Portland General Electric
121 SW Salmon Street • Portland, OR 97204
portlandgeneral.com

July 7, 2023

Via Electronic Filing

Public Utility Commission of Oregon
Attention: Filing Center
P.O. Box 1088
Salem, OR 97308-1088

Re: LC 80 – Portland General Electric Company's 2023 Clean Energy Plan and Integrated Resource Plan Addendum: Portfolio Analysis Refresh

Dear Filing Center:

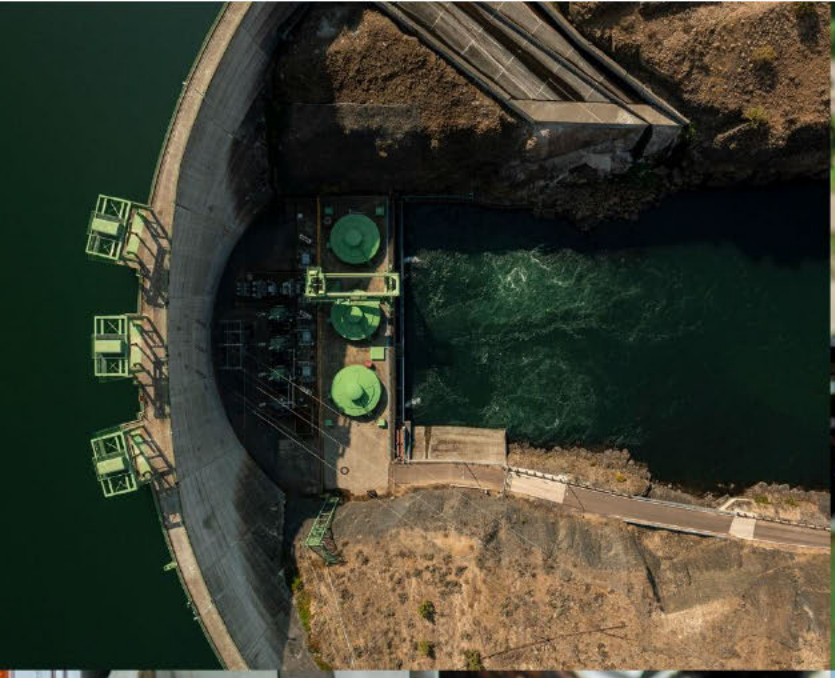
Enclosed for filing in the above-referenced docket is Portland General Electric Company's (PGE) Addendum: Portfolio Analysis Refresh (Addendum) to its 2023 Clean Energy Plan (CEP) and Integrated Resource Plan (IRP). The Addendum incorporates several input forecasts of demand and generation supply that are used to estimate system needs. The Addendum also includes PGE's reevaluation of its portfolio analysis based on this updated information. The updates provided in this addendum required updates to the CEP data template that accompanied the CEP/IRP. As such, a CEP data template addendum is being included with this filing.

Kristen Sheeran, PGE's Director of Sustainability and Resource Planning, leads PGE's CEP and IRP work. Please direct any questions or communications regarding these comments to: pge.opuc.filings@pgn.com.

Sincerely,

/s/ Riley Peck

Riley Peck
Senior Manager, Regulatory Strategy
Resource & Regulatory Strategy



2023 Clean Energy Plan and Integrated Resource Plan

Addendum: System Need & Portfolio Analysis Refresh

PGE

This document contains forward-looking statements, including those regarding implementation of our business plans, technology transitions, our business, strategies and financial performance, our offerings of new services, and other statements that are not historical fact, and actual results could differ materially from these forward-looking statements. Risk factors that could cause actual results to differ are set forth in the "Risk Factors" section, as well as other sections of our 2022 Annual Report on Form 10-K, available on our website at investors.portlandgeneral.com/financial information/sec-filings, as well as, or in addition to, other filings with the SEC. All forward-looking statements are based on management's estimates, projections, and assumptions as of the date of filing, and we undertake no obligation to update any such statements.

This document is based on the best available information at the time it was prepared but is subject to change without notice.

Portland General Electric Company
Integrated Resource Planning
121 SW Salmon Street
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Introduction

The first step in the development of the 2023 CEP/IRP was an estimation of long-term system needs. These needs are calculated as the difference between the system demand for electricity and the supply of existing and contracted generation to meet it. There are two main types of system need:[1,2]

1. *Energy need*: The average amount of system deficit expected over a typical year, expressed in average MW (MWa)
2. *Capacity need*: The resource deficit experienced in times of peak need, expressed in effective capacity (MW)

The 2023 CEP/IRP relies on many input forecasts of both future supply and demand to estimate this need. Since the preparation of the CEP/IRP analysis and its filing in March 2023, several of these forecasts have been updated. The first purpose of this Addendum is to introduce those updates and quantify their impacts on system need. While there are some off-setting effects described below, since the March 2023 filing there has been a sharp increase in nearly all input forecasts resulting in significantly higher system need. Each of the updated input forecasts are detailed in **Chapter 1, Input updates** and the resulting energy and capacity needs are detailed in **Chapter 2, Need changes**.

The second purpose of this Addendum is to reevaluate portfolio analysis based on this updated information. The filed CEP/IRP's portfolio analysis posed several core questions in resource planning. This Addendum asks if the answers PGE provided in the filed CEP/IRP still hold true given the updated input forecasts and the resulting increased estimated system needs. We find those main findings, filed at the end of March, are still valid and now, more supported by these updated input forecasts. In addition, our proposed path to compliance with 2030 emissions targets remains the same. PGE's decarbonization path still requires us to procure sufficient non-emitting energy and capacity resources to systematically reduce fossil fuel generation and purchases associated with Oregon retail load. Our procurement strategies and timing of RFPs will be updated to reflect this increased resource need. This increased resource need also further underscores the critical need to address regional transmission constraints. On-system resources like energy efficiency and community-based

[1] Previous IRPs focused on RPS need as well. However, the non-emitting generation need established by the emission reduction targets in HB 2021 is substantially greater than any applicable RPS constraints. While there was some information in the filed CEP/IRP, this document does not focus on RPS need as it does not drive resource need under any future modeled.

[2] PGE also estimates the flexibility need of the system. The relationship between the flexibility and capacity need is such that only the larger of the two drive resource decisions. Given that the capacity need is significantly higher than the flexibility need, flexibility need is not considered a driver of resource additions within current IRP modeling.

renewable energy (CBRE) resources each are identified as an important part of PGE's resource mix going forward. The increased system need still points to a linear reduction as the most appropriate choice of modeling emissions through 2030. While the size of the incremental resource additions does increase with system need, this Addendum supports the appropriateness of the answers from portfolio analysis and the construction of the Preferred Portfolio, which forms PGE's pathway to 2030 compliance. Similarly, the increase in resources identified in this Addendum do not change the structure of either our Action Plan or our pathway towards 2030. The proposed actions still rely on customer demand-side actions, CBRE acquisitions, increased transmission access, and new resources to meet energy and capacity needs.

Chapter 1. Input updates

Input forecasts create the basis of CEP/IRP estimation of system needs. Since the March 31, 2023 filing, several input forecasts have been updated. Additionally, several methodological changes have been made for this Addendum. These updated input forecasts and methodological changes and magnitudes of their changes are described below.

1.1 Load forecast

Generally, long-term forecasts of load are the first input to be finalized during the development of an IRP. For example, the 2019 IRP (filed in July 2019) finalized its forecast of load in September of 2018. The 2023 CEP/IRP used the March 2022 load forecast for most analysis but did include a sensitivity looking at the December 2022 load forecast as well. In this addendum PGE has updated the load forecast to the June 2023 vintage.

PGE's load forecast methodology includes near term and long-term components, as reflected in Table 99 of Appendix D in the filed CEP/IRP. PGE updates its long-term model specifications during the IRP cycle with periodic updates to the stakeholder audience. These long-term models have not changed as compared to those models presented in the 2023 CEP/IRP.

The near-term load forecast model is updated more frequently, several times each year as new information is available. In the past 18 months, PGE's industrial class load has grown rapidly, at a rate of 10.6 percent in 2022 and 8.3 percent in the first quarter of 2023. The primary driver of PGE's increased load forecast is to reflect rapid industrial growth and growing demand of data centers in PGE's service territory.

In addition, PGE has made several refinements to its near-term load forecast methodology. The data aggregation has been changed to reflect residential dwelling type and non-residential rate schedule groupings rather than previous dwelling and heat type groupings and industry (NAICS) segment non-residential groupings. The new model structure and additional months of data included allow for a simplified approach to capturing the impact of COVID-19. In the commercial models, there is no longer a need for manual indicators, rather economic drivers adequately capture the impact in the historical period.

In March 2022 PGE assumed that the long-term impacts of COVID-19 on residential usage would be one-third of the initial impact. This assumption, along with other decreasing trends in residential use per customer, resulted in a forecasted 4.4 percent decrease in use-per-customer for 2022. As time has passed and more usage data has become available, initial lockdown is now controlled for in the historical period and the uptick since this period is modeled as a permanent shift. Specifically, the early impacts of COVID-19 are captured by

indicating the first six months of the pandemic when lockdowns were at their peak and an indicator variable, which begins in April of 2020 and continues into perpetuity, is interacted with weather variables. These interactions account for the change in residential customers' response to weather due to increased time spent at home. This update in assumptions does not change the long-term growth rates of residential customers but rather resulted in a level shift in the near-term usage as we no longer assume a drop in usage due to the unwinding of COVID-19. These changes are summarized in **Table 1** below.

Table 1. Key updates in input assumptions and model structure

	March 2022 Forecast	June 2023 Forecast
Historical Data	Ending January 2022	Ending April 2023
Economic Forecast	OEA February 2022	OEA May 2023
COVID-19	Multiple complex indicator variables Assumption of greater return to pre-pandemic levels for residential customers	Simplified drivers Assumes that status quo has been reached and residential usage will not see a drop off due to return to office
Residential Groups	Dwelling Type & Heat Type	Dwelling Type
Non-residential Groups	NAICS (18 models)	Rate Schedule (5 models)

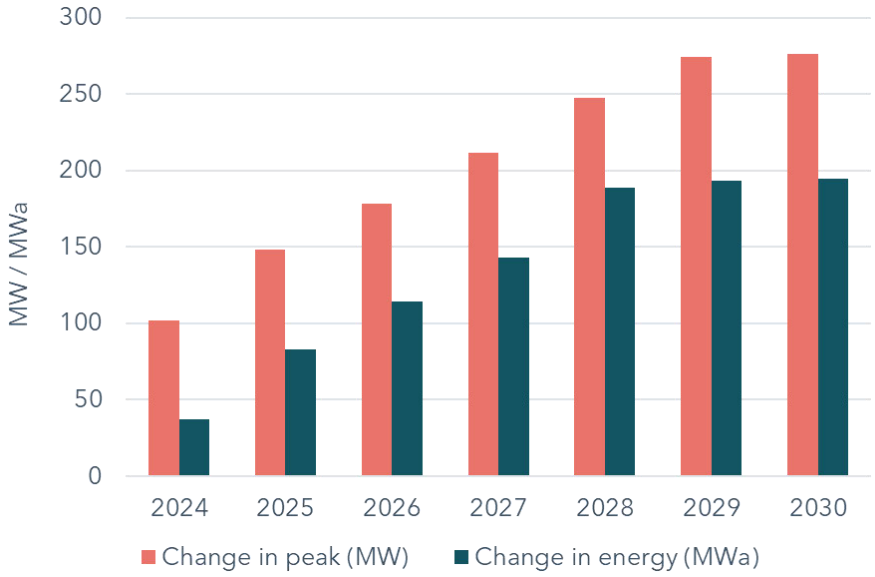
The result of this update is summarized below by replicating the average annual growth rates as shown in **Table 2**. Since only the 5-year portion of the model is updated, these changes are front weighted.

Table 2. Reference Case top down econometric 20-year AAGR (2023-2042)

Vintage	Total Energy	Peak	Residential	Commercial	Industrial
March 2022	1.2%	0.8%	0.5%	0.0%	3.5%
June 2023	1.6%	1.1%	0.6%	0.0%	3.9%

Aggregated, these changes lead to significantly higher forecasts of system needs. The magnitudes of these changes in both energy and capacity (in MWa and MW) are displayed below in **Figure 1**.

Figure 1. March 2022 to June 2023 load forecast changes



1.2 Distributed energy resources

PGE continues to experience growth of distributed energy resources (DERs) on the system driven by strong customer demand and favorable federal, state, and local policies. Like the load forecast described in **Section 1.1, Load forecast**, the DER forecast is a key input to CEP/IRP analysis at the start of the modeling workflow. Like the load forecast, the 2023 CEP/IRP used the March 2022 vintage of the DER forecast that was filed in the DSP Part 2 for most analyses.[3]

The most notable changes in policy that affect the DER forecast since the vintage used in the filing of the 2023 CEP/IRP are the Inflation Reduction Act (IRA) and Oregon's adoption of the Advanced Clean Cars II rule.[4] This section presents results from our most recent DER forecast update.

[3] Like the load forecast described in **Section 1.1**, the Low, Reference, and High Need Futures leveraged the March 2022 DER forecast vintage, but additional sensitivity cases were conducted with additional DER growth as described in Section 6.10.22 of the 2023 CEP/IRP.

[4] The 2023 CEP/IRP accounted for IRA influence on supply-side technology cost changes driven by the legislation. PGE did not include explicit accounting of the IRA impacts on DER until the forecast update described in this section. However, some of the DER sensitivity cases in the 2023 CEP/IRP did account for large DER growth.

1.2.1 DER forecast update overview

AdopDER is PGE's enterprise DER modeling tool used to forecast DER adoption and calculate expected load impacts for critical PGE business functions. PGE uses the tool to forecast DER growth and potential impacts from the bottom-up, aggregating site-level adoption up to the feeder and ultimately the bulk power system level. The tool is consistently used to inform DSP forecasting, the CEP/IRP, corporate load forecasting, and various other PGE functions about the expected impact stemming from customer DER adoption and consequent changes to overall system energy demand patterns.

AdopDER is a unique hybrid model for assessing DER growth, leveraging top-down customer growth estimates determined by the corporate load forecast, and pairs this with bottom-up insights about customer behavior and DER resource availability to inform an overall picture of DER adoption. For more information on AdopDER and how it interacts with the corporate load forecast, see Section 3.5 of the DSP Part 2.[5]

The full suite of potential impacts of the IRA on DER adoption will take more time to assess and understand as the longer-term provisions and supply-chain responses come into clearer focus, such as onshore manufacturing incentives and requirements. Our DER forecast update focuses on the most near-term elements within the legislation that impact our forecast methodologies.[6] However, across all DER types we do see a steady increase over time in terms of adoption following this update. The main areas of change were:

- Transportation electrification update: reflecting passage of Oregon DEQ's Advanced Clean Cars II rule and the EV tax incentives in the IRA, as well as updated DMV registrations and econometric forecast calibration
- Solar PV and storage update: reflecting recent acceleration of PGE's interconnection queue and changes in IRA regarding the Investment Tax Credit (ITC)
- Building electrification update: reflecting increased incentives stemming from policy changes such as the IRA

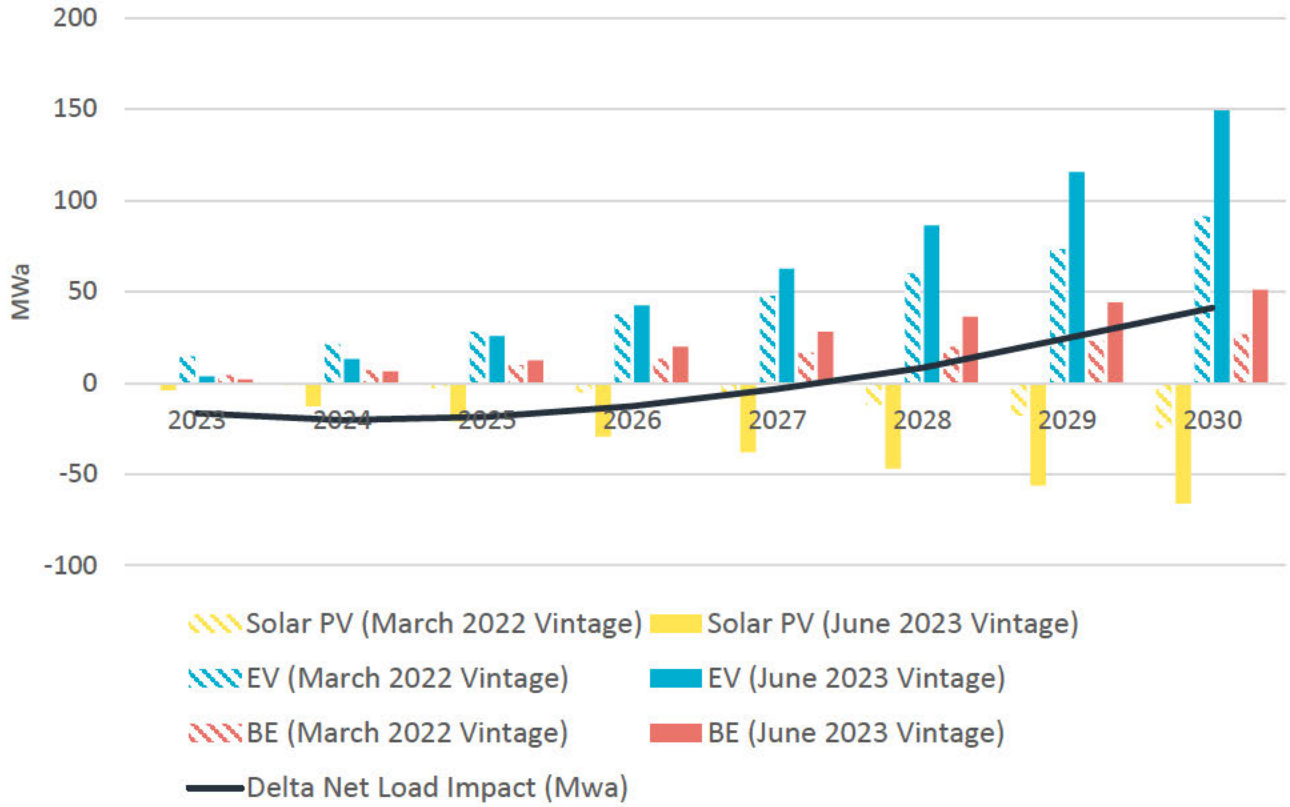
[5] DSP Part 2 is available at: https://downloads.ctfassets.net/416ywc1laqmd/2Fr2nVc4FKONetiVZ8aLWM/b209013acfedf1125ceb7ba2940bac71/DSP_Part_2_-_Full_report.pdf

[6] This DER forecast update includes only solar PV, transportation and building electrification. Demand response (DR) programs, including distributed standalone storage, are not reflected here. Because these resources are modeled in the technical achievable potential within the IRP, changes to the selection of those resources are addressed through portfolio modeling.

1.2.2 DER forecast results

Figure 2 shows the high-level DER changes by category from the March 2022 DER forecast vintage that informed most of the 2023 CEP/IRP analysis compared to the updated June 2023 DER forecast vintage.[7] The net annual energy impact is a decrease until 2027 and a net increase beginning in 2028.[8]

Figure 2. Aggregated forecasted distributed energy resource changes



In the initial years, the forecast is slightly reduced compared to the previous forecast used in the CEP/IRP because of the updated customer adoption and near-term market trends that were recalibrated, while longer-term the growth in electrification is partially offset by an increase in the solar adoption forecast. In aggregate, the combined DERs will add 41 MWa of

[7] Note these MWa represent incremental additions starting from the base year of the forecast (2022) in order to separate from the DER that are effectively embedded in the corporate load forecast. Therefore, they do not represent the total DER on the system.

