Cost (\$/MWh) (OR % of LLH Price that accounts for Carbon?)	Wholesale Market Energy HLH Total (\$/MWh)	Wholesale Market Energy LLH Total (\$/MWh)	Carbon emissions price (nominal 2020CEC \$ per metric ton)
2021	1/1/2021							\$ -
2021	2/1/2021							\$ 23.99
2021	3/1/2021					41.74	39.125	\$ 26.94
2021	4/1/2021					35.88	33.625	\$ 31.03
2021	5/1/2021					36.36	34.025	\$ 35.77
2021	6/1/2021					40.01	37.412	\$ 41.23
2021	7/1/2021					39.07	37.080	\$ 47.51
2021	8/1/2021					39.62	37.741	\$ 54.74
2021	9/1/2021					41.32	39.817	\$ 63.05
2021	10/1/2021					42.30	41.790	\$ 72.64
2021	11/1/2021					42.88	42.718	\$ 74.19
2021	12/1/2021					41.83	41.817	\$ 75.77
2022	1/1/2022					42.71	43.557	\$ 77.39
2022	2/1/2022					42.21	43.266	\$ 79.04
2022	3/1/2022					43.68	45.109	\$ 80.73
2022	4/1/2022					42.68	45.469	\$ 82.45
2022	5/1/2022					43.14	45.202	\$ 84.21
2022	6/1/2022					42.82	45.901	\$ 86.00
2022	7/1/2022					42.80	46.104	\$ 87.84
2022	8/1/2022					42.61	45.656	\$ 89.71
2022	9/1/2022					44.37	46.630	\$ 91.63
2022	10/1/2022					45.74	47.569	\$ 93.58
2022	11/1/2022					44.72	47.428	\$ 95.58
2022	12/1/2022					43.42	46.566	\$ 97.62
2023	1/1/2023					43.95	48.492	\$ 99.70
2023	2/1/2023					43.96	47.758	\$ 101.82
2023	3/1/2023					45.27	49.246	\$ 104.00
2023	4/1/2023					43.71	48.404	\$ 106.22
2023	5/1/2023					45.01	50.112	\$ 108.48
2023	6/1/2023					49.35	54.134	\$ 110.80
2023	7/1/2023							

Alternative Submissions	Rationale for alternative submission: This aligns with the most recently 2023 IRP Draft which was presented to stakeholders in August 2022. This better aligns with longer-term value to
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Loss of Load Probability Heat Map Input

NOTE: This is utilized for generation deferrals only.

Source and page #: IRP August roundtable, Slide 20

Source Link or File

Name: https://assets.ctfassets.net/416ywc1laqmd/1tEzsTwigoFoOfVxtuGob/4bff485e57a30ad1549d061094a44347/IRP_Roundtable_August_22-7.pdf

Source Notes: Slide 20, latest draft presented for the 2023 IRP. Final IRP LOLE may be a little different

Notes: Heatmap for Weekdays/Weekends only was developed using a heuristic approach, since Sequoia does not explicitly report weekdays or weekends. It is assumed that ratio of LOLP for T