[8] This is strongly influenced by the solar PV update, which has the highest percentage change between the forecast vintages, though in the longer term less energy impact compared to electrification. The relatively higher change in the distributed solar forecast is due to the combined influence of adding IRA incentives as well as accounting for the recent uptick in rooftop solar applications that continued throughout 2022 even before the passage of the IRA.

additional load to our baseline corporate load forecast by 2030, increasing overall energy need.

Although the impact of DERs that add load (e.g., transportation electrification) or generation (e.g., distributed solar) can offset each other from an average annual energy demand perspective, integrating these growing DERs interconnected to the distribution grid will require careful planning and integration to minimize system costs and maximize their potential for shifting load and providing additional grid services as discussed in PGE's DSP Part 2.

1.3 2021 All-Source RFP

The 2021 All-Source RFP began with acquisition targets of 500 MW of capacity and up to 150 MWa of energy to meet the 2025 resource adequacy deficit.[9] The energy target was later increased to up to 250 MWa in the UM 2166 docket, and the capacity target decreased to 388 MW.[10]

The 2023 CEP/IRP was published before the conclusion of the 2021 All-Source RFP. To avoid adding incremental resources to fill need that would be met with resources acquired in that RFP, the CEP/IRP relied on a proxy set of resources in its analysis. By the filing of the CEP/IRP the company did have certainty of one resource (the Clearwater wind project), which is included in its analysis. The remainder of the RFP proxy included sufficient solar and stand-alone storage to meet the remaining RFP acquisition targets (this amounted to 410 MW of generic solar resource and 400 MW of four-hour batteries). These resources are included in the projected energy load-resource balance displayed in the filed CEP/IRP's Figure 42.

In May 2023 PGE announced the conclusion of the 2021 RFP. In addition to Clearwater Wind, the RFP acquired three four-hour battery projects totaling 475 MW. The difference between the RFP proxy and the actual resources acquired in the 2021 All-Source RFP are displayed in **Table 3**.

Table 3. 2021 RFP proxy vs actual 2021 All-Source RFP acquisitions

2023 CEP/IRP 2021 RFP proxy		2021 RFP procurement	
Resource	Nameplate MW	Resource	Nameplate MW
Clearwater Wind	311	Clearwater Wind	311
Proxy solar	410	Troutdale 4-hr battery	200
4-hr battery	400	Seaside 4-hr battery	200
		Evergreen 4-hr battery	75

[9] UM 2166, page 1 & 2: https://edocs.puc.state.or.us/efdocs/HAA/um2166haa173953.pdf
[10] UM 2166, Order 22-315, page 5.

Updating from the RFP proxy to using the actual projects has three primary impacts on the PGE planning models:

1. *Energy need increases:* The need to acquire non-emitting energy resources, like wind and solar, increases as fewer renewables were acquired than included in the proxy.
2. *Winter capacity need decreases:* The additional battery (75 MW more in the actual than the proxy) provides more winter capacity than the proxy solar resources.[11]
3. *Summer capacity need remains:* The additional capacity provided by the increased storage is roughly offset by the reduction in capacity from the RFP proxy's solar.

1.4 Storage resources

Throughout the cycle of charging and discharging a battery, some energy is lost from the roundtrip efficiency of the battery system. As the energy lost by current quantities of storage is not substantial, PGE has not previously accounted for them in energy need accounting. However, as large quantities of batteries are planned to be added to the system, the losses are projected to be non-trivial. For this Addendum energy losses have been added for the 475 MW of RFP storage resources and the 23 MW of existing storage PPAs. Losses were calculated using simulated average annual capacity factors from Aurora of -1.4 percent for the 4-hr storage proxy resource.[12] Accounting for energy losses from storage results in an increase in energy need on average by 7 MWa per year. The capacity need model (Sequoia) already has incorporated storage losses into need and ELCC calculations; as a result no adjustments are needed to the capacity need values for storage losses.

1.5 Qualifying facilities update

The 2023 CEP/IRP uses qualifying facility inputs (facilities contracted under PGE's Schedule 201 or Schedule 202) that were updated in December 2022. From December 2022 to June 2023 there have been changes to qualifying facilities that have resulted in an approximately 161 MW nameplate net decrease of generation resources. The majority (160 MW) of this change is due to solar qualifying facilities terminating their contracts with PGE (the remaining 1 MW is from correcting IRP input errors).

[11] Those solar resources were assumed to use conditional-firm transmission, which reduced their capacity contribution values.
[12] The market simulation that creates these capacity factors (Aurora PZM model) limits storage cycling to an average of once per day on an annual basis.

The impact to PGE's planning models of switching to updated qualifying facility inputs is increased need for non-emitting resources and increased need for capacity resources in both the summer and winter.

1.6 Methodological corrections

1.6.1 Thermal output

The 2023 CEP/IRP uses the Aurora PZM model (PZM) in conjunction with the intermediary GHG model to determine how much energy can be retained from CO_2e emitting sources for retail load service. For this Addendum two corrections were made in the PZM:

1. Minimum heat rates in PZM were adjusted for several existing thermal plants (Beaver, Carty, Coyote, and Port Westward 1)
2. The nameplate capacity associated with Beaver was corrected

These corrections altered how those resources are economically dispatched in PZM, and this impacted how much energy is estimated to be retained from CO_2e emitting sources for retail load service. The impact of these changes is shown in **Table 4** which displays differences between the Addendum values and the 2023 CEP/IRP values for CO_2e associated energy retained for retail load service (Reference Case price future (RRRR)). The changes in owned generation, which are primarily changes associated with Beaver, are mostly balanced by market unspecified purchases. In year 2030, the total change in energy retained for retail load service from CO_2e emitting sources is two MWa fewer than in the CEP/IRP.

Table 4. Changes to energy retained for retail load service from CO2e emitting sources

RRRR	Beaver	Carty	Coyote	PW1	PW2	Colstrip (20%)	Market Unspec.	Other	Total
2024	(34)	0	2	(1)	0	0	39	(2)	6
2025	(31)	4	4	1	1	2	25	(0)	5
2026	(18)	5	4	4	1	3	2	0	2
2027	(11)	3	2	2	1	2	1	0	1
2028	11	(2)	(1)	(1)	(1)	(1)	(7)	(1)	(3)
2029	6	(1)	(0)	(1)	(0)	(0)	(5)	(1)	(2)
2030	5	(1)	(0)	(1)	(0)	0	(4)	(1)	(2)

Table 5 shows the annual CO_2e emissions in the Preferred Portfolio from the Addendum and the 2023 CEP/IRP. Note that there is no change in the retail load service CO_2e emissions values (both documents use the same CO_2e glidepaths).

Table 5. CO2e from retail load service and total emissions (retail + wholesale)

All values in million metric tons of CO_2e						
	Retail load CO_2e			Total (retail + wholesale) CO_2e		
Year	2023 CEP/IRP	Addendum	Difference	2023 CEP/IRP	Addendum	Difference
2024	5.31	5.31	0.00	7.17	7.17	0.00
2025	5.05	5.05	0.00	6.91	6.84	(0.07)
2026	4.36	4.36	0.00	6.75	6.63	(0.12)
2027	3.68	3.68	0.00	6.71	6.60	(0.11)
2028	2.99	2.99	0.00	6.71	6.81	0.09
2029	2.31	2.31	0.00	6.43	6.50	0.08
2030	1.62	1.62	0.00	4.42	4.50	0.08

1.6.2 Light load hour market

The 2023 CEP/IRP adequacy model (Sequoia) includes a light load hour market for resource adequacy calculations. The total quantity modeled available from this market varies between 400-999 MW depending on load, with higher load days (which are associated with more extreme weather) seeing less availability than lower load days. The hours that define the light load hour market in the 2023 CEP/IRP were carried over from the 2019 IRP Update and are hour ending 23 to hour ending 6 Pacific Standard Time, Monday through Saturday. However, light load hours are more commonly defined as hour ending 23 to hour ending 6, Prevailing Time.[13] The difference in those two definitions mostly impacts summer adequacy modeling since summer months occur during Pacific Daylight Time (rather than Pacific Standard Time). PGE tested the capacity impact of moving the light load hour market to match Prevailing Time for the months of April through October and saw a 15 MW decrease in summer capacity need and a zero change in winter capacity need, for year 2026.[14] This shift in light load hour market availability was built into this Addendum and only impacts the capacity need values (not the energy need values).[15]

There is a need to better understand power market availability at a more refined level than the traditional heavy load and light load hour split. For example, the Power Council chose to redefine heavy and light load hours for modeling purposes in the 2021 Power Plan due to

[13] Light load hours typically include holidays as well, however holidays are not specified in Sequoia's market setup.
[14] The months of March and November were left in standard time. This was done since adequacy issues in those two months are likely due to cold weather which is more likely in early March or late November, time periods that are mostly in standard time.
[15] The full set of summer years were rerun for this Refresh. The full winter adequacy years were not rerun after test years (reference case years 2026 and 2030) showed zero change. This change only impacts the winter market in October, a month that typically has few (if any) adequacy challenges in the model.

changing market dynamics.[16] For future resource adequacy work, the CEP/IRP team will work internally with market facing teams to discuss which hours market power will most likely be available.

1.6.3 Annual Revenue-requirement Tool

PGE developed its Annual Revenue-requirement Tool (ART) as part of the 2023 CEP/IRP. ART is the final step in the analysis workflow and leverages data from several upstream models including the intermediary GHG model (iGHG). PGE identified an error in the data that is transferred between the iGHG model and ART. Specifically, PGE identified that costs associated with market purchases that are then sold in the wholesale market were not included in the data sent to ART. However, the benefits associated with these wholesale sales on the revenue requirement were included. Thus, previous ART results partially undercounted costs associated with market purchases that remain constant across portfolios with the same decarbonization glidepath.

These unaccounted costs associated with market purchases from both specified and unspecified sources are highest in 2024 and reduce over time as dependence on market purchases that contain emissions reduces in each decarbonization glidepath. Thus, the change in overall revenue requirement is largest in 2024 and reduces over time.

This change does not impact the comparison between portfolios that have the same glidepaths such as the annual price impact comparison between the different energy efficiency portfolios. However, since the change has the highest impact on early years such as 2024 and 2025, the rate of change of the normalized revenue requirement ($/MWh) decreases. In other words, rates increase at a less-steep rate compared to the graphs provided in the filed IRP.

[16] The Power Council, for purposes of the 2021 Power Plan, defined heavy load hours "as hours ending 7 pm through 10 pm on weekdays; light load hours are all others."
https://www.nwcouncil.org/2021powerplan_cost-and-benefits-energy-efficiency-resources/

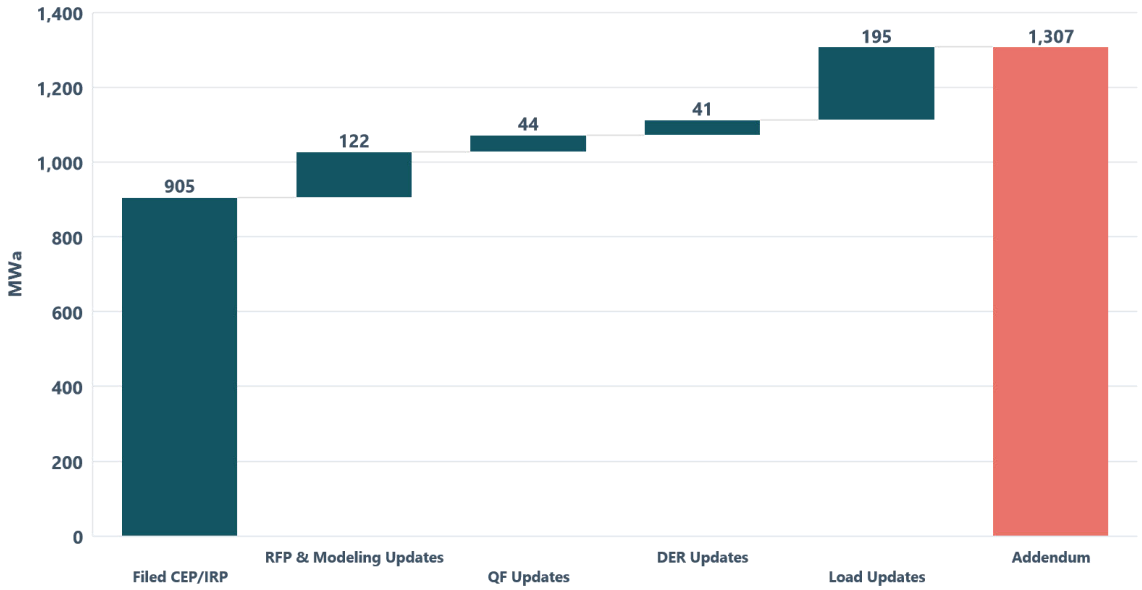
Chapter 2. Need changes

The resulting changes to energy and capacity needs from the updates to input forecasts and modeling changes are described below.

2.1 Energy need

Energy need describes PGE's resource needs in terms of the balance between the average amount of electricity demanded and supplied each year. Since the 2023 CEP/IRP, PGE's estimate of energy need has changed due to updates to the factors described in **Chapter 1, Input updates**.[17] The drivers of change behind each of these updates are described in previous sections. The incremental impact of each update and the resulting updated 2030 Reference Case energy need are shown in **Figure 3**. The combined impact of the updates increases PGE's forecasted 2030 Reference Case energy need from 905 MWa to 1307 MWa.

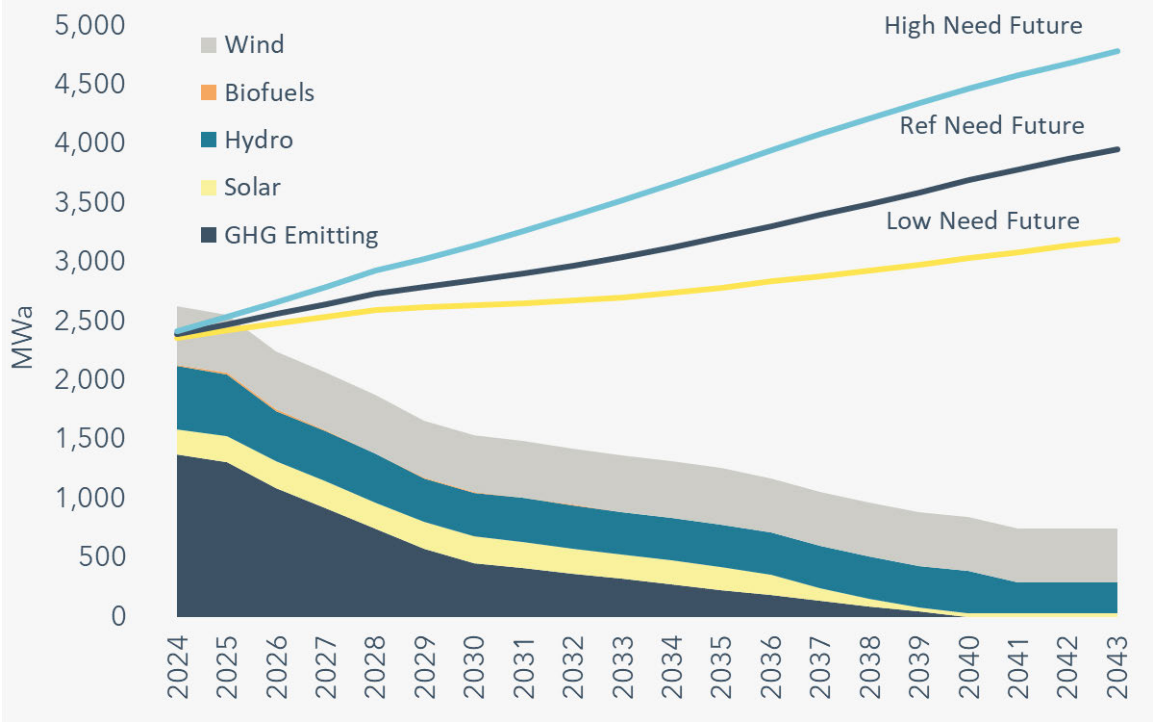
Figure 3. Incremental impacts of updates on 2030 Reference Case energy need



[17] In addition to the changes described in **Chapter 1** an adjustment was made to the forecast of community solar in PGE's energy accounting to improve alignment with PGE's capacity modeling in Sequoia, which resulted in a small increase (1.7 MWa) in 2030.

Figure 4 shows PGE's updated energy-load resource balance, which compares the forecast of Oregon retail load and the amount of energy allowed to serve retail load, assuming a linear decarbonization glidepath. The energy available to serve retail load is the combination of energy from GHG-emitting sources retained for retail sales and the total energy from non-emitting sources. The quantity of allowed energy does not include new supply-side resources outside of those from the 2021 RFP and the continued acquisition of energy efficiency, demand response and other demand-side resources. Before any additional incremental resource additions, Reference Case retail load is expected to surpass the allowed energy on PGE's system starting in 2026.

Figure 4. Energy-load resource balance in linear GHG glidepath in Reference Case future[18]



[18] For convenience of display, the negative energy associated with storage is represented in **Figure 4** as an increase in load.

2.2 Capacity need

Capacity needs describe the effective capacity, in MW, required to achieve a resource-adequate power system. These estimates come from PGE's resource adequacy model, Sequoia.

The impact of the changes that have occurred from when CEP/IRP assumptions were locked to this Addendum is a net increase in the need for resources that provide effective capacity. The elements that create this changing need are broken out for summer and winter in **Figure 5** and **Figure 6** below for the year 2028 (the year targeted by the CEP/IRP Action Plan). Note that some updates impact one season more than the other. For example, moving from 2021 RFP proxies to the actual resources selected reduces the need for winter capacity but has little impact on summer capacity need. For both winter and summer, the largest driver of increased capacity need is the updated load forecast. In 2028, the 1-in-2 peak forecast, on an annual basis, is roughly 250 MW higher in the Addendum than in the CEP/IRP.

Figure 5. Summer 2028, changes in capacity need

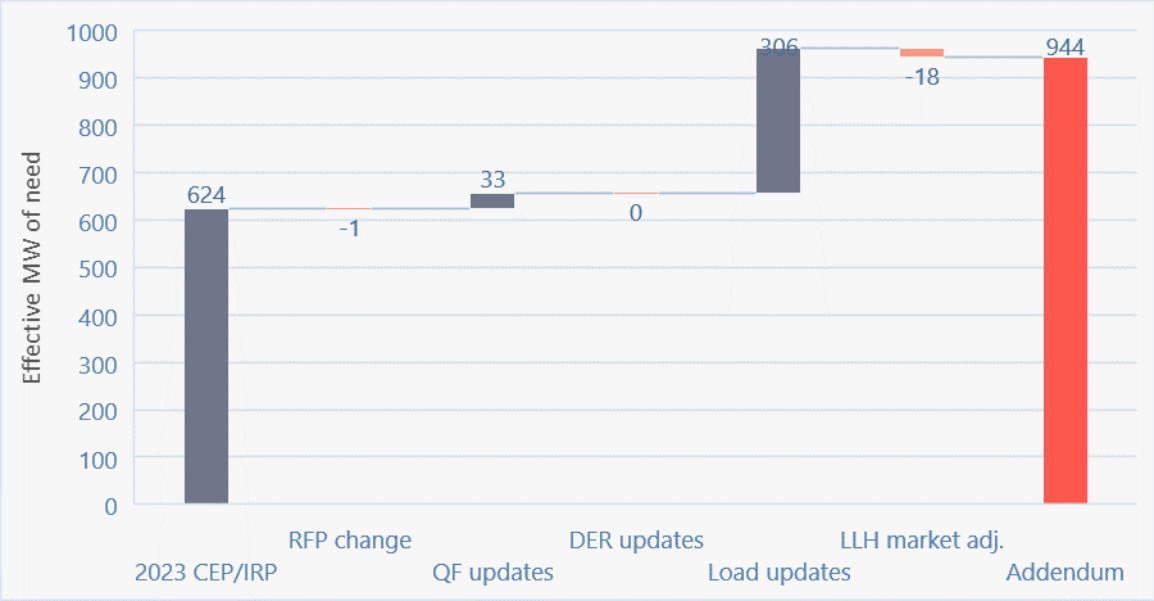


Figure 6. Winter 2028, changes in capacity need

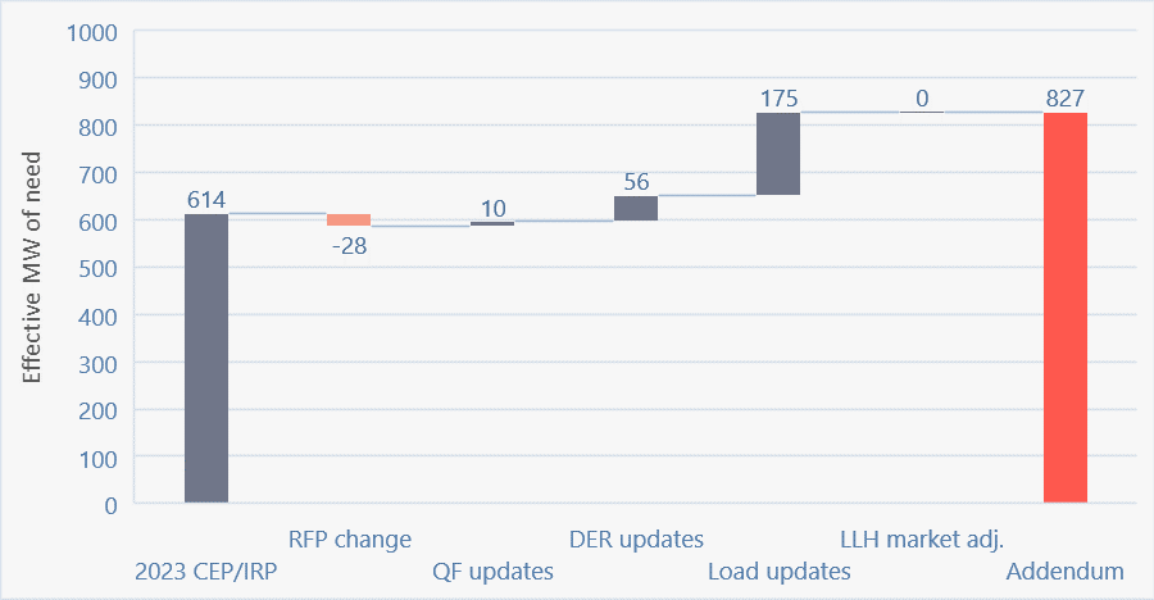
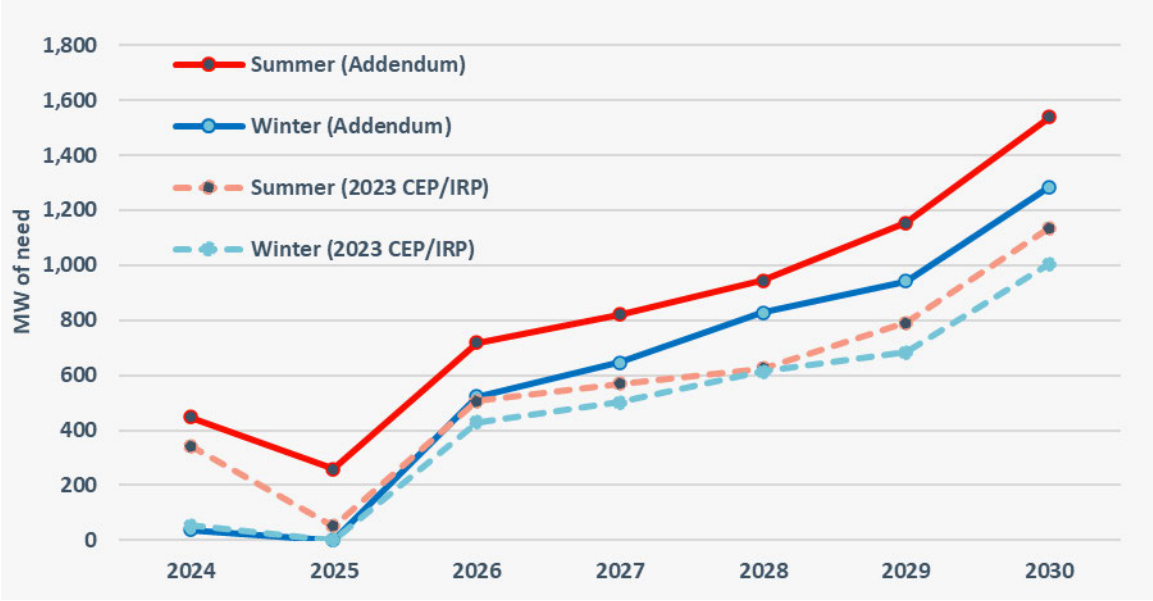


Figure 7 shows the CEP/IRP capacity need and the Addendum values for year 2024 through 2030. Need increases over time due to load growth, contract expirations, and resource exits. Need increases sharply in 2026 due to expiring contracts, and again in 2030 due to the assumption that PGE will stop taking power from Colstrip at the end of 2029.

Figure 7. Capacity need comparison



Chapter 3. Portfolio analysis

PGE reevaluated portfolio analysis based on the updated estimates of need provided in **Chapter 2, Need changes** and methodological change described in **Section 1.6, Methodological corrections**. Additionally, we made two portfolio analysis corrections discussed earlier in the CEP/IRP docket.[19] The changes to portfolio analysis are described below, then the results to all changed inputs to all modeled portfolios and the Preferred Portfolio follow after.

3.1 Hybrid and pumped storage resources

As mentioned in PGE's Round 0 comments, PGE has identified (with the help of RNW and Swan Lake and Goldendale) two corrections to make in portfolio analysis.

The first correction addresses the failure to make pumped hydro storage available for selection in the Preferred Portfolio. PGE agrees that pumped hydro should not be included as an emerging technology and has made it available for selection in the Preferred Portfolio in this refreshed analysis. In this analysis, the full 2000 MW of known potential projects in the region (Swan Lake 400 MW, Gordon Butte 400 MW and Goldendale 800 MW) is made available for selection in the Preferred Portfolio starting in 2028.

The second correction addresses an error in the capacity factors of hybrid resources (solar plus storage) used in portfolio analysis in the filed CEP/IRP. The error, which only affected hybrid resources, resulted in capacity factors that were 33 percent to 40 percent of what they should have been. As a result, the potential energy benefits of hybrid resources were underestimated in modeling. This refresh of portfolio analysis uses the corrected hybrid capacity factors. **Table 6** shows both the corrected capacity factors, used in this analysis, and the capacity factors used in the filed 2023 CEP/IRP.

Table 6. Average annual capacity factors of hybrid proxy resources

	Update (corrected)	Filed CEP/IRP (with error)
Christmas Valley Hybrid 1	28.6%	9.5%
Christmas Valley Hybrid 2	29.2%	11.7%
McMinnville Hybrid 1	22.3%	7.4%
McMinnville Hybrid 2	23.0%	9.2%

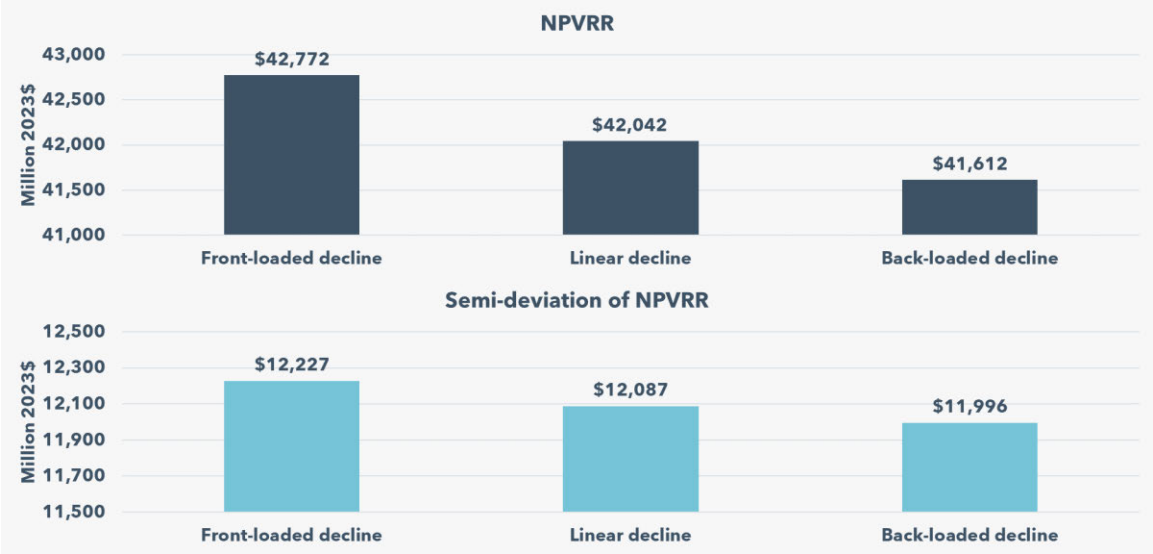
[19] See Section 3.6, Pumped hydro characteristics and Section 11.6, Hybrid resources of PGE's Round 0 comments. Available here: https://edocs.puc.state.or.us/efdocs/HAC/lc80hac102443.pdf

3.2 Portfolio analysis

Portfolio analysis in the 2023 CEP/IRP was organized around several key questions in resource planning. After incorporating the updated input forecasts, the findings regarding those key questions are robust to the updates and have not changed.

Decarbonization glidepath: Refreshing estimates of system needs provides supporting evidence that the linear decline still represents the best balance between decarbonization and portfolio cost and risks. Comparison of the cost and risk metrics of the decarbonization glidepath portfolios shows that, consistent with the results in the filed CEP/IRP, the cost and risk of the 'Linear decline' portfolio falls in between those of the 'Front-loaded decline' and 'Back-loaded decline' portfolios (**Figure 8**). While the back-loaded decline produces lower portfolio cost and risk metrics, it still has drawbacks associated higher cumulative emissions and procurement risk from waiting to procure the resources necessary for HB 2021 compliance. Conversely, while the front-loaded decline produces lower cumulative emissions, it brings higher costs than the linear glidepath.

Figure 8. Cost and risk metrics of decarbonization glidepath portfolios



Transmission need: Increasing system resource need exacerbates the need for transmission to move off-system generation to load. The informational portfolio with no transmission upgrades ('No Upgrades') displays the estimated first year where PGE would not be able to

add sufficient resources without some increase in transmission availability.[20] This date is displayed in **Table 7** which compares the 'No Upgrade' portfolio results from the filed CEP/IRP to the updated results. The first year of transmission need has shifted from 2029 to 2028, and the size of the need in 2030 has increased from 768 MW to 1,658 MW.

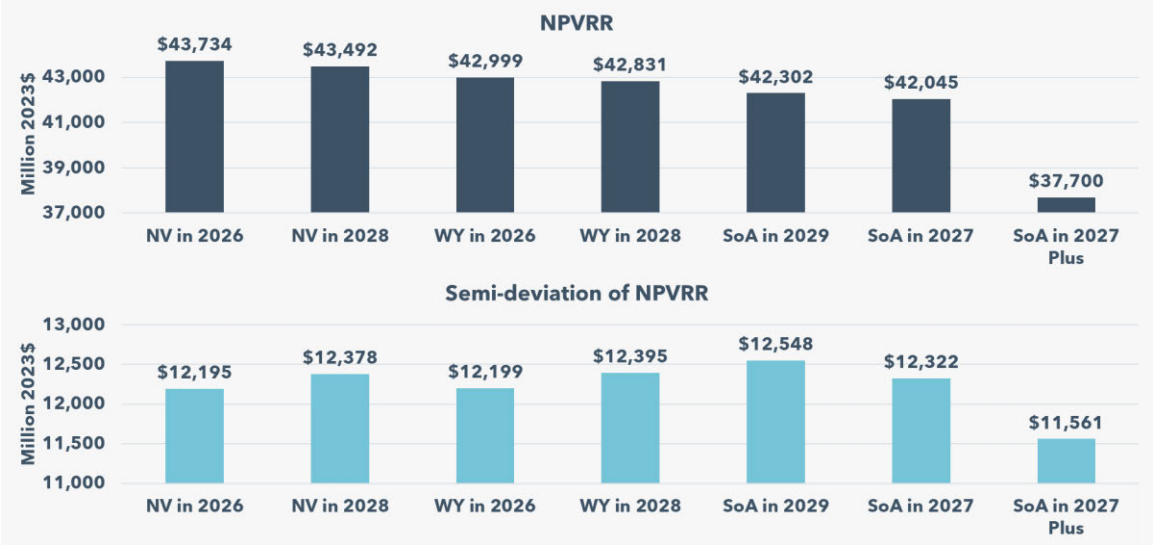
Table 7. Estimated Reference Case transmission need

	Estimated transmission need (MW)	
Year	**2023 CEP/IRP**	**Updated Results**
2026	0	0
2027	0	0
2028	0	355
2029	159	1,051
2030	768	1,658
2035	3,005	4,568
2040	7,468	9,403

Additional Transmission Resources: Having access to a wider geographic area of resources leads to decreased cost and risk. Consistent with the findings in the filed CEP/IRP, the 'SoA in 2027 plus' portfolio, which allows access to the largest amount of transmission resources, produces the lowest cost and risk amongst the transmission timing portfolios (**Figure 9**). These results demonstrate the benefits of having more transmission options available. Both 'SoA in 2027' and 'SoA in 2029' have lower cost than the WY and NV transmission expansion portfolios, reinforcing the finding of value in pursuing options to upgrade the existing transmission system to expand access to renewable resources in the PNW. These findings reaffirm the inclusion of all available transmission options in the Preferred Portfolio.

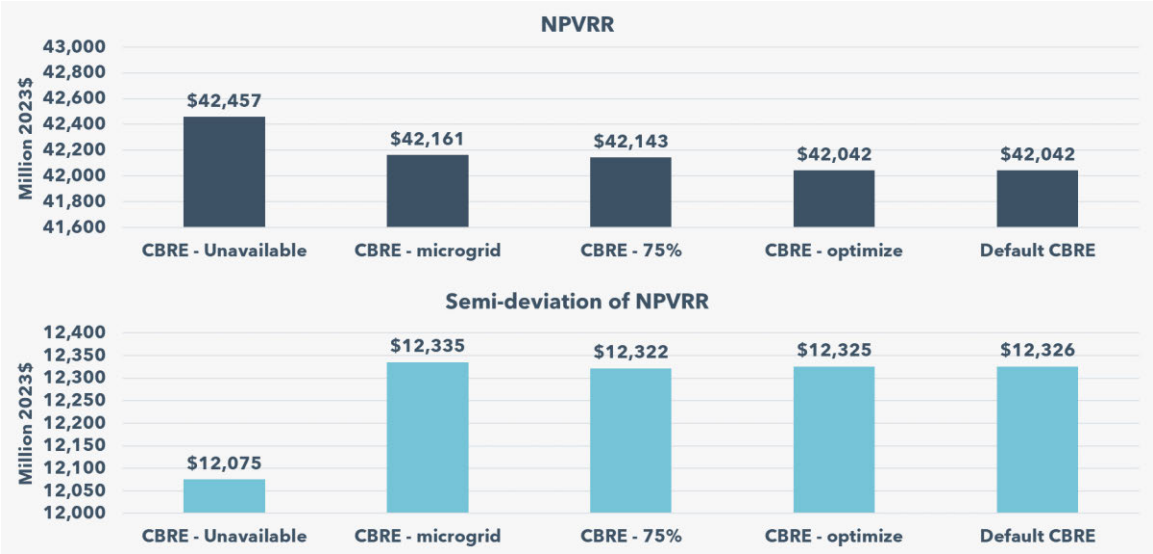
[20] The portfolio is considered informational because it does not represent an actionable set of resource actions for PGE. It does provide a useful demonstration that the current forecasts of transmission capacity are insufficient to meet system needs.

Figure 9. Cost and risk metrics of transmission timing portfolios



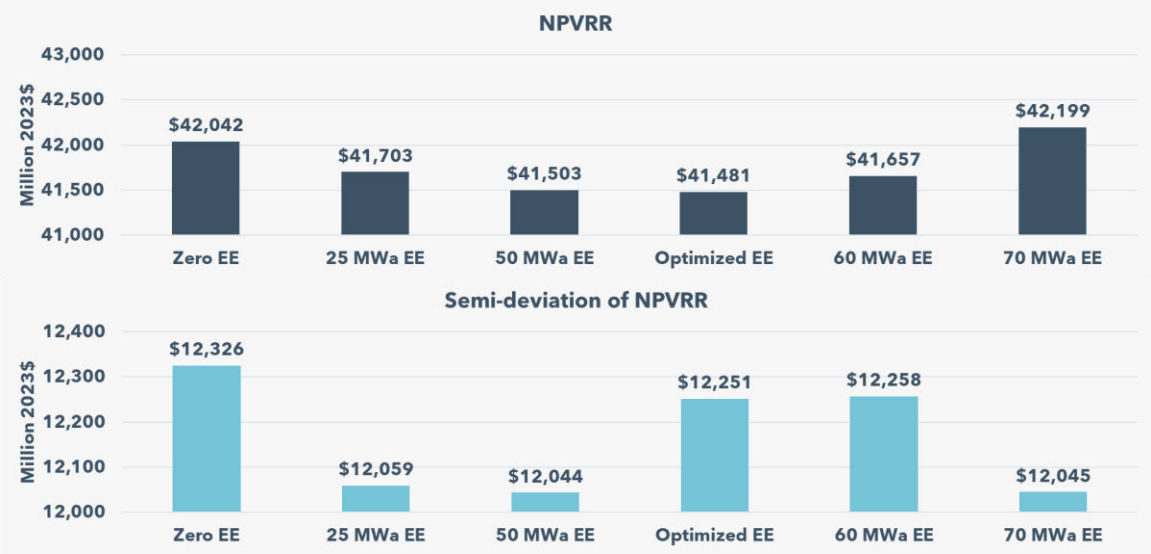
Community-Based Renewable Energy: The addition of CBREs to PGE's system lower portfolio cost and the full potential of 155 MW are added when the model is able to optimize their selection. Consistent with findings in the filed CEP/IRP, the 'CBRE – optimize' and 'Default CBRE' portfolios, which both add the full 155 MW of CBRE resources, produce the lowest costs. This finding demonstrates potential for CBREs to lower costs in a transmission-constrained environment, while maximizing the provision of community benefits (**Figure 10**). Consistent with these updated results, the full 155 MW of CBREs are included in the Preferred Portfolio.