WEEKDAYS & WEEKENDS

Hr Ending	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	0.002027	0.000268	0	0	0	3.17565E-05	0	0.000161669	0	0	0.000158782	0.003121
2	0.001392	0.000167	0	0	0	2.02087E-05	0	5.77391E-05	2.88695E-06	0	8.94955E-05	0.002136
3	0.001204	0.000162	0	0	0	1.44348E-05	0	6.3513E-05	2.88695E-06	0	7.21738E-05	0.001732
4	0.001207	0.000165	0	0	0	2.02087E-05	0	6.0626E-05	2.88695E-06	0	7.50608E-05	0.001677
5	0.001547	0.000237	0	0	0	1.44348E-05	0	6.63999E-05	2.88695E-06	0	0.000112591	0.002393
6	0.002751	0.000534	1.15478E-05	0	0	2.88695E-06	0	3.75304E-05	1.44348E-05	8.66086E-06	0.000678434	0.005471
7	0.007922	0.002341	3.75304E-05	0	0	2.88695E-06	0	3.75304E-05	1.44348E-05	1.44348E-05	0.001937145	0.014807
8	0.013058	0.003802	3.46434E-05	0	0	2.88695E-06	0	1.15478E-05	0	1.15478E-05	0.003094813	0.021768
9	0.014276	0.003554	1.44348E-05	0	0	1.15478E-05	0	1.44348E-05	0	0	0.002837875	0.023543
10	0.012007	0.002295	8.66086E-06	0	0	2.88695E-05	0	2.30956E-05	2.88695E-06	0	0.001579163	0.020523
11	0.011686	0.00153	5.77391E-06	0	0	5.48521E-05	2.88695E-06	7.50608E-05	0	0	0.001281807	0.020558
12	0.010116	0.001143	0	0	0	7.79477E-05	0.000127026	0.000363756	2.88695E-06	0	0.001238503	0.019426
13	0.008225	0.000788	0	0	0	0.000101043	0.000782364	0.001270259	1.44348E-05	0	0.001091268	0.016767
14	0.006822	0.000589	0	0	0	0.000164556	0.002093041	0.003397943	3.17565E-05	0	0.00090939	0.013704
15	0.006097	0.000667	2.88695E-06	0	0	0.000190539	0.003819438	0.006452339	7.79477E-05	0	0.001120138	0.013499
16	0.009362	0.000898	0	0	0	0.000251165	0.005083924	0.009356614	0.000190539	1.15478E-05	0.003008205	0.023993
17	0.015067	0.002064	2.30956E-05	0	0	0.000317565	0.006406148	0.011819184	0.000620695	2.59826E-05	0.004622011	0.030273
18	0.018127	0.004059	3.17565E-05	0	0	0.00034066	0.005851853	0.012327288	0.001157668	3.17565E-05	0.005063715	0.034014
19	0.021401	0.005165	6.0626E-05	0	2.88695E-06	0.000467686	0.007705277	0.019622618	0.002026641	3.17565E-05	0.006036618	0.03917
20	0.022637	0.005809	8.66086E-05	0	5.77391E-06	0.000958468	0.012130975	0.021040111	0.002015093	4.04173E-05	0.006807434	0.040472
21	0.02255	0.005953	6.0626E-05	0	2.88695E-06	0.000802573	0.010248682	0.017708568	0.001634015	3.17565E-05	0.006501417	0.039176
22	0.019932	0.00509	3.75304E-05	0	0	0.000562956	0.007402147	0.014951528	0.001408833	2.30956E-05	0.005462115	0.033951
23	0.01013	0.003028	1.44348E-05	0	0	0.000288695	0.000814121	0.003539404	0.000508104	5.77391E-06	0.003175648	0.016066
24	0.00459	0.001094	0	0	0	0.000155895	5.48521E-05	0.000715964	3.46434E-05	2.88695E-06	0.00107972	0.00716

Formatting

Min 0.00
Max 0.03
p50 3E-05

Total to Weekday/Weekend remains constant

WEEKDAYS Only

Hr Ending	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	0.002159	0.000283	0	0	0	4.20415E-05	0	0.000179632	0	0	0.00017581	0.002889
2	0.001479	0.000168	0	0	0	2.67537E-05	0	6.49733E-05	0	0	7.64392E-05	0.002033
3	0.001273	0.000157	0	0	0	1.91098E-05	0	7.26172E-05	3.82196E-06	0	6.49733E-05	0.001613
4	0.001292	0.000145	0	0	0	2.67537E-05	0	6.87952E-05	3.82196E-06	0	6.11513E-05	0.001601
5	0.001601	0.000222	0	0	0	1.91098E-05	0	7.64392E-05	3.82196E-06	0	0.000110837	0.002266
6	0.002916	0.000508	0	1.14659E-05	0	3.82196E-06	0	3.82196E-05	1.52878E-05	1.14659E-05	0.00072235	0.005095
7	0.008301	0.002236	0	4.20415E-05	0	3.82196E-06	0	3.82196E-05	1.14659E-05	1.91098E-05	0.002098255	0.014118
8	0.013797	0.003677	0	3.43976E-05	0	3.82196E-06	0	1.52878E-05	0	1.52878E-05	0.003294528	0.020677
9	0.015081	0.003428	0	1.91098E-05	0	1.52878E-05	0	1.14659E-05	0	0	0.003026991	0.022374
10	0.012677	0.002201	0	1.14659E-05	0	3.43976E-05	0	2.29317E-05	3.82196E-06	0	0.001719881	0.019431
11	0.012421	0.00151	0	7.64392E-06	0	6.49733E-05	3.82196E-06	8.02611E-05	0	0	0.001368261	0.019423
12	0.010713	0.001147	0	0	0	8.40831E-05	0.000122303	0.000397484	0	0	0.001272712	0.018334
13	0.008653	0.000791	0	0	0	0.000114659	0.000779679	0.001261246	1.52878E-05	0	0.001150409	0.015918
14	0.007143	0.000566	0	0	0	0.000187276	0.00220527	0.003489448	3.05757E-05	0	0.000940202	0.013105
15	0.006356	0.000623	0	3.82196E-06	0	0.000210208	0.003948083	0.006615809	7.26172E-05	0	0.001203917	0.012849
16	0.009788	0.000875	0	0	0	0.000275181	0.005316343	0.009539607	0.000179632	1.14659E-05	0.003160759	0.022932
17	0.015777	0.001984	0	2.29317E-05	0	0.00035162	0.006566124	0.01198566	0.000603869	2.67537E-05	0.00489975	0.029066
18	0.019022	0.003914	0	3.43976E-05	0	0.000374552	0.006065447	0.012505446	0.001135122	3.43976E-05	0.005392783	0.032697
19	0.02242	0.004961	0	5.73294E-05	3.82196E-06	0.000504498	0.007995536	0.019931511	0.00197213	3.43976E-05	0.006375026	0.037933
20	0.023719	0.005668	0	9.1727E-05	7.64392E-06	0.001031929	0.0125322	0.021402964	0.001960664	3.43976E-05	0.007269364	0.039209
21	0.023669	0.005771	0	5.73294E-05	3.82196E-06	0.000863762	0.010506562	0.018093149	0.001567003	3.43976E-05	0.006894812	0.037853
22	0.020971	0.004904	0	4.20415E-05	0	0.000603869	0.00765156	0.015261078	0.001356795	2.29317E-05	0.005801732	0.032643
23	0.010732	0.002912	0	1.91098E-05	0	0.000309579	0.000886694	0.003577353	0.00050832	3.82196E-06	0.003393899	0.015231
24	0.004873	0.001028	0	0	0	0.000160522	6.87952E-05	0.00076057	3.43976E-05	3.82196E-06	0.001150409	0.006899