Figure 10. Cost and risk metrics of CBRE portfolios



Energy Efficiency: The increased need increases the value of non-emitting generation resources. As in the filed CEP/IRP, additional quantities of EE can lower long-term cost and risk. The optimized EE portfolio elects to add 53 MWa of additional EE. As shown in **Figure 11**, increasing the amount of EE added decreases costs up to a point, suggesting that there are additional quantities of EE beyond those identified as cost-effective using avoided cost outputs from the 2019 IRP update that can help meet energy needs while lowering long-term portfolio costs.

Figure 11. Cost and risk metrics of EE & DR portfolios



However, as detailed in the filed CEP/IRP there are near-term cost impact implications associated with EE that must be taken into consideration. **Figure 12** shows that relative to a portfolio without any additional EE, including additional EE results in higher near-term cost pressure. PGE notes that the increase in dependence on both transmission market access resources and generic resource because of higher resource needs, reduce the relative increase in near term cost stemming from energy efficiency. Thus, compared to the analysis that was filed in the CEP/IRP, we see a smaller increase in near-term cost especially in 2029 and 2030. Since the underlying phenomenon that ties the addition of EE to increase near term rate pressure is policy based, the directional insights do not vary from the filed CEP/IRP. Reiterating the policies that drive this interaction, first, unlike other assets the additional EE is not financed or securitized, so the full cost is incurred before the generation starts. Second, EE decreases retail sales which leads to increased costs per unit of sales. Aggregated, these two effects lead to much higher near-term cost increases than the relevant comparators. While these policies have been in place for many years, the fast ramp in acquisition required exacerbates the near-term impacts of these policies. PGE recognizes that different rate mechanisms could reduce the influence of the near-term price impact. As a result of the

findings, the Preferred Portfolio does not include additional EE beyond the amount found to be cost-effective using avoided cost outputs developed from the 2019 IRP.

Figure 12. Yearly costs per MWh for additional EE portfolios

3.3 Preferred Portfolio

The cumulative resource additions from 2024 through 2030 in the Preferred Portfolio are shown in **Table 8**. Notable outcomes of the resource build include:

- The updates to energy and capacity need forecasts resulted in a larger resource build (and associated cost and risk metrics) in the Preferred Portfolio.
- The correction to hybrid capacity factors has resulted in the model shifting to selecting hybrid resources rather than standalone storage and solar. 1010 MW of hybrid resources are added through 2030.
- All 800 MW of available transmission expansion are selected by 2030. This includes 400 MW of WY wind and 400 MW of NV solar.

- The model must now rely on 251 MW of the Generic VER resource in 2030 to meet needs.
- Pumped hydro storage is not added in the 2024-2030 timeframe. The full 2000 MW of available pumped hydro are added in 2040.

Table 8. Cumulative resource buildout in Preferred Portfolio (MW)

	2024	2025	2026	2027	2028	2029	2030
Wind	0	0	690	1090	1128	1528	1528
Solar	0	0	0	0	0	153	400
Hybrid	0	0	299	299	869	1010	1010
Battery Storage	0	0	0	0	0	0	0
Pumped Hydro Storage	0	0	0	0	0	0	0
CBREs	0	0	66	85	110	133	155
WY Tx	0	0	0	0	0	400	400
NV Tx	0	0	0	0	0	153	400
Generic VER	0	0	0	0	0	0	251
SoA Tx	0	0	0	400	400	400	400
Additional EE & DERs	0	0	0	0	0	0	0
Non-GHG-Emitting Contract Extension	0	0	200	200	200	200	200
Cost-effective EE (MWa)*	30	60	90	120	150	183	216
Cost-effective DR*	133	162	183	199	211	218	228
Clearwater Wind **	311	311	311	311	311	311	311
Seaside Storage **	0	0	200	200	200	200	200
Troutdale Storage **	0	200	200	200	200	200	200
Evergreen Storage **	0	75	75	75	75	75	75

* Contributions reduce need

** 2021 RFP resources

The cost and risk metrics of the Preferred Portfolio are displayed in **Figure 13**. The increased need and resulting increase in resource additions resulted in an increase in cost and risk associated with the Preferred Portfolio. The 20-year NPVRR of the Preferred Portfolio in the updated results is $36.96 billion. The increased resource needs found in the results of this analysis using updated need forecasts reinforces the key findings from the filed CEP/IRP that the binding nature of decarbonization and transmission constraints necessitates an approach to pursue all feasible avenues of resource additions.

Figure 13. Cost and risk metrics of the Preferred Portfolio

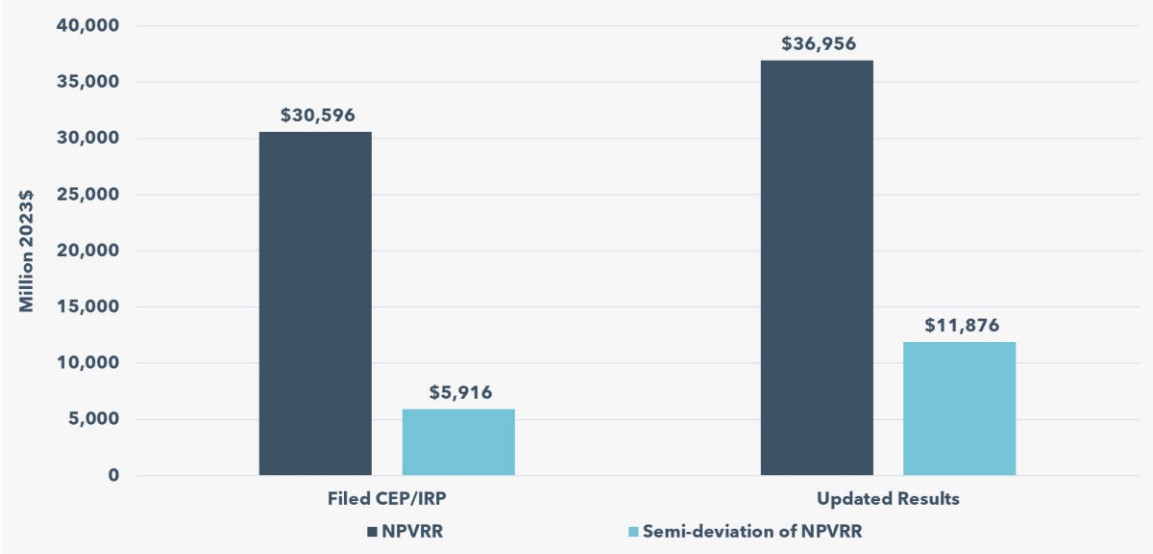
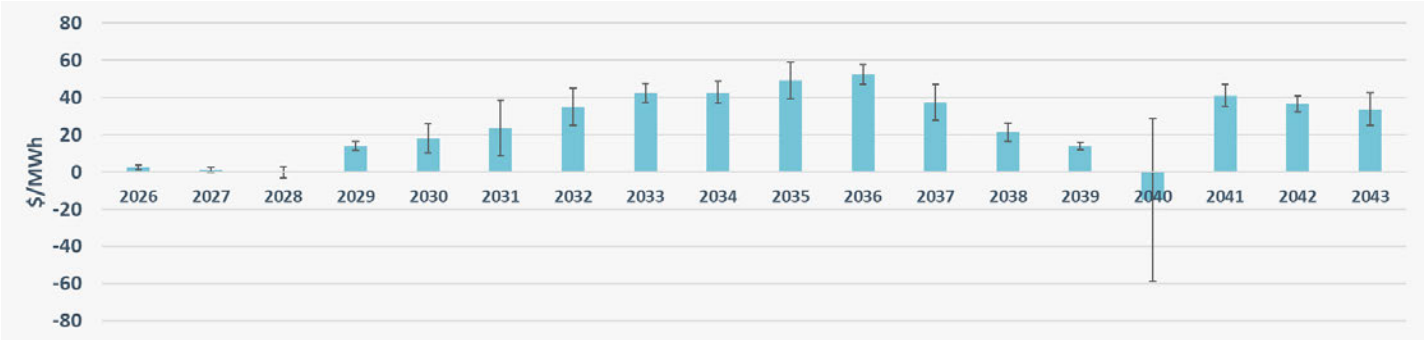


Figure 14 shows the difference in annual price impact between the Preferred Portfolio that was filed in CEP/IRP and the Preferred Portfolio developed in this Addendum. The increase in costs across the years is the direct result of the increase in resource additions stemming from the increased resource need driven by the different factors identified in **Chapter 2, Need changes**.[21,22]

Figure 14. Price impact difference between filed CEP/IRP and Addendum Preferred Portfolio



[21] The methodological correction identified in **Section 1.6.3** is addressed and factors within the **Figure 14**. However, its impact is minor relative to the change in price impact resulting from the addition of new resources

[22] The reduction in cost in 2040 is a function of the large addition of batteries, which based on the current treatment of the 30% ITC, lowers the first year's cash flow. The associated large range highlights the relationship between ownership structures and tax credits as they affect cash flows.

Table 9 is an update of Table 2 of the filed CEP/IRP, providing a summary of total resource actions from 2023 through 2030. It shows incremental new resources added by year (it does not show resource losses). It includes IRP Preferred Portfolio resources and non-CEP/IRP resource actions (2021 RFP resources, qualifying facility resource additions, GFI solar additions, etc.).[23] **Table 9** also include PGE's retail load service GHG emissions glidepath from 2023 through 2030.

Table 9. Preferred Portfolio resource pathway through 2030 (incremental additions)

Values in nameplate MW	2023	2024	2025	2026	2027	2028	2029	2030
DR (cost-effective)	24	26	25	19	14	11	8	9
EE (cost-effective)	31	30	30	30	30	31	33	33
Storage	0	0	275	200	0	0	0	0
Solar & wind	30	734	69	700	410	48	563	508
Hybrid	0	0	0	299	0	570	141	0
CBRE	0	0	0	66	19	25	23	22
Transmission (Tx) market access	0	0	0	0	0	0	553	247
Contract extension	0	0	0	200	0	0	0	0
GHG glidepath (MMTCO2e)	5.9	5.3	5.0	4.4	3.7	3.0	2.3	1.6

Table 10 shows incremental resource actions from year 2031 through 2043. It also includes PGE's retail load service GHG emissions glidepath from 2031 through 2043.

Table 10. Preferred Portfolio resource pathway 2031-2043 (incremental additions)

Values in nameplate MW	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043
DR (cost effective)	11	8	9	8	5	11	7	7	7	1	6	11	3
EE (cost effective)	34	34	32	31	29	28	25	23	19	16	15	11	9
Storage	0	32	100	100	100	100	68	100	100	2100	0	0	0
Solar & wind	522	347	341	363	469	500	500	500	500	500	483	255	225
Hybrid	0	0	0	0	0	0	0	0	0	0	0	0	0
CBRE	0	0	0	0	0	0	0	0	0	0	0	0	0
Tx market access	0	0	0	0	0	0	0	0	0	0	0	0	0
Capacity	0	0	0	18	134	135	256	500	500	500	0	0	0
GHG glidepath (MMT CO2e)	1.5	1.3	1.1	1.0	0.8	0.6	0.5	0.3	0.2	0.0	0.0	0.0	0.0

[23] As a result of including non-CEP/IRP and non-RFP resources the values in this table will differ from those in **Table 8**. For simplification purposes, generic VER resources and 5 MW of qualifying facility biomass are included in the wind & solar values.

Conclusion

This Addendum has incorporated several updated CEP/IRP input forecasts and reevaluated portfolio analysis on the resulting calculations of system need. Results have provided additional support to the answers proposed to the main questions posed by portfolio analysis:

- A linear decline is an appropriate method to model emission reductions through 2030
- Addressing congestion across BPA's system (especially across the South of Allston flowgate) is necessary to maintain reliability and add sufficient off-system resources to meet energy needs
- Acquiring generation beyond the traditional geographical footprint of PGE's resources is an effective strategy to reduce long-term system cost and risk, particularly in higher-need futures
- CBRE resources could be an effective means of reducing long-term system cost, risk, and emissions while maximizing community benefits
- Additional quantities of EE (above the cost-effective forecasts from the ETO) reduce long-term system cost and risk. However, under the current policy and cost structures this additional EE has a significant near-term price impact.

The increased resource need could warrant updating the resource acquisition targets in the Action Plan. Those potential updated values are presented below in **Table 11**:

Table 11. Potential updates to Action Plan resource targets

		2023 CEP/IRP	LC 80 Addendum
Customer actions	Acquire all cost-effective energy efficiency	150MWa Cumulative 2024-2028	Unchanged
	Incorporate customer demand response	211 MW summer & 158 winter by 2028	Unchanged
CBRE action	Issue RFP for all available and qualifying CBRE resources	66 MW by 2026	Unchanged
Energy action	Conduct one or more RFPs to acquire sufficient energy to position PGE to meet the forecasted 2030 need	181 MWa (905 MWa / 5 total years) per year through 2028 (543 MWa in Action Plan window)	**261** MWa (**1307** MWa / 5 total years) per year through 2028 (**783** MWa in Action Plan window)
Capacity action	Conduct one or more RFPs to acquire sufficient capacity to meet forecasted 2028 needs	624 MW summer & 614 MW winter	**944** MW summer & **827** MW winter

		2023 CEP/IRP	LC 80 Addendum
Transmission actions	Pursue options to alleviate congestion on the South of Alston (SoA) flowgate	n/a	Unchanged
	Explore options to upgrade the Bethel-Round Butte line (from 230 to 500 kV)	n/a	Unchanged

These resource targets in the Action Plan form the basis of need projections going forward. However, this Addendum supports the notion that resource need estimates are not static. Instead, they will be constantly updated throughout the LC 80 docket and beyond as new input forecasts, resource information, and methodological changes are incorporated. This is especially applicable for the current RFP, whose resource acquisition targets will be updated with refreshed forecasts of system needs going forward. This constant updating is not a new process: the capacity needs used in the 2021 All-Source RFP were updated six times either between its initiation (April 2021) and its last filing (May 2022) in the RFP docket (UM 2166) and other regulatory filings. These updates were triggered by updated input forecasts like updated load forecasts and projected resource changes (such as the extension of the Pelton-Round Butte contract). The results of the 2023 CEP/IRP were an important but static consideration in how the Company plans to meet its long-term system needs. However, PGE expects the forecasts of long-term supply and demand that create system need to be continuously evolving, and the Company is committed to working with its public stakeholders and the Commission to continue updating forecasts when and where appropriate.

PGE also recognizes that there remain important questions in resource planning that warrant further investigation in the LC 80 docket. The Company is working to clearly articulate its long-term transmission needs and how the transmission components of the Action Plan fit in to its wider resource acquisition strategy. PGE is also looking to assess what options exist to leverage the opportunities of additional EE beyond the forecasted acquisition of cost-effective measures provided by ETO.

These questions highlight the challenge of acquiring sufficient resources to meet HB 2021's emission reduction targets both reliably and affordably. PGE is committed to working with its public stakeholders and the Commission to determine the best set of resources to achieve those three goals. This Addendum reflects our willingness to ensure this conversation is supported by the most appropriate information possible.

Portland General Electric (PGE)

Clean Energy Plan and Integrated Resource Plan 2023

CEP Data Template

Purpose: **This spreadsheet contains supporting data for PGE's portfolio analysis for the 2023 Clean Energy Plan (CEP) and Integrated Resource Plan (IRP). For accessibility and in compliance with OPUC Order 22-446, the data is provided in a standard format provided by Public Utility Commission of Oregon (OPUC) Staff.**

Location: **A Microsoft Excel version of this document is available on PGE's website at www.portlandgeneral.com/resourceplanning/**

The Excel version contains cell comments and notes that provide context to data provided that may not be visible in the filed version.

Contents:

Contact: **For general inquiries or accessibility questions, please contact CEP@pgn.com**
For all formal correspondence or inquiries related to PGE's CEP/IRP filing, please contact pge.opuc.filings@pgn.com

Vintage: **Updated 7/7/2023**

Based on: **DRAFT CEP/IRP Data Template**
Received from OPUC Staff on 2/24/23

DRAFT CEP/IRP Data Template

Template vintage (OPUC Staff): 2/22/2023

Background

This spreadsheet provides a standard data sharing template for non-confidential information pertaining utility Clean Energy Plans (CEPs) and Integrated Resource Plans (IRPs), as described in OPUC Orders Orders No. 22-206, No. 22-390, and No. 22-446. This template accompanies a complete list of the requirements and expectations from Orders No. 22-206, No. 22-390, and No. 22-446 (**"UM 2225 Order Summary/Rubric"**) and the information requested in this data template is cross-referenced to the items listed in the UM 2225 Order Summary/Rubric at the top of each tab.

Units

Information is requested in the following standard units to enable efficient review by OPUC Staf and stakeholders:

Data	**Units**
Capacity	MW
Energy	GWh, MWh, or MWa
GHG Emissions	metric tons $CO2_e$
Fuel burn	MMBtu
Costs	nominal $ or million nominal $

For some items, including Community Benefits Indicators (CBIs) and Scoring Metrics, the utility must provide the units that they use in their plans.

Legend

Provide data on a forecasted or planning basis
Provide historical data
Provide units, metric, or resource name

Instructions

Fill in the requested information, with units if not already specified.

If providing information for more than 30 portfolios (see Portfolios tab), copy or expand tables as needed

Email questions to:

Submission instructions:

Instructions

List the set of portfolios considered in developing the **Action Plan**, which test different paces of GHG reductions and different levels of community impact.