WEEKENDS Only

Hr Ending	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	0.001617	0.000224	0	0	0	0	0	0.000106	0	0	0.000106	0.003835
2	0.001121	0.000165	0	0	0	0	0	3.54E-05	1.18E-05	0	0.00013	0.002455
3	0.000991	0.000177	0	0	0	0	0	3.54E-05	0	0	9.44E-05	0.002101
4	0.000944	0.000224	0	0	0	0	0	3.54E-05	0	0	0.000118	0.001912
5	0.001381	0.000283	0	0	0	0	0	3.54E-05	0	0	0.000118	0.002785
6	0.002242	0.000614	1.18E-05	0	0	0	0	3.54E-05	1.18E-05	0	0.000543	0.006632
7	0.00675	0.002667	2.36E-05	0	0	0	0	3.54E-05	2.36E-05	0	0.00144	0.016934
8	0.010774	0.004189	3.54E-05	0	0	0	0	0	0	0	0.002478	0.025136
9	0.011789	0.003941	0	0	0	0	0	2.36E-05	0	0	0.002254	0.027154
10	0.009936	0.002584	0	0	0	1.18E-05	0	2.36E-05	0	0	0.001145	0.023897
11	0.009417	0.001593	0	0	0	2.36E-05	0	5.9E-05	0	0	0.001015	0.024062
12	0.008272	0.001133	0	0	0	5.9E-05	0.000142	0.00026	1.18E-05	0	0.001133	0.022799
13	0.006903	0.000779	0	0	0	5.9E-05	0.000791	0.001298	1.18E-05	0	0.000909	0.019389
14	0.00583	0.000661	0	0	0	9.44E-05	0.001747	0.003115	3.54E-05	0	0.000814	0.015553
15	0.005299	0.000802	0	0	0	0.00013	0.003422	0.005948	9.44E-05	0	0.000861	0.015506
16	0.008048	0.000968	0	0	0	0.000177	0.004366	0.008792	0.000224	1.18E-05	0.002537	0.027272
17	0.012875	0.002313	2.36E-05	0	0	0.000212	0.005912	0.011305	0.000673	2.36E-05	0.003764	0.033998
18	0.015365	0.004508	2.36E-05	0	0	0.000236	0.005192	0.011777	0.001227	2.36E-05	0.004048	0.038081
19	0.018256	0.005794	7.08E-05	0	0	0.000354	0.006809	0.018669	0.002195	2.36E-05	0.004992	0.04299
20	0.019294	0.006243	7.08E-05	0	0	0.000732	0.010892	0.01992	0.002183	5.9E-05	0.005381	0.044371
21	0.019094	0.006514	7.08E-05	0	0	0.000614	0.009452	0.016521	0.001841	2.36E-05	0.005287	0.043262
22	0.016722	0.005664	2.36E-05	0	0	0.000437	0.006632	0.013996	0.00157	2.36E-05	0.004414	0.037987
23	0.008272	0.003387	0	0	0	0.000224	0.00059	0.003422	0.000507	1.18E-05	0.002502	0.018645
24	0.003717	0.001298	0	0	0	0.000142	1.18E-05	0.000578	3.54E-05	0	0.000861	0.007966

Alternative Submissions	Rationale for alternative submission: HB 2021 is a more stringent carbon standard than RPS. RPS compliance is no longer a binding constraint and thus do not have any associated compliance costs. The impact of HB 2021 on avoided costs materialize through an increase in the avoided cost of capacity. The cost of capacity increases because 1. PGE can only build renewables moving forward. 2. Carbon compliance constraints for HB 2021 goals
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RPS Compliance Inputs IRP

Real or Nominal?	Real
Dollar Year:	
Source and Pg #:	
Source Link or File Name:	
Source Notes:	HB 2021 is a more stringent carbon standard than RPS. RPS compliance is no longer a binding constraint and thus do not have any associated compliance costs