Identify the Preferred Portfolio in cell B5

Preferred Portfolio	Portfolio40	Preferred Portfolio
Index	Portfolio list	
1	Portfolio1	Linear decline
2	Portfolio2	Front-loaded decline
3	Portfolio3	Back-loaded decline
4	Portfolio4	100% emissions reduction by 2035
5	Portfolio5	2-yr forward shift in targets
6	Portfolio6	Optimize NCE
7	Portfolio7	Zero NCE
8	Portfolio8	60 MWa EE
9	Portfolio9	Default CBREs
10	Portfolio10	CBRE - 75%
11	Portfolio11	CBRE - zero
12	Portfolio12	CBRE - microgrid
13	Portfolio13	CBRE - optimize
14	Portfolio14	Unconstrained Tx
15	Portfolio15	No Upgrades
16	Portfolio16	Unconstrained SoA
17	Portfolio17	Unconstrained SoA Plus
18	Portfolio18	SoA in 2027
19	Portfolio19	SoA in 2029
20	Portfolio20	WY in 2026
21	Portfolio21	NV in 2026
22	Portfolio22	WY in 2028
23	Portfolio23	NV in 2028
24	Portfolio24	Oregon-only resources
25	Portfolio25	Physical RPS
26	Portfolio26	Hydrogen blending
27	Portfolio27	Hydrogen building
28	Portfolio28	Offshore wind
29	Portfolio29	Long Duration Storage
30	Portfolio30	Pumped hydro
31	Portfolio31	RTO
32	Portfolio32	Min Avg LT cost
33	Portfolio33	Min Avg ST cost
34	Portfolio34	Min Ref ST cost
35	Portfolio35	SoA in 2027 Plus
36	Portfolio36	50 Mwa EE
37	Portfolio37	25 Mwa EE
38	Portfolio38	70 Mwa EE
39	Portfolio39	Optimized
40	Portfolio40	Preferred

Instructions

For each of the portfolios listed on the "Portfolios" tab, list the annual goals for actions over the study period

UM 2225 Order Summary/Rubric references: C.2(a)-(i), C.3

	40	Portfolio40	Preferred												
		Clean energy resources (MWa)	Clean energy resources (MWa)	Energy Storage (MW)	Energy Storage (MWh)	Energy Storage (MW)	Energy Storage (MWh)	Energy Efficiency (MWa)	Demand Response (MW)	CBREs (MWa)	CBREs (MW or MWa)		Transmission Projects		
Year		System resources	Voluntary programs	System resources	System resources	Voluntary programs	Voluntary programs			System resources	Voluntary programs	Retirements (list unit)	(MW)	Operational Changes	
2023		n/a	85.49	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
2024		138.60	112.47	-	-	n/a	n/a	30.00	133.00	-	n/a	n/a	-	n/a	
2025		138.61	113.21	475.00	1,900.00	n/a	n/a	60.00	162.00	-	n/a	n/a	-	n/a	
2026		618.32	114.47	475.00	1,900.00	n/a	n/a	90.00	183.00	12.55	n/a	n/a	-	n/a	
2027		791.80	115.74	475.00	1,900.00	n/a	n/a	120.00	199.00	16.01	n/a	n/a	400.00	n/a	
2028		972.18	116.89	475.00	1,900.00	n/a	n/a	150.00	211.00	21.57	n/a	n/a	400.00	n/a	
2029		1,237.95	118.28	475.00	1,900.00	n/a	n/a	183.00	218.00	26.76	n/a	n/a	953.00	n/a	
2030		1,407.89	119.55	475.00	1,900.00	n/a	n/a	216.00	228.00	30.78	n/a	n/a	1,200.00	n/a	
2031		1,516.55	119.04	475.00	1,900.00	n/a	n/a	251.00	242.00	30.79	n/a	n/a	1,200.00	n/a	
2032		1,645.97	118.41	507.00	2,028.00	n/a	n/a	285.00	252.00	30.80	n/a	n/a	1,200.00	n/a	
2033		1,777.25	118.02	607.00	2,428.00	n/a	n/a	317.00	261.00	30.80	n/a	n/a	1,200.00	n/a	
2034		1,913.68	117.52	707.00	2,828.00	n/a	n/a	348.00	270.00	30.80	n/a	n/a	1,200.00	n/a	
2035		2,099.53	117.01	807.00	3,228.00	n/a	n/a	377.00	272.00	30.80	n/a	n/a	1,200.00	n/a	
2036		2,288.45	116.40	907.00	3,628.00	n/a	n/a	404.00	287.00	30.80	n/a	n/a	1,200.00	n/a	
2037		2,478.73	67.75	975.00	3,900.00	n/a	n/a	429.00	296.00	30.80	n/a	n/a	1,200.00	n/a	
2038		2,667.63	41.47	1,075.00	4,300.00	n/a	n/a	452.00	303.00	30.80	n/a	n/a	1,200.00	n/a	
2039		2,858.10	16.93	1,175.00	4,700.00	n/a	n/a	471.00	310.00	30.80	n/a	n/a	1,200.00	n/a	
2040		3,047.24	16.93	3,275.00	25,100.00	n/a	n/a	487.00	306.00	30.80	n/a	n/a	1,200.00	n/a	
2041		3,232.18	16.93	3,275.00	25,100.00	n/a	n/a	503.00	314.00	30.80	n/a	n/a	1,200.00	n/a	
2042		3,329.05	16.93	3,275.00	25,100.00	n/a	n/a	514.00	330.00	30.80	n/a	n/a	1,200.00	n/a	
2043		3,413.94	16.93	3,275.00	25,100.00	n/a	n/a	523.00	336.00	30.80	n/a	n/a	1,200.00	n/a	
sources:		Preferred portfolio summary: wind, solar, hybrid, hydrogen, Clearwater Wind, generic VER, contract extension	Annual Resource Availability: Green Future Initiative (Bakeoven, Daybreak/Bakeoven2, Montague) + Community Solar MWa	Preferred portfolio summary: 4hr battery as storage + 4hr battery RFP proxy	MWh discharged: Energy Storage MW *storage duration	n/a	n/a	Preferred portfolio summary: EE	Preferred portfolio summary: DR	Preferred portfolio summary: Solar, micro, hydro CBRE	n/a	n/a	Preferred portfolio summary: SoA+ market access	n/a	

	1	Portfolio1	Linear decline												
		Clean energy resources (MWa)	Clean energy resources (MWa)	Energy Storage (MW)	Energy Storage (MWh)	Energy Storage (MW)	Energy Storage (MWh)			CBREs (MWa)	CBREs (MW or MWa)				
Year		System resources	Voluntary programs	System resources	System resources	Voluntary programs	Voluntary programs	Energy Efficiency (MWa)	Demand Response (MW)	System resources	Voluntary programs	Retirements (list unit)	Transmission Projects (MW)	Operational Changes	
2023		n/a	85.49	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
2024		138.60	112.47	-	-	n/a	n/a	30.00	133.00	-	n/a	n/a	-	n/a	
2025		138.61	113.21	475.00	1,900.00	n/a	n/a	60.00	162.00	-	n/a	n/a	-	n/a	
2026		633.42	114.47	475.00	1,900.00	n/a	n/a	90.00	183.00	12.55	n/a	n/a	-	n/a	
2027		734.27	115.74	475.00	1,900.00	n/a	n/a	120.00	199.00	16.01	n/a	n/a	228.00	n/a	
2028		972.18	116.89	475.00	1,900.00	n/a	n/a	150.00	211.00	21.57	n/a	n/a	400.00	n/a	
2029		1,237.96	118.28	475.00	1,900.00	n/a	n/a	183.00	218.00	26.77	n/a	n/a	400.00	n/a	
2030		1,412.73	119.55	816.00	3,264.00	n/a	n/a	216.00	228.00	30.80	n/a	n/a	400.00	n/a	
2031		1,522.55	119.04	916.00	3,664.00	n/a	n/a	251.00	242.00	30.80	n/a	n/a	400.00	n/a	
2032		1,651.95	118.41	916.00	3,664.00	n/a	n/a	285.00	252.00	30.80	n/a	n/a	400.00	n/a	
2033		1,781.48	118.02	916.00	3,664.00	n/a	n/a	317.00	261.00	30.80	n/a	n/a	400.00	n/a	
2034		1,916.63	117.52	916.00	3,664.00	n/a	n/a	348.00	270.00	30.80	n/a	n/a	400.00	n/a	
2035		2,075.03	117.01	916.00	3,664.00	n/a	n/a	377.00	272.00	30.80	n/a	n/a	400.00	n/a	
2036		2,264.40	116.40	916.00	3,664.00	n/a	n/a	404.00	287.00	30.80	n/a	n/a	400.00	n/a	
2037		2,454.08	67.75	975.00	3,900.00	n/a	n/a	429.00	296.00	30.80	n/a	n/a	400.00	n/a	
2038		2,631.79	41.47	1,075.00	4,300.00	n/a	n/a	452.00	303.00	30.80	n/a	n/a	400.00	n/a	
2039		2,811.35	16.93	1,175.00	4,700.00	n/a	n/a	471.00	310.00	30.80	n/a	n/a	400.00	n/a	
2040		2,960.40	16.93	1,275.00	5,100.00	n/a	n/a	487.00	306.00	30.80	n/a	n/a	400.00	n/a	
2041		3,145.01	16.93	1,275.00	5,100.00	n/a	n/a	503.00	314.00	30.80	n/a	n/a	400.00	n/a	
2042		3,232.38	16.93	1,275.00	5,100.00	n/a	n/a	514.00	330.00	30.80	n/a	n/a	400.00	n/a	
2043		3,320.52	16.93	1,275.00	5,100.00	n/a	n/a	523.00	336.00	30.80	n/a	n/a	400.00	n/a	

Instructions

For each of the portfolios listed on the "Portfolios" tab, list the annual goals for actions over the study period

UM 2225 Order Summary/Rubric references: C.2(a)-(i), C.3

								Note: This column reflects both the EE that was previously deemed cost effective by Energy Trust and any additional EE selected in this portfolio	Note: this column reflects both the DR that was previously deemed cost effective by PGE and any additional DR selected in this portfolio					
2	Portfolio2	Front-loaded decline								CBREs (MWa)	CBREs (MW or MWa)			
Year	Clean energy resources (MWa) System resources	Clean energy resources (MWa) Voluntary programs	Energy Storage (MW) System resources	Energy Storage (MWh) System resources	Energy Storage (MW) Voluntary programs	Energy Storage (MWh) Voluntary programs	Energy Efficiency (MWa)	Demand Response (MW)	System resources	Voluntary programs	Retirements (list unit)	Transmission Projects	Operational Changes
2023	n/a	85.49	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2024	139	112.47	-	-	n/a	n/a	30.00	133.00	-	n/a	n/a	-	n/a
2025	139	113.21	475.00	1,900.00	n/a	n/a	60.00	162.00	-	n/a	n/a	-	n/a
2026	707	114.47	475.00	1,900.00	n/a	n/a	90.00	183.00	12.55	n/a	n/a	-	n/a
2027	1,014	115.74	475.00	1,900.00	n/a	n/a	120.00	199.00	16.01	n/a	n/a	400.00	n/a
2028	1,231	116.89	475.00	1,900.00	n/a	n/a	150.00	211.00	21.58	n/a	n/a	400.00	n/a
2029	1,382	118.28	475.00	1,900.00	n/a	n/a	183.00	218.00	26.79	n/a	n/a	400.00	n/a
2030	1,414	119.55	900.00	3,600.00	n/a	n/a	216.00	228.00	30.80	n/a	n/a	400.00	n/a
2031	1,523	119.04	975.00	3,900.00	n/a	n/a	251.00	242.00	30.80	n/a	n/a	400.00	n/a
2032	1,653	118.41	975.00	3,900.00	n/a	n/a	285.00	252.00	30.80	n/a	n/a	400.00	n/a
2033	1,782	118.02	975.00	3,900.00	n/a	n/a	317.00	261.00	30.80	n/a	n/a	400.00	n/a
2034	1,917	117.52	975.00	3,900.00	n/a	n/a	348.00	270.00	30.80	n/a	n/a	400.00	n/a
2035	2,075	117.01	975.00	3,900.00	n/a	n/a	377.00	272.00	30.80	n/a	n/a	400.00	n/a
2036	2,264	116.40	975.00	3,900.00	n/a	n/a	404.00	287.00	30.80	n/a	n/a	400.00	n/a
2037	2,454	67.75	975.00	3,900.00	n/a	n/a	429.00	296.00	30.80	n/a	n/a	400.00	n/a
2038	2,632	41.47	1,075.00	4,300.00	n/a	n/a	452.00	303.00	30.80	n/a	n/a	400.00	n/a
2039	2,811	16.93	1,175.00	4,700.00	n/a	n/a	471.00	310.00	30.80	n/a	n/a	400.00	n/a
2040	2,960	16.93	1,275.00	5,100.00	n/a	n/a	487.00	306.00	30.80	n/a	n/a	400.00	n/a
2041	3,145	16.93	1,275.00	5,100.00	n/a	n/a	503.00	314.00	30.80	n/a	n/a	400.00	n/a
2042	3,232	16.93	1,275.00	5,100.00	n/a	n/a	514.00	330.00	30.80	n/a	n/a	400.00	n/a
2043	3,321	16.93	1,275.00	5,100.00	n/a	n/a	523.00	336.00	30.80	n/a	n/a	400.00	n/a

3	Portfolio3	Back-loaded decline							CBREs (MWa)	CBREs (MW or MWa)			
Year	Clean energy resources (MWa) System resources	Clean energy resources (MWa) Voluntary programs	Energy Storage (MW) System resources	Energy Storage (MWh) System resources	Energy Storage (MW) Voluntary programs	Energy Storage (MWh) Voluntary programs	Energy Efficiency (MWa)	Demand Response (MW)	System resources	Voluntary programs	Retirements (list unit)	Transmission Projects	Operational Changes
2023	n/a	85.49	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2024	138.60	112.47	-	-	n/a	n/a	30.00	133.00	-	n/a	n/a	-	n/a
2025	138.61	113.21	475.00	1,900.00	n/a	n/a	60.00	162.00	-	n/a	n/a	-	n/a
2026	589.20	114.47	707.00	2,828.00	n/a	n/a	90.00	183.00	12.54	n/a	n/a	-	n/a
2027	679.92	115.74	707.00	2,828.00	n/a	n/a	120.00	199.00	16.01	n/a	n/a	205.00	n/a
2028	789.32	116.89	707.00	2,828.00	n/a	n/a	150.00	211.00	21.56	n/a	n/a	400.00	n/a
2029	970.11	118.28	707.00	2,828.00	n/a	n/a	183.00	218.00	26.77	n/a	n/a	400.00	n/a
2030	1,412.65	119.55	811.00	3,244.00	n/a	n/a	216.00	228.00	30.80	n/a	n/a	400.00	n/a
2031	1,522.47	119.04	911.00	3,644.00	n/a	n/a	251.00	242.00	30.80	n/a	n/a	400.00	n/a
2032	1,651.88	118.41	911.00	3,644.00	n/a	n/a	285.00	252.00	30.80	n/a	n/a	400.00	n/a
2033	1,781.42	118.02	911.00	3,644.00	n/a	n/a	317.00	261.00	30.80	n/a	n/a	400.00	n/a
2034	1,916.55	117.52	911.00	3,644.00	n/a	n/a	348.00	270.00	30.80	n/a	n/a	400.00	n/a
2035	2,075.04	117.01	911.00	3,644.00	n/a	n/a	377.00	272.00	30.80	n/a	n/a	400.00	n/a
2036	2,264.42	116.40	911.00	3,644.00	n/a	n/a	404.00	287.00	30.80	n/a	n/a	400.00	n/a
2037	2,454.09	67.75	975.00	3,900.00	n/a	n/a	429.00	296.00	30.80	n/a	n/a	400.00	n/a
2038	2,631.79	41.47	1,075.00	4,300.00	n/a	n/a	452.00	303.00	30.80	n/a	n/a	400.00	n/a
2039	2,811.36	16.93	1,175.00	4,700.00	n/a	n/a	471.00	310.00	30.80	n/a	n/a	400.00	n/a
2040	2,960.39	16.93	1,275.00	5,100.00	n/a	n/a	487.00	306.00	30.80	n/a	n/a	400.00	n/a
2041	3,145.02	16.93	1,275.00	5,100.00	n/a	n/a	503.00	314.00	30.80	n/a	n/a	400.00	n/a
2042	3,232.38	16.93	1,275.00	5,100.00	n/a	n/a	514.00	330.00	30.80	n/a	n/a	400.00	n/a
2043	3,320.52	16.93	1,275.00	5,100.00	n/a	n/a	523.00	336.00	30.80	n/a	n/a	400.00	n/a

Instructions

For each of the portfolios listed on the "Portfolios" tab, list the annual goals for actions over the study period

UM 2225 Order Summary/Rubric references: C.2(a)-(i), C.3

								Note: This column reflects both the EE that was previously deemed cost effective by Energy Trust and any additional EE selected in this portfolio	Note: this column reflects both the DR that was previously deemed cost effective by PGE and any additional DR selected in this portfolio					
4	Portfolio4	100% emissions reduction by 2035								CBREs (MWa)	CBREs (MW or MWa)			
Year	Clean energy resources (MWa) System resources	Clean energy resources (MWa) Voluntary programs	Energy Storage (MW) System resources	Energy Storage (MWh) System resources	Energy Storage (MW) Voluntary programs	Energy Storage (MWh) Voluntary programs	Energy Efficiency (MWa)	Demand Response (MW)	System resources	Voluntary programs	Retirements (list unit)	Transmission Projects	Operational Changes
2023	n/a	85.49	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2024	138.60	112.47	-	-	n/a	n/a	30.00	133.00	-	n/a	n/a	-	n/a
2025	138.61	113.21	475.00	1,900.00	n/a	n/a	60.00	162.00	-	n/a	n/a	-	n/a
2026	633.42	114.47	475.00	1,900.00	n/a	n/a	90.00	183.00	12.55	n/a	n/a	-	n/a
2027	734.25	115.74	475.00	1,900.00	n/a	n/a	120.00	199.00	16.01	n/a	n/a	228.00	n/a
2028	972.18	116.89	475.00	1,900.00	n/a	n/a	150.00	211.00	21.57	n/a	n/a	400.00	n/a
2029	1,237.96	118.28	475.00	1,900.00	n/a	n/a	183.00	218.00	26.76	n/a	n/a	400.00	n/a
2030	1,412.73	119.55	816.00	3,264.00	n/a	n/a	216.00	228.00	30.79	n/a	n/a	400.00	n/a
2031	1,567.97	119.04	875.00	3,500.00	n/a	n/a	251.00	242.00	30.80	n/a	n/a	400.00	n/a
2032	1,742.33	118.41	875.00	3,500.00	n/a	n/a	285.00	252.00	30.80	n/a	n/a	400.00	n/a
2033	1,918.93	118.02	875.00	3,500.00	n/a	n/a	317.00	261.00	30.80	n/a	n/a	400.00	n/a
2034	2,100.05	117.52	875.00	3,500.00	n/a	n/a	348.00	270.00	30.80	n/a	n/a	400.00	n/a
2035	2,294.63	117.01	875.00	3,500.00	n/a	n/a	377.00	272.00	30.80	n/a	n/a	400.00	n/a
2036	2,427.68	116.40	875.00	3,500.00	n/a	n/a	404.00	287.00	30.80	n/a	n/a	400.00	n/a
2037	2,592.08	67.75	975.00	3,900.00	n/a	n/a	429.00	296.00	30.80	n/a	n/a	400.00	n/a
2038	2,724.79	41.47	1,075.00	4,300.00	n/a	n/a	452.00	303.00	30.80	n/a	n/a	400.00	n/a
2039	2,858.36	16.93	1,175.00	4,700.00	n/a	n/a	471.00	310.00	30.80	n/a	n/a	400.00	n/a
2040	2,960.40	16.93	1,275.00	5,100.00	n/a	n/a	487.00	306.00	30.80	n/a	n/a	400.00	n/a
2041	3,145.01	16.93	1,275.00	5,100.00	n/a	n/a	503.00	314.00	30.80	n/a	n/a	400.00	n/a
2042	3,232.39	16.93	1,275.00	5,100.00	n/a	n/a	514.00	330.00	30.80	n/a	n/a	400.00	n/a
2043	3,320.52	16.93	1,275.00	5,100.00	n/a	n/a	523.00	336.00	30.80	n/a	n/a	400.00	n/a

5	Portfolio5	2-yr forward shift in targets								CBREs (MWa)	CBREs (MW or MWa)			
Year	Clean energy resources (MWa) System resources	Clean energy resources (MWa) Voluntary programs	Energy Storage (MW) System resources	Energy Storage (MWh) System resources	Energy Storage (MW) Voluntary programs	Energy Storage (MWh) Voluntary programs	Energy Efficiency (MWa)	Demand Response (MW)	System resources	Voluntary programs	Retirements (list unit)	Transmission Projects	Operational Changes
2023	n/a	85.49	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2024	138.60	112.47	-	-	n/a	n/a	30.00	133.00	-	n/a	n/a	-	n/a
2025	138.61	113.21	475.00	1,900.00	n/a	n/a	60.00	162.00	-	n/a	n/a	-	n/a
2026	633.43	114.47	475.00	1,900.00	n/a	n/a	90.00	183.00	12.55	n/a	n/a	-	n/a
2027	920.74	115.74	475.00	1,900.00	n/a	n/a	120.00	199.00	16.01	n/a	n/a	400.00	n/a
2028	1,314.16	116.89	475.00	1,900.00	n/a	n/a	150.00	211.00	21.58	n/a	n/a	400.00	n/a
2029	1,450.95	118.28	475.00	1,900.00	n/a	n/a	183.00	218.00	26.79	n/a	n/a	400.00	n/a
2030	1,504.25	119.55	782.00	3,128.00	n/a	n/a	216.00	228.00	30.80	n/a	n/a	400.00	n/a
2031	1,614.09	119.04	882.00	3,528.00	n/a	n/a	251.00	242.00	30.80	n/a	n/a	400.00	n/a
2032	1,742.44	118.41	882.00	3,528.00	n/a	n/a	285.00	252.00	30.80	n/a	n/a	400.00	n/a
2033	1,873.01	118.02	882.00	3,528.00	n/a	n/a	317.00	261.00	30.80	n/a	n/a	400.00	n/a
2034	2,008.15	117.52	882.00	3,528.00	n/a	n/a	348.00	270.00	30.80	n/a	n/a	400.00	n/a
2035	2,167.00	117.01	882.00	3,528.00	n/a	n/a	377.00	272.00	30.80	n/a	n/a	400.00	n/a
2036	2,356.36	116.40	882.00	3,528.00	n/a	n/a	404.00	287.00	30.80	n/a	n/a	400.00	n/a
2037	2,546.09	67.75	975.00	3,900.00	n/a	n/a	429.00	296.00	30.80	n/a	n/a	400.00	n/a
2038	2,724.79	41.47	1,075.00	4,300.00	n/a	n/a	452.00	303.00	30.80	n/a	n/a	400.00	n/a
2039	2,858.34	16.93	1,175.00	4,700.00	n/a	n/a	471.00	310.00	30.80	n/a	n/a	400.00	n/a
2040	2,960.39	16.93	1,275.00	5,100.00	n/a	n/a	487.00	306.00	30.80	n/a	n/a	400.00	n/a
2041	3,145.01	16.93	1,275.00	5,100.00	n/a	n/a	503.00	314.00	30.80	n/a	n/a	400.00	n/a
2042	3,232.38	16.93	1,275.00	5,100.00	n/a	n/a	514.00	330.00	30.80	n/a	n/a	400.00	n/a
2043	3,320.52	16.93	1,275.00	5,100.00	n/a	n/a	523.00	336.00	30.80	n/a	n/a	400.00	n/a

Instructions

For each of the portfolios listed on the "Portfolios" tab, list the annual goals for actions over the study period

UM 2225 Order Summary/Rubric references: C.2(a)-(i), C.3

								Note: This column reflects both the EE that was previously deemed cost effective by Energy Trust and any additional EE selected in this portfolio	Note: this column reflects both the DR that was previously deemed cost effective by PGE and any additional DR selected in this portfolio					
	6	Portfolio6	Optimize NCE											
		Clean energy resources (MWa)	Clean energy resources (MWa)	Energy Storage (MW)	Energy Storage (MWh)	Energy Storage (MW)	Energy Storage (MWh)			CBREs (MWa)	CBREs (MW or MWa)			
Year		System resources	Voluntary programs	System resources	System resources	Voluntary programs	Voluntary programs	Energy Efficiency (MWa)	Demand Response (MW)	System resources	Voluntary programs	Retirements (list unit)	Transmission Projects	Operational Changes
2023		n/a	85.49	n/a	n/a	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a
2024		138.60	112.47	-	-	n/a	n/a	30.00	133.00	-	n/a	n/a	-	n/a
2025		138.61	113.21	475.00	1,900.00	n/a	n/a	60.03	162.00	-	n/a	n/a	-	n/a
2026		629.87	114.47	475.00	1,900.00	n/a	n/a	102.06	183.00	12.54	n/a	n/a	-	n/a
2027		712.82	115.74	475.00	1,900.00	n/a	n/a	142.09	199.00	16.01	n/a	n/a	187.00	n/a
2028		940.18	116.89	475.00	1,900.00	n/a	n/a	182.12	211.00	21.56	n/a	n/a	400.00	n/a
2029		1,194.96	118.28	475.00	1,900.00	n/a	n/a	226.15	218.00	26.76	n/a	n/a	400.00	n/a
2030		1,357.09	119.55	629.00	2,516.00	n/a	n/a	269.18	228.00	30.79	n/a	n/a	400.00	n/a
2031		1,467.02	119.04	729.00	2,916.00	n/a	n/a	304.23	242.00	30.80	n/a	n/a	400.00	n/a
2032		1,597.68	118.41	829.00	3,316.00	n/a	n/a	338.28	252.00	30.80	n/a	n/a	400.00	n/a
2033		1,727.93	118.02	875.00	3,500.00	n/a	n/a	370.33	261.00	30.80	n/a	n/a	400.00	n/a
2034		1,863.05	117.52	875.00	3,500.00	n/a	n/a	401.38	270.00	30.80	n/a	n/a	400.00	n/a
2035		2,022.03	117.01	875.00	3,500.00	n/a	n/a	430.43	272.00	30.80	n/a	n/a	400.00	n/a
2036		2,211.40	116.40	875.00	3,500.00	n/a	n/a	457.48	287.00	30.80	n/a	n/a	400.00	n/a
2037		2,401.08	67.75	975.00	3,900.00	n/a	n/a	482.53	296.00	30.80	n/a	n/a	400.00	n/a
2038		2,578.79	41.47	1,075.00	4,300.00	n/a	n/a	505.58	303.00	30.80	n/a	n/a	400.00	n/a
2039		2,758.36	16.93	1,175.00	4,700.00	n/a	n/a	524.63	310.00	30.80	n/a	n/a	400.00	n/a
2040		2,907.40	16.93	1,275.00	5,100.00	n/a	n/a	540.68	306.00	30.80	n/a	n/a	400.00	n/a
2041		3,092.01	16.93	1,275.00	5,100.00	n/a	n/a	556.73	314.00	30.80	n/a	n/a	400.00	n/a
2042		3,179.39	16.93	1,275.00	5,100.00	n/a	n/a	567.78	330.00	30.80	n/a	n/a	400.00	n/a
2043		3,267.52	16.93	1,275.00	5,100.00	n/a	n/a	576.83	336.00	30.80	n/a	n/a	400.00	n/a

	7	Portfolio7	Zero NCE											
		Clean energy resources (MWa)	Clean energy resources (MWa)	Energy Storage (MW)	Energy Storage (MWh)	Energy Storage (MW)	Energy Storage (MWh)			CBREs (MWa)	CBREs (MW or MWa)			
Year		System resources	Voluntary programs	System resources	System resources	Voluntary programs	Voluntary programs	Energy Efficiency (MWa)	Demand Response (MW)	System resources	Voluntary programs	Retirements (list unit)	Transmission Projects	Operational Changes
2023		n/a	85.49	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2024		138.60	112.47	-	-	n/a	n/a	30.00	133.00	-	n/a	n/a	-	n/a
2025		138.61	113.21	475.00	1,900.00	n/a	n/a	60.00	162.00	-	n/a	n/a	-	n/a
2026		633.42	114.47	475.00	1,900.00	n/a	n/a	90.00	183.00	12.54	n/a	n/a	-	n/a
2027		734.27	115.74	475.00	1,900.00	n/a	n/a	120.00	199.00	16.01	n/a	n/a	228.00	n/a
2028		972.18	116.89	475.00	1,900.00	n/a	n/a	150.00	211.00	21.56	n/a	n/a	400.00	n/a
2029		1,237.96	118.28	475.00	1,900.00	n/a	n/a	183.00	218.00	26.77	n/a	n/a	400.00	n/a
2030		1,412.73	119.55	816.00	3,264.00	n/a	n/a	216.00	228.00	30.80	n/a	n/a	400.00	n/a
2031		1,522.55	119.04	916.00	3,664.00	n/a	n/a	251.00	242.00	30.80	n/a	n/a	400.00	n/a
2032		1,651.95	118.41	916.00	3,664.00	n/a	n/a	285.00	252.00	30.80	n/a	n/a	400.00	n/a
2033		1,781.48	118.02	916.00	3,664.00	n/a	n/a	317.00	261.00	30.80	n/a	n/a	400.00	n/a
2034		1,916.63	117.52	916.00	3,664.00	n/a	n/a	348.00	270.00	30.80	n/a	n/a	400.00	n/a
2035		2,075.03	117.01	916.00	3,664.00	n/a	n/a	377.00	272.00	30.80	n/a	n/a	400.00	n/a
2036		2,264.40	116.40	916.00	3,664.00	n/a	n/a	404.00	287.00	30.80	n/a	n/a	400.00	n/a
2037		2,454.08	67.75	975.00	3,900.00	n/a	n/a	429.00	296.00	30.80	n/a	n/a	400.00	n/a
2038		2,631.79	41.47	1,075.00	4,300.00	n/a	n/a	452.00	303.00	30.80	n/a	n/a	400.00	n/a
2039		2,811.35	16.93	1,175.00	4,700.00	n/a	n/a	471.00	310.00	30.80	n/a	n/a	400.00	n/a
2040		2,960.40	16.93	1,275.00	5,100.00	n/a	n/a	487.00	306.00	30.80	n/a	n/a	400.00	n/a
2041		3,145.01	16.93	1,275.00	5,100.00	n/a	n/a	503.00	314.00	30.80	n/a	n/a	400.00	n/a
2042		3,232.38	16.93	1,275.00	5,100.00	n/a	n/a	514.00	330.00	30.80	n/a	n/a	400.00	n/a
2043		3,320.52	16.93	1,275.00	5,100.00	n/a	n/a	523.00	336.00	30.80	n/a	n/a	400.00	n/a

Instructions

For each of the portfolios listed on the "Portfolios" tab, list the annual goals for actions over the study period

UM 2225 Order Summary/Rubric references: C.2(a)-(i), C.3

	8	Portfolio8	60 MWa EE					Note: This column reflects both the EE that was previously deemed cost effective by Energy Trust and any additional EE selected in this portfolio	Note: this column reflects both the DR that was previously deemed cost effective by PGE and any additional DR selected in this portfolio					
		Clean energy resources (MWa)	Clean energy resources (MWa)	Energy Storage (MW)	Energy Storage (MWh)	Energy Storage (MW)	Energy Storage (MWh)			CBREs (MWa)	CBREs (MW or MWa)			
Year		System resources	Voluntary programs	System resources	System resources	Voluntary programs	Voluntary programs	Energy Efficiency (MWa)	Demand Response (MW)	System resources	Voluntary programs	Retirements (list unit)	Transmission Projects	Operational Changes
2023		n/a	85.49	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2024		138.60	112.47	-	-	n/a	n/a	30.00	133.00	-	n/a	n/a	-	n/a
2025		138.61	113.21	475.00	1,900.00	n/a	n/a	60.00	162.00	-	n/a	n/a	-	n/a
2026		629.52	114.47	475.00	1,900.00	n/a	n/a	102.06	183.00	12.54	n/a	n/a	-	n/a
2027		709.92	115.74	475.00	1,900.00	n/a	n/a	144.09	199.00	16.01	n/a	n/a	181.00	n/a
2028		936.18	116.89	475.00	1,900.00	n/a	n/a	186.12	211.00	21.56	n/a	n/a	400.00	n/a
2029		1,189.96	118.28	475.00	1,900.00	n/a	n/a	231.15	218.00	26.76	n/a	n/a	400.00	n/a
2030		1,349.88	119.55	613.00	2,452.00	n/a	n/a	276.16	228.00	30.79	n/a	n/a	400.00	n/a
2031		1,459.82	119.04	713.00	2,852.00	n/a	n/a	311.21	242.00	30.80	n/a	n/a	400.00	n/a
2032		1,590.47	118.41	813.00	3,252.00	n/a	n/a	345.26	252.00	30.80	n/a	n/a	400.00	n/a
2033		1,720.95	118.02	875.00	3,500.00	n/a	n/a	377.31	261.00	30.80	n/a	n/a	400.00	n/a
2034		1,856.07	117.52	875.00	3,500.00	n/a	n/a	408.36	270.00	30.80	n/a	n/a	400.00	n/a
2035		2,015.05	117.01	875.00	3,500.00	n/a	n/a	437.41	272.00	30.80	n/a	n/a	400.00	n/a
2036		2,204.42	116.40	875.00	3,500.00	n/a	n/a	464.46	287.00	30.80	n/a	n/a	400.00	n/a
2037		2,394.10	67.75	975.00	3,900.00	n/a	n/a	489.51	296.00	30.80	n/a	n/a	400.00	n/a
2038		2,571.81	41.47	1,075.00	4,300.00	n/a	n/a	512.56	303.00	30.80	n/a	n/a	400.00	n/a
2039		2,751.38	16.93	1,175.00	4,700.00	n/a	n/a	531.61	310.00	30.80	n/a	n/a	400.00	n/a
2040		2,900.42	16.93	1,275.00	5,100.00	n/a	n/a	547.66	306.00	30.80	n/a	n/a	400.00	n/a
2041		3,085.03	16.93	1,275.00	5,100.00	n/a	n/a	563.71	314.00	30.80	n/a	n/a	400.00	n/a
2042		3,172.41	16.93	1,275.00	5,100.00	n/a	n/a	574.76	330.00	30.80	n/a	n/a	400.00	n/a
2043		3,260.54	16.93	1,275.00	5,100.00	n/a	n/a	583.81	336.00	30.80	n/a	n/a	400.00	n/a

	9	Portfolio9	Default CBREs											
		Clean energy resources (MWa)	Clean energy resources (MWa)	Energy Storage (MW)	Energy Storage (MWh)	Energy Storage (MW)	Energy Storage (MWh)			CBREs (MWa)	CBREs (MW or MWa)			
Year		System resources	Voluntary programs	System resources	System resources	Voluntary programs	Voluntary programs	Energy Efficiency (MWa)	Demand Response (MW)	System resources	Voluntary programs	Retirements (list unit)	Transmission Projects	Operational Changes
2023		n/a	85.49	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2024		138.60	112.47	-	-	n/a	n/a	30.00	133.00	-	n/a	n/a	-	n/a
2025		138.61	113.21	475.00	1,900.00	n/a	n/a	60.00	162.00	-	n/a	n/a	-	n/a
2026		633.42	114.47	475.00	1,900.00	n/a	n/a	90.00	183.00	12.54	n/a	n/a	-	n/a
2027		734.27	115.74	475.00	1,900.00	n/a	n/a	120.00	199.00	16.01	n/a	n/a	228.00	n/a
2028		972.18	116.89	475.00	1,900.00	n/a	n/a	150.00	211.00	21.56	n/a	n/a	400.00	n/a
2029		1,237.96	118.28	475.00	1,900.00	n/a	n/a	183.00	218.00	26.77	n/a	n/a	400.00	n/a
2030		1,412.73	119.55	816.00	3,264.00	n/a	n/a	216.00	228.00	30.80	n/a	n/a	400.00	n/a
2031		1,522.55	119.04	916.00	3,664.00	n/a	n/a	251.00	242.00	30.80	n/a	n/a	400.00	n/a
2032		1,651.95	118.41	916.00	3,664.00	n/a	n/a	285.00	252.00	30.80	n/a	n/a	400.00	n/a
2033		1,781.48	118.02	916.00	3,664.00	n/a	n/a	317.00	261.00	30.80	n/a	n/a	400.00	n/a
2034		1,916.63	117.52	916.00	3,664.00	n/a	n/a	348.00	270.00	30.80	n/a	n/a	400.00	n/a
2035		2,075.03	117.01	916.00	3,664.00	n/a	n/a	377.00	272.00	30.80	n/a	n/a	400.00	n/a
2036		2,264.40	116.40	916.00	3,664.00	n/a	n/a	404.00	287.00	30.80	n/a	n/a	400.00	n/a
2037		2,454.08	67.75	975.00	3,900.00	n/a	n/a	429.00	296.00	30.80	n/a	n/a	400.00	n/a
2038		2,631.79	41.47	1,075.00	4,300.00	n/a	n/a	452.00	303.00	30.80	n/a	n/a	400.00	n/a
2039		2,811.35	16.93	1,175.00	4,700.00	n/a	n/a	471.00	310.00	30.80	n/a	n/a	400.00	n/a
2040		2,960.40	16.93	1,275.00	5,100.00	n/a	n/a	487.00	306.00	30.80	n/a	n/a	400.00	n/a
2041		3,145.01	16.93	1,275.00	5,100.00	n/a	n/a	503.00	314.00	30.80	n/a	n/a	400.00	n/a
2042		3,232.38	16.93	1,275.00	5,100.00	n/a	n/a	514.00	330.00	30.80	n/a	n/a	400.00	n/a
2043		3,320.52	16.93	1,275.00	5,100.00	n/a	n/a	523.00	336.00	30.80	n/a	n/a	400.00	n/a

Instructions

For each of the portfolios listed on the "Portfolios" tab, list the annual goals for actions over the study period

UM 2225 Order Summary/Rubric references: C.2(a)-(i), C.3

	Note: This column reflects both the EE that was previously deemed cost effective by Energy Trust and any additional EE selected in this portfolio	Note: this column reflects both the DR that was previously deemed cost effective by PGE and any additional DR selected in this portfolio

10 Portfolio10 CBRE - 75%

Year	Clean energy resources (MWa) System resources	Clean energy resources (MWa) Voluntary programs	Energy Storage (MW) System resources	Energy Storage (MWh) System resources	Energy Storage (MW) Voluntary programs	Energy Storage (MWh) Voluntary programs	Energy Efficiency (MWa)	Demand Response (MW)	CBREs (MWa) System resources	CBREs (MW or MWa) Voluntary programs	Retirements (list unit)	Transmission Projects	Operational Changes
2023	n/a	85.49	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2024	138.60	112.47	-	-	n/a	n/a	30.00	133.00	-	n/a	n/a	-	n/a
2025	138.61	113.21	475.00	1,900.00	n/a	n/a	60.00	162.00	0.01	n/a	n/a	-	n/a
2026	635.65	114.47	475.00	1,900.00	n/a	n/a	90.00	183.00	9.48	n/a	n/a	-	n/a
2027	737.55	115.74	475.00	1,900.00	n/a	n/a	120.00	199.00	12.09	n/a	n/a	231.00	n/a
2028	977.48	116.89	475.00	1,900.00	n/a	n/a	150.00	211.00	16.29	n/a	n/a	400.00	n/a
2029	1,244.54	118.28	475.00	1,900.00	n/a	n/a	183.00	218.00	20.21	n/a	n/a	400.00	n/a
2030	1,420.92	119.55	861.00	3,444.00	n/a	n/a	216.00	228.00	23.24	n/a	n/a	400.00	n/a
2031	1,530.71	119.04	961.00	3,844.00	n/a	n/a	251.00	242.00	23.26	n/a	n/a	400.00	n/a
2032	1,660.15	118.41	961.00	3,844.00	n/a	n/a	285.00	252.00	23.27	n/a	n/a	400.00	n/a
2033	1,789.63	118.02	961.00	3,844.00	n/a	n/a	317.00	261.00	23.28	n/a	n/a	400.00	n/a
2034	1,924.78	117.52	961.00	3,844.00	n/a	n/a	348.00	270.00	23.29	n/a	n/a	400.00	n/a
2035	2,082.52	117.01	961.00	3,844.00	n/a	n/a	377.00	272.00	23.30	n/a	n/a	400.00	n/a
2036	2,271.88	116.40	961.00	3,844.00	n/a	n/a	404.00	287.00	23.32	n/a	n/a	400.00	n/a
2037	2,461.57	67.75	975.00	3,900.00	n/a	n/a	429.00	296.00	23.32	n/a	n/a	400.00	n/a
2038	2,639.27	41.47	1,075.00	4,300.00	n/a	n/a	452.00	303.00	23.33	n/a	n/a	400.00	n/a
2039	2,818.82	16.93	1,175.00	4,700.00	n/a	n/a	471.00	310.00	23.34	n/a	n/a	400.00	n/a
2040	2,967.85	16.93	1,275.00	5,100.00	n/a	n/a	487.00	306.00	23.35	n/a	n/a	400.00	n/a
2041	3,152.46	16.93	1,275.00	5,100.00	n/a	n/a	503.00	314.00	23.36	n/a	n/a	400.00	n/a
2042	3,239.82	16.93	1,275.00	5,100.00	n/a	n/a	514.00	330.00	23.38	n/a	n/a	400.00	n/a
2043	3,327.94	16.93	1,275.00	5,100.00	n/a	n/a	523.00	336.00	23.38	n/a	n/a	400.00	n/a

11 Portfolio11 CBRE - zero

Year	Clean energy resources (MWa) System resources	Clean energy resources (MWa) Voluntary programs	Energy Storage (MW) System resources	Energy Storage (MWh) System resources	Energy Storage (MW) Voluntary programs	Energy Storage (MWh) Voluntary programs	Energy Efficiency (MWa)	Demand Response (MW)	CBREs (MWa) System resources	CBREs (MW or MWa) Voluntary programs	Retirements (list unit)	Transmission Projects	Operational Changes
2023	n/a	85.49	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2024	138.60	112.47	-	-	n/a	n/a	30.00	133.00	-	n/a	n/a	-	n/a
2025	138.61	113.21	475.00	1,900.00	n/a	n/a	60.00	162.00	0.01	n/a	n/a	-	n/a
2026	642.49	114.47	475.00	1,900.00	n/a	n/a	90.00	183.00	0.01	n/a	n/a	-	n/a
2027	747.82	115.74	475.00	1,900.00	n/a	n/a	120.00	199.00	0.04	n/a	n/a	239.00	n/a
2028	993.72	116.89	475.00	1,900.00	n/a	n/a	150.00	211.00	0.05	n/a	n/a	400.00	n/a
2029	1,264.69	118.28	475.00	1,900.00	n/a	n/a	183.00	218.00	0.05	n/a	n/a	400.00	n/a
2030	1,445.72	119.55	975.00	3,900.00	n/a	n/a	216.00	228.00	0.06	n/a	n/a	400.00	n/a
2031	1,554.08	119.04	975.00	3,900.00	n/a	n/a	251.00	242.00	0.07	n/a	n/a	400.00	n/a
2032	1,683.53	118.41	975.00	3,900.00	n/a	n/a	285.00	252.00	0.07	n/a	n/a	400.00	n/a
2033	1,813.00	118.02	975.00	3,900.00	n/a	n/a	317.00	261.00	0.10	n/a	n/a	400.00	n/a
2034	1,948.16	117.52	975.00	3,900.00	n/a	n/a	348.00	270.00	0.11	n/a	n/a	400.00	n/a
2035	2,105.70	117.01	975.00	3,900.00	n/a	n/a	377.00	272.00	0.11	n/a	n/a	400.00	n/a
2036	2,295.07	116.40	975.00	3,900.00	n/a	n/a	404.00	287.00	0.12	n/a	n/a	400.00	n/a
2037	2,484.75	67.75	975.00	3,900.00	n/a	n/a	429.00	296.00	0.13	n/a	n/a	400.00	n/a
2038	2,662.45	41.47	1,075.00	4,300.00	n/a	n/a	452.00	303.00	0.16	n/a	n/a	400.00	n/a
2039	2,842.00	16.93	1,175.00	4,700.00	n/a	n/a	471.00	310.00	0.16	n/a	n/a	400.00	n/a
2040	2,991.03	16.93	1,275.00	5,100.00	n/a	n/a	487.00	306.00	0.17	n/a	n/a	400.00	n/a
2041	3,175.64	16.93	1,275.00	5,100.00	n/a	n/a	503.00	314.00	0.18	n/a	n/a	400.00	n/a
2042	3,263.00	16.93	1,275.00	5,100.00	n/a	n/a	514.00	330.00	0.18	n/a	n/a	400.00	n/a
2043	3,351.13	16.93	1,275.00	5,100.00	n/a	n/a	523.00	336.00	0.19	n/a	n/a	400.00	n/a

Instructions

For each of the portfolios listed on the "Portfolios" tab, list the annual goals for actions over the study period

UM 2225 Order Summary/Rubric references: C.2(a)-(i), C.3

Note: This column reflects both the EE that was previously deemed cost effective by Energy Trust and any additional EE selected in this portfolio

Note: this column reflects both the DR that was previously deemed cost effective by PGE and any additional DR selected in this portfolio

12	Portfolio12	CBRE - microgrid											
	Clean energy resources (MWa)	Clean energy resources (MWa)	Energy Storage (MW)	Energy Storage (MWh)	Energy Storage (MW)	Energy Storage (MWh)			CBREs (MWa)	CBREs (MW or MWa)			
Year	System resources	Voluntary programs	System resources	System resources	Voluntary programs	Voluntary programs	Energy Efficiency (MWa)	Demand Response (MW)	System resources	Voluntary programs	Retirements (list unit)	Transmission Projects	Operational Changes
2023	n/a	85.49	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2024	138.60	112.47	-	-	n/a	n/a	30.00	133.00	-	n/a	n/a	-	n/a
2025	138.61	113.21	475.00	1,900.00	n/a	n/a	60.00	162.00	0.01	n/a	n/a	-	n/a
2026	634.94	114.47	475.00	1,900.00	n/a	n/a	90.00	183.00	7.86	n/a	n/a	-	n/a
2027	735.52	115.74	475.00	1,900.00	n/a	n/a	120.00	199.00	10.26	n/a	n/a	228.00	n/a
2028	980.75	116.89	475.00	1,900.00	n/a	n/a	150.00	211.00	13.00	n/a	n/a	400.00	n/a
2029	1,249.17	118.28	475.00	1,900.00	n/a	n/a	183.00	218.00	15.56	n/a	n/a	400.00	n/a
2030	1,425.55	119.55	840.00	3,360.00	n/a	n/a	216.00	228.00	18.31	n/a	n/a	400.00	n/a
2031	1,535.35	119.04	940.00	3,760.00	n/a	n/a	251.00	242.00	18.32	n/a	n/a	400.00	n/a
2032	1,664.76	118.41	940.00	3,760.00	n/a	n/a	285.00	252.00	18.32	n/a	n/a	400.00	n/a
2033	1,794.27	118.02	940.00	3,760.00	n/a	n/a	317.00	261.00	18.34	n/a	n/a	400.00	n/a
2034	1,929.41	117.52	940.00	3,760.00	n/a	n/a	348.00	270.00	18.35	n/a	n/a	400.00	n/a
2035	2,087.46	117.01	940.00	3,760.00	n/a	n/a	377.00	272.00	18.35	n/a	n/a	400.00	n/a
2036	2,276.82	116.40	940.00	3,760.00	n/a	n/a	404.00	287.00	18.36	n/a	n/a	400.00	n/a
2037	2,466.51	67.75	975.00	3,900.00	n/a	n/a	429.00	296.00	18.37	n/a	n/a	400.00	n/a
2038	2,644.21	41.47	1,075.00	4,300.00	n/a	n/a	452.00	303.00	18.39	n/a	n/a	400.00	n/a
2039	2,823.77	16.93	1,175.00	4,700.00	n/a	n/a	471.00	310.00	18.39	n/a	n/a	400.00	n/a
2040	2,972.80	16.93	1,275.00	5,100.00	n/a	n/a	487.00	306.00	18.40	n/a	n/a	400.00	n/a
2041	3,157.41	16.93	1,275.00	5,100.00	n/a	n/a	503.00	314.00	18.41	n/a	n/a	400.00	n/a
2042	3,244.77	16.93	1,275.00	5,100.00	n/a	n/a	514.00	330.00	18.41	n/a	n/a	400.00	n/a
2043	3,332.90	16.93	1,275.00	5,100.00	n/a	n/a	523.00	336.00	18.42	n/a	n/a	400.00	n/a

13	Portfolio13	CBRE - optimize											
	Clean energy resources (MWa)	Clean energy resources (MWa)	Energy Storage (MW)	Energy Storage (MWh)	Energy Storage (MW)	Energy Storage (MWh)			CBREs (MWa)	CBREs (MW or MWa)			
Year	System resources	Voluntary programs	System resources	System resources	Voluntary programs	Voluntary programs	Energy Efficiency (MWa)	Demand Response (MW)	System resources	Voluntary programs	Retirements (list unit)	Transmission Projects	Operational Changes
2023	n/a	85.49	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2024	138.60	112.47	-	-	n/a	n/a	30.00	133.00	-	n/a	n/a	-	n/a
2025	138.61	113.21	475.00	1,900.00	n/a	n/a	60.00	162.00	-	n/a	n/a	-	n/a
2026	633.42	114.47	475.00	1,900.00	n/a	n/a	90.00	183.00	12.51	n/a	n/a	-	n/a
2027	734.27	115.74	475.00	1,900.00	n/a	n/a	120.00	199.00	15.98	n/a	n/a	228.00	n/a
2028	972.18	116.89	475.00	1,900.00	n/a	n/a	150.00	211.00	21.55	n/a	n/a	400.00	n/a
2029	1,237.95	118.28	475.00	1,900.00	n/a	n/a	183.00	218.00	26.75	n/a	n/a	400.00	n/a
2030	1,412.73	119.55	816.00	3,264.00	n/a	n/a	216.00	228.00	30.78	n/a	n/a	400.00	n/a
2031	1,522.55	119.04	916.00	3,664.00	n/a	n/a	251.00	242.00	30.80	n/a	n/a	400.00	n/a
2032	1,651.95	118.41	916.00	3,664.00	n/a	n/a	285.00	252.00	30.80	n/a	n/a	400.00	n/a
2033	1,781.48	118.02	916.00	3,664.00	n/a	n/a	317.00	261.00	30.80	n/a	n/a	400.00	n/a
2034	1,916.63	117.52	916.00	3,664.00	n/a	n/a	348.00	270.00	30.80	n/a	n/a	400.00	n/a
2035	2,075.03	117.01	916.00	3,664.00	n/a	n/a	377.00	272.00	30.80	n/a	n/a	400.00	n/a
2036	2,264.40	116.40	916.00	3,664.00	n/a	n/a	404.00	287.00	30.80	n/a	n/a	400.00	n/a
2037	2,454.08	67.75	975.00	3,900.00	n/a	n/a	429.00	296.00	30.80	n/a	n/a	400.00	n/a
2038	2,631.79	41.47	1,075.00	4,300.00	n/a	n/a	452.00	303.00	30.80	n/a	n/a	400.00	n/a
2039	2,811.35	16.93	1,175.00	4,700.00	n/a	n/a	471.00	310.00	30.80	n/a	n/a	400.00	n/a
2040	2,960.40	16.93	1,275.00	5,100.00	n/a	n/a	487.00	306.00	30.80	n/a	n/a	400.00	n/a
2041	3,145.01	16.93	1,275.00	5,100.00	n/a	n/a	503.00	314.00	30.80	n/a	n/a	400.00	n/a
2042	3,232.38	16.93	1,275.00	5,100.00	n/a	n/a	514.00	330.00	30.80	n/a	n/a	400.00	n/a
2043	3,320.52	16.93	1,275.00	5,100.00	n/a	n/a	523.00	336.00	30.80	n/a	n/a	400.00	n/a

Instructions

For each of the portfolios listed on the "Portfolios" tab, list the annual goals for actions over the study period

UM 2225 Order Summary/Rubric references: C.2(a)-(i), C.3

Note: This column reflects both the EE that was previously deemed cost effective by Energy Trust and any additional EE selected in this portfolio

Note: this column reflects both the DR that was previously deemed cost effective by PGE and any additional DR selected in this portfolio

14	Portfolio14	Unconstrained Tx												
	Clean energy resources (MWa)	Clean energy resources (MWa)	Energy Storage (MW)	Energy Storage (MWh)	Energy Storage (MW)	Energy Storage (MWh)			CBREs (MWa)	CBREs (MW or MWa)			
Year	System resources	Voluntary programs	System resources	System resources	Voluntary programs	Voluntary programs	Energy Efficiency (MWa)	Demand Response (MW)	System resources	Voluntary programs	Retirements (list unit)	Transmission Projects	Operational Changes
2023	n/a	85.49	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2024	138.60	112.47	-	-	n/a	n/a	30.00	133.00	-	n/a	n/a	-	n/a
2025	138.60	113.21	475.00	1,900.00	n/a	n/a	60.00	162.00	-	n/a	n/a	-	n/a
2026	801.09	114.47	699.00	2,796.00	n/a	n/a	90.00	183.00	-	n/a	n/a	-	n/a
2027	812.79	115.74	828.00	3,312.00	n/a	n/a	120.00	199.00	-	n/a	n/a	-	n/a
2028	1,098.78	116.89	828.00	3,312.00	n/a	n/a	150.00	211.00	-	n/a	n/a	-	n/a
2029	1,292.46	118.28	828.00	3,312.00	n/a	n/a	183.00	218.00	-	n/a	n/a	-	n/a
2030	1,443.87	119.55	828.00	3,312.00	n/a	n/a	216.00	228.00	-	n/a	n/a	-	n/a
2031	1,652.62	119.04	850.00	3,400.00	n/a	n/a	251.00	242.00	-	n/a	n/a	-	n/a
2032	1,781.94	118.41	850.00	3,400.00	n/a	n/a	285.00	252.00	-	n/a	n/a	-	n/a
2033	1,912.79	118.02	939.00	3,756.00	n/a	n/a	317.00	261.00	-	n/a	n/a	-	n/a
2034	2,032.89	117.52	1,039.00	4,156.00	n/a	n/a	348.00	270.00	-	n/a	n/a	-	n/a
2035	2,198.26	117.01	1,075.00	4,300.00	n/a	n/a	377.00	272.00	-	n/a	n/a	-	n/a
2036	2,377.32	116.40	1,075.00	4,300.00	n/a	n/a	404.00	287.00	-	n/a	n/a	-	n/a
2037	2,486.45	67.75	1,075.00	4,300.00	n/a	n/a	429.00	296.00	-	n/a	n/a	-	n/a
2038	2,662.79	41.47	1,075.00	4,300.00	n/a	n/a	452.00	303.00	-	n/a	n/a	-	n/a
2039	2,842.31	16.93	1,175.00	4,700.00	n/a	n/a	471.00	310.00	-	n/a	n/a	-	n/a
2040	3,091.33	16.93	1,275.00	5,100.00	n/a	n/a	487.00	306.00	-	n/a	n/a	-	n/a
2041	3,176.00	16.93	1,275.00	5,100.00	n/a	n/a	503.00	314.00	-	n/a	n/a	-	n/a
2042	3,265.03	16.93	1,275.00	5,100.00	n/a	n/a	514.00	330.00	-	n/a	n/a	-	n/a
2043	3,354.10	16.93	1,275.00	5,100.00	n/a	n/a	523.00	336.00	-	n/a	n/a	-	n/a

15	Portfolio15	No Upgrades											
	Clean energy resources (MWa)	Clean energy resources (MWa)	Energy Storage (MW)	Energy Storage (MWh)	Energy Storage (MW)	Energy Storage (MWh)			CBREs (MWa)	CBREs (MW or MWa)			
Year	System resources	Voluntary programs	System resources	System resources	Voluntary programs	Voluntary programs	Energy Efficiency (MWa)	Demand Response (MW)	System resources	Voluntary programs	Retirements (list unit)	Transmission Projects	Operational Changes
2023	n/a	85.49	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2024	138.60	112.47	-	-	n/a	n/a	30.00	133.00	-	n/a	n/a	-	n/a
2025	138.61	113.21	475.00	1,900.00	n/a	n/a	60.00	162.00	-	n/a	n/a	-	n/a
2026	633.41	114.47	475.00	1,900.00	n/a	n/a	90.00	183.00	12.55	n/a	n/a	-	n/a
2027	695.07	115.74	475.00	1,900.00	n/a	n/a	120.00	199.00	16.03	n/a	n/a	-	n/a
2028	972.16	116.89	475.00	1,900.00	n/a	n/a	150.00	211.00	21.59	n/a	n/a	-	n/a
2029	1,237.96	118.28	475.00	1,900.00	n/a	n/a	183.00	218.00	26.79	n/a	n/a	-	n/a
2030	1,414.98	119.55	975.00	3,900.00	n/a	n/a	216.00	228.00	30.80	n/a	n/a	-	n/a
2031	1,523.35	119.04	975.00	3,900.00	n/a	n/a	251.00	242.00	30.80	n/a	n/a	-	n/a
2032	1,652.81	118.41	975.00	3,900.00	n/a	n/a	285.00	252.00	30.80	n/a	n/a	-	n/a
2033	1,782.30	118.02	975.00	3,900.00	n/a	n/a	317.00	261.00	30.80	n/a	n/a	-	n/a
2034	1,917.46	117.52	975.00	3,900.00	n/a	n/a	348.00	270.00	30.80	n/a	n/a	-	n/a
2035	2,075.03	117.01	975.00	3,900.00	n/a	n/a	377.00	272.00	30.80	n/a	n/a	-	n/a
2036	2,264.54	116.40	975.00	3,900.00	n/a	n/a	404.00	287.00	30.80	n/a	n/a	-	n/a
2037	2,454.09	67.75	975.00	3,900.00	n/a	n/a	429.00	296.00	30.80	n/a	n/a	-	n/a
2038	2,631.80	41.47	1,075.00	4,300.00	n/a	n/a	452.00	303.00	30.80	n/a	n/a	-	n/a
2039	2,811.36	16.93	1,175.00	4,700.00	n/a	n/a	471.00	310.00	30.80	n/a	n/a	-	n/a
2040	2,960.40	16.93	1,275.00	5,100.00	n/a	n/a	487.00	306.00	30.80	n/a	n/a	-	n/a
2041	3,145.02	16.93	1,275.00	5,100.00	n/a	n/a	503.00	314.00	30.80	n/a	n/a	-	n/a
2042	3,232.39	16.93	1,275.00	5,100.00	n/a	n/a	514.00	330.00	30.80	n/a	n/a	-	n/a
2043	3,320.52	16.93	1,275.00	5,100.00	n/a	n/a	523.00	336.00	30.80	n/a	n/a	-	n/a

Instructions

For each of the portfolios listed on the "Portfolios" tab, list the annual goals for actions over the study period

UM 2225 Order Summary/Rubric references: C.2(a)-(i), C.3

Note: This column reflects both the EE that was previously deemed cost effective by Energy Trust and any additional EE selected in this portfolio

Note: this column reflects both the DR that was previously deemed cost effective by PGE and any additional DR selected in this portfolio

16	Portfolio16	Unconstrained SoA												
	Clean energy resources (MWa)	Clean energy resources (MWa)	Energy Storage (MW)	Energy Storage (MWh)	Energy Storage (MW)	Energy Storage (MWh)			CBREs (MWa)	CBREs (MW or MWa)			
Year	System resources	Voluntary programs	System resources	System resources	Voluntary programs	Voluntary programs	Energy Efficiency (MWa)	Demand Response (MW)	System resources	Voluntary programs	Retirements (list unit)	Transmission Projects	Operational Changes
2023	n/a	85.49	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2024	138.60	112.47	-	-	n/a	n/a	30.00	133.00	-	n/a	n/a	-	n/a
2025	138.61	113.21	475.00	1,900.00	n/a	n/a	60.00	162.00	-	n/a	n/a	-	n/a
2026	589.19	114.47	707.00	2,828.00	n/a	n/a	90.00	183.00	12.54	n/a	n/a	-	n/a
2027	695.08	115.74	707.00	2,828.00	n/a	n/a	120.00	199.00	16.00	n/a	n/a	238.00	n/a
2028	975.53	116.89	707.00	2,828.00	n/a	n/a	150.00	211.00	21.56	n/a	n/a	894.00	n/a
2029	1,295.58	118.28	707.00	2,828.00	n/a	n/a	183.00	218.00	26.75	n/a	n/a	1,640.00	n/a
2030	1,418.50	119.55	707.00	2,828.00	n/a	n/a	216.00	228.00	30.75	n/a	n/a	1,940.00	n/a
2031	1,583.93	119.04	707.00	2,828.00	n/a	n/a	251.00	242.00	30.75	n/a	n/a	2,317.00	n/a
2032	1,682.31	118.41	707.00	2,828.00	n/a	n/a	285.00	252.00	30.75	n/a	n/a	2,644.00	n/a
2033	1,838.53	118.02	807.00	3,228.00	n/a	n/a	317.00	261.00	30.75	n/a	n/a	3,017.00	n/a
2034	2,000.11	117.52	907.00	3,628.00	n/a	n/a	348.00	270.00	30.75	n/a	n/a	3,516.00	n/a
2035	2,166.60	117.01	1,007.00	4,028.00	n/a	n/a	377.00	272.00	30.75	n/a	n/a	3,917.00	n/a
2036	2,346.56	116.40	1,075.00	4,300.00	n/a	n/a	404.00	287.00	30.76	n/a	n/a	4,504.00	n/a
2037	2,455.66	67.75	1,075.00	4,300.00	n/a	n/a	429.00	296.00	30.76	n/a	n/a	4,752.00	n/a
2038	2,632.01	41.47	1,075.00	4,300.00	n/a	n/a	452.00	303.00	30.76	n/a	n/a	5,486.00	n/a
2039	2,811.56	16.93	1,175.00	4,700.00	n/a	n/a	471.00	310.00	30.76	n/a	n/a	6,262.00	n/a
2040	3,060.55	16.93	1,275.00	5,100.00	n/a	n/a	487.00	306.00	30.76	n/a	n/a	7,380.00	n/a
2041	3,145.21	16.93	1,275.00	5,100.00	n/a	n/a	503.00	314.00	30.76	n/a	n/a	7,567.00	n/a
2042	3,232.55	16.93	1,275.00	5,100.00	n/a	n/a	514.00	330.00	30.76	n/a	n/a	7,776.00	n/a
2043	3,320.71	16.93	1,275.00	5,100.00	n/a	n/a	523.00	336.00	30.76	n/a	n/a	7,991.00	n/a

17	Portfolio17	Unconstrained SoA Plus												
	Clean energy resources (MWa)	Clean energy resources (MWa)	Energy Storage (MW)	Energy Storage (MWh)	Energy Storage (MW)	Energy Storage (MWh)			CBREs (MWa)	CBREs (MW or MWa)			
Year	System resources	Voluntary programs	System resources	System resources	Voluntary programs	Voluntary programs	Energy Efficiency (MWa)	Demand Response (MW)	System resources	Voluntary programs	Retirements (list unit)	Transmission Projects	Operational Changes
2023	n/a	85.49	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2024	138.60	112.47	-	-	n/a	n/a	30.00	133.00	-	n/a	n/a	-	n/a
2025	138.60	113.21	475.00	1,900.00	n/a	n/a	60.00	162.00	-	n/a	n/a	-	n/a
2026	589.19	114.47	707.00	2,828.00	n/a	n/a	90.00	183.00	12.54	n/a	n/a	-	n/a
2027	695.08	115.74	707.00	2,828.00	n/a	n/a	120.00	199.00	16.00	n/a	n/a	238.00	n/a
2028	975.53	116.89	707.00	2,828.00	n/a	n/a	150.00	211.00	21.56	n/a	n/a	888.00	n/a
2029	1,288.67	118.28	707.00	2,828.00	n/a	n/a	183.00	218.00	26.75	n/a	n/a	1,622.00	n/a
2030	1,411.40	119.55	707.00	2,828.00	n/a	n/a	216.00	228.00	30.75	n/a	n/a	1,922.00	n/a
2031	1,577.59	119.04	707.00	2,828.00	n/a	n/a	251.00	242.00	30.75	n/a	n/a	2,300.00	n/a
2032	1,667.82	118.41	707.00	2,828.00	n/a	n/a	285.00	252.00	30.75	n/a	n/a	2,614.00	n/a
2033	1,860.27	118.02	775.00	3,100.00	n/a	n/a	317.00	261.00	30.75	n/a	n/a	3,070.00	n/a
2034	1,991.69	117.52	875.00	3,500.00	n/a	n/a	348.00	270.00	30.75	n/a	n/a	3,512.00	n/a
2035	2,139.51	117.01	975.00	3,900.00	n/a	n/a	377.00	272.00	30.75	n/a	n/a	3,881.00	n/a
2036	2,306.29	116.40	1,075.00	4,300.00	n/a	n/a	404.00	287.00	30.76	n/a	n/a	4,447.00	n/a
2037	2,460.32	67.75	1,075.00	4,300.00	n/a	n/a	429.00	296.00	30.76	n/a	n/a	5,058.00	n/a
2038	2,632.02	41.47	1,075.00	4,300.00	n/a	n/a	452.00	303.00	30.76	n/a	n/a	5,825.00	n/a
2039	2,811.57	16.93	1,175.00	4,700.00	n/a	n/a	471.00	310.00	30.76	n/a	n/a	6,510.00	n/a
2040	3,060.59	16.93	1,275.00	5,100.00	n/a	n/a	487.00	306.00	30.76	n/a	n/a	7,192.00	n/a
2041	3,145.24	16.93	1,275.00	5,100.00	n/a	n/a	503.00	314.00	30.76	n/a	n/a	7,380.00	n/a
2042	3,232.58	16.93	1,275.00	5,100.00	n/a	n/a	514.00	330.00	30.76	n/a	n/a	7,589.00	n/a
2043	3,320.73	16.93	1,275.00	5,100.00	n/a	n/a	523.00	336.00	30.76	n/a	n/a	7,804.00	n/a

Instructions

For each of the portfolios listed on the "Portfolios" tab, list the annual goals for actions over the study period

UM 2225 Order Summary/Rubric references: C.2(a)-(i), C.3

								Note: This column reflects both the EE that was previously deemed cost effective by Energy Trust and any additional EE selected in this portfolio	Note: this column reflects both the DR that was previously deemed cost effective by PGE and any additional DR selected in this portfolio					
18	Portfolio18	SoA in 2027								CBREs (MWa)	CBREs (MW or MWa)			
Year	Clean energy resources (MWa) System resources	Clean energy resources (MWa) Voluntary programs	Energy Storage (MW) System resources	Energy Storage (MWh) System resources	Energy Storage (MW) Voluntary programs	Energy Storage (MWh) Voluntary programs		Energy Efficiency (MWa)	Demand Response (MW)	System resources	Voluntary programs	Retirements (list unit)	Transmission Projects	Operational Changes
2023	n/a	85.49	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	n/a	n/a	n/a
2024	138.60	112.47	-	-	n/a	n/a		30.00	133.00	-	n/a	n/a	-	n/a
2025	138.61	113.21	475.00	1,900.00	n/a	n/a		60.00	162.00	-	n/a	n/a	-	n/a
2026	633.42	114.47	475.00	1,900.00	n/a	n/a		90.00	183.00	12.55	n/a	n/a	-	n/a
2027	806.90	115.74	475.00	1,900.00	n/a	n/a		120.00	199.00	16.01	n/a	n/a	400.00	n/a
2028	972.18	116.89	475.00	1,900.00	n/a	n/a		150.00	211.00	21.57	n/a	n/a	400.00	n/a
2029	1,237.96	118.28	475.00	1,900.00	n/a	n/a		183.00	218.00	26.77	n/a	n/a	400.00	n/a
2030	1,412.73	119.55	816.00	3,264.00	n/a	n/a		216.00	228.00	30.80	n/a	n/a	400.00	n/a
2031	1,522.55	119.04	916.00	3,664.00	n/a	n/a		251.00	242.00	30.80	n/a	n/a	400.00	n/a
2032	1,651.95	118.41	916.00	3,664.00	n/a	n/a		285.00	252.00	30.80	n/a	n/a	400.00	n/a
2033	1,781.48	118.02	916.00	3,664.00	n/a	n/a		317.00	261.00	30.80	n/a	n/a	400.00	n/a
2034	1,916.63	117.52	916.00	3,664.00	n/a	n/a		348.00	270.00	30.80	n/a	n/a	400.00	n/a
2035	2,075.03	117.01	916.00	3,664.00	n/a	n/a		377.00	272.00	30.80	n/a	n/a	400.00	n/a
2036	2,264.40	116.40	916.00	3,664.00	n/a	n/a		404.00	287.00	30.80	n/a	n/a	400.00	n/a
2037	2,454.08	67.75	975.00	3,900.00	n/a	n/a		429.00	296.00	30.80	n/a	n/a	400.00	n/a
2038	2,631.79	41.47	1,075.00	4,300.00	n/a	n/a		452.00	303.00	30.80	n/a	n/a	400.00	n/a
2039	2,811.35	16.93	1,175.00	4,700.00	n/a	n/a		471.00	310.00	30.80	n/a	n/a	400.00	n/a
2040	2,960.40	16.93	1,275.00	5,100.00	n/a	n/a		487.00	306.00	30.80	n/a	n/a	400.00	n/a
2041	3,145.01	16.93	1,275.00	5,100.00	n/a	n/a		503.00	314.00	30.80	n/a	n/a	400.00	n/a
2042	3,232.38	16.93	1,275.00	5,100.00	n/a	n/a		514.00	330.00	30.80	n/a	n/a	400.00	n/a
2043	3,320.52	16.93	1,275.00	5,100.00	n/a	n/a		523.00	336.00	30.80	n/a	n/a	400.00	n/a

19	Portfolio19	SoA in 2029								CBREs (MWa)	CBREs (MW or MWa)			
Year	Clean energy resources (MWa) System resources	Clean energy resources (MWa) Voluntary programs	Energy Storage (MW) System resources	Energy Storage (MWh) System resources	Energy Storage (MW) Voluntary programs	Energy Storage (MWh) Voluntary programs		Energy Efficiency (MWa)	Demand Response (MW)	System resources	Voluntary programs	Retirements (list unit)	Transmission Projects	Operational Changes
2023	n/a	85.49	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	n/a	n/a	n/a
2024	138.60	112.47	-	-	n/a	n/a		30.00	133.00	-	n/a	n/a	-	n/a
2025	138.61	113.21	475.00	1,900.00	n/a	n/a		60.00	162.00	-	n/a	n/a	-	n/a
2026	633.42	114.47	475.00	1,900.00	n/a	n/a		90.00	183.00	12.54	n/a	n/a	-	n/a
2027	695.09	115.74	475.00	1,900.00	n/a	n/a		120.00	199.00	16.02	n/a	n/a	-	n/a
2028	972.16	116.89	475.00	1,900.00	n/a	n/a		150.00	211.00	21.59	n/a	n/a	-	n/a
2029	1,237.95	118.28	475.00	1,900.00	n/a	n/a		183.00	218.00	26.78	n/a	n/a	400.00	n/a
2030	1,412.73	119.55	816.00	3,264.00	n/a	n/a		216.00	228.00	30.80	n/a	n/a	400.00	n/a
2031	1,522.55	119.04	916.00	3,664.00	n/a	n/a		251.00	242.00	30.80	n/a	n/a	400.00	n/a
2032	1,651.95	118.41	916.00	3,664.00	n/a	n/a		285.00	252.00	30.80	n/a	n/a	400.00	n/a
2033	1,781.48	118.02	916.00	3,664.00	n/a	n/a		317.00	261.00	30.80	n/a	n/a	400.00	n/a
2034	1,916.63	117.52	916.00	3,664.00	n/a	n/a		348.00	270.00	30.80	n/a	n/a	400.00	n/a
2035	2,075.03	117.01	916.00	3,664.00	n/a	n/a		377.00	272.00	30.80	n/a	n/a	400.00	n/a
2036	2,264.40	116.40	916.00	3,664.00	n/a	n/a		404.00	287.00	30.80	n/a	n/a	400.00	n/a
2037	2,454.08	67.75	975.00	3,900.00	n/a	n/a		429.00	296.00	30.80	n/a	n/a	400.00	n/a
2038	2,631.79	41.47	1,075.00	4,300.00	n/a	n/a		452.00	303.00	30.80	n/a	n/a	400.00	n/a
2039	2,811.36	16.93	1,175.00	4,700.00	n/a	n/a		471.00	310.00	30.80	n/a	n/a	400.00	n/a
2040	2,960.40	16.93	1,275.00	5,100.00	n/a	n/a		487.00	306.00	30.80	n/a	n/a	400.00	n/a
2041	3,145.01	16.93	1,275.00	5,100.00	n/a	n/a		503.00	314.00	30.80	n/a	n/a	400.00	n/a
2042	3,232.39	16.93	1,275.00	5,100.00	n/a	n/a		514.00	330.00	30.80	n/a	n/a	400.00	n/a
2043	3,320.52	16.93	1,275.00	5,100.00	n/a	n/a		523.00	336.00	30.80	n/a	n/a	400.00	n/a

Instructions

For each of the portfolios listed on the "Portfolios" tab, list the annual goals for actions over the study period

Note: This column reflects both the EE that was previously deemed cost effective by Energy Trust and any additional EE selected in this portfolio

Note: this column reflects both the DR that was previously deemed cost effective by PGE and any additional DR selected in this portfolio

UM 2225 Order Summary/Rubric references: C.2(a)-(i), C.3

20	Portfolio20	WY in 2026											
	Clean energy resources (MWa)	Clean energy resources (MWa)	Energy Storage (MW)	Energy Storage (MWh)	Energy Storage (MW)	Energy Storage (MWh)			CBREs (MWa)	CBREs (MW or MWa)			
Year	System resources	Voluntary programs	System resources	System resources	Voluntary programs	Voluntary programs	Energy Efficiency (MWa)	Demand Response (MW)	System resources	Voluntary programs	Retirements (list unit)	Transmission Projects	Operational Changes
2023	n/a	85.49	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2024	138.60	112.47	-	-	n/a	n/a	30.00	133.00	-	n/a	n/a	-	n/a
2025	138.61	113.21	475.00	1,900.00	n/a	n/a	60.00	162.00	-	n/a	n/a	-	n/a
2026	724.98	114.47	475.00	1,900.00	n/a	n/a	90.00	183.00	12.54	n/a	n/a	400.00	n/a
2027	726.08	115.74	475.00	1,900.00	n/a	n/a	120.00	199.00	16.00	n/a	n/a	400.00	n/a
2028	972.18	116.89	475.00	1,900.00	n/a	n/a	150.00	211.00	21.56	n/a	n/a	400.00	n/a
2029	1,237.96	118.28	475.00	1,900.00	n/a	n/a	183.00	218.00	26.77	n/a	n/a	400.00	n/a
2030	1,409.78	119.55	607.00	2,428.00	n/a	n/a	216.00	228.00	30.80	n/a	n/a	400.00	n/a
2031	1,519.72	119.04	707.00	2,828.00	n/a	n/a	251.00	242.00	30.80	n/a	n/a	400.00	n/a
2032	1,650.35	118.41	807.00	3,228.00	n/a	n/a	285.00	252.00	30.80	n/a	n/a	400.00	n/a
2033	1,780.93	118.02	875.00	3,500.00	n/a	n/a	317.00	261.00	30.80	n/a	n/a	400.00	n/a
2034	1,916.05	117.52	875.00	3,500.00	n/a	n/a	348.00	270.00	30.80	n/a	n/a	400.00	n/a
2035	2,075.03	117.01	875.00	3,500.00	n/a	n/a	377.00	272.00	30.80	n/a	n/a	400.00	n/a
2036	2,264.39	116.40	875.00	3,500.00	n/a	n/a	404.00	287.00	30.80	n/a	n/a	400.00	n/a
2037	2,454.08	67.75	975.00	3,900.00	n/a	n/a	429.00	296.00	30.80	n/a	n/a	400.00	n/a
2038	2,631.79	41.47	1,075.00	4,300.00	n/a	n/a	452.00	303.00	30.80	n/a	n/a	400.00	n/a
2039	2,811.35	16.93	1,175.00	4,700.00	n/a	n/a	471.00	310.00	30.80	n/a	n/a	400.00	n/a
2040	2,960.39	16.93	1,275.00	5,100.00	n/a	n/a	487.00	306.00	30.80	n/a	n/a	400.00	n/a
2041	3,145.02	16.93	1,275.00	5,100.00	n/a	n/a	503.00	314.00	30.80	n/a	n/a	400.00	n/a
2042	3,232.39	16.93	1,275.00	5,100.00	n/a	n/a	514.00	330.00	30.80	n/a	n/a	400.00	n/a
2043	3,320.52	16.93	1,275.00	5,100.00	n/a	n/a	523.00	336.00	30.80	n/a	n/a	400.00	n/a

21	Portfolio21	NV in 2026											
	Clean energy resources (MWa)	Clean energy resources (MWa)	Energy Storage (MW)	Energy Storage (MWh)	Energy Storage (MW)	Energy Storage (MWh)			CBREs (MWa)	CBREs (MW or MWa)			
Year	System resources	Voluntary programs	System resources	System resources	Voluntary programs	Voluntary programs	Energy Efficiency (MWa)	Demand Response (MW)	System resources	Voluntary programs	Retirements (list unit)	Transmission Projects	Operational Changes
2023	n/a	85.49	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2024	138.60	112.47	-	-	n/a	n/a	30.00	133.00	-	n/a	n/a	-	n/a
2025	138.61	113.21	475.00	1,900.00	n/a	n/a	60.00	162.00	-	n/a	n/a	-	n/a
2026	674.91	114.47	475.00	1,900.00	n/a	n/a	90.00	183.00	12.54	n/a	n/a	400.00	n/a
2027	691.75	115.74	475.00	1,900.00	n/a	n/a	120.00	199.00	16.00	n/a	n/a	400.00	n/a
2028	972.16	116.89	475.00	1,900.00	n/a	n/a	150.00	211.00	21.56	n/a	n/a	400.00	n/a
2029	1,237.95	118.28	475.00	1,900.00	n/a	n/a	183.00	218.00	26.76	n/a	n/a	400.00	n/a
2030	1,409.78	119.55	607.00	2,428.00	n/a	n/a	216.00	228.00	30.79	n/a	n/a	400.00	n/a
2031	1,519.72	119.04	707.00	2,828.00	n/a	n/a	251.00	242.00	30.80	n/a	n/a	400.00	n/a
2032	1,650.35	118.41	807.00	3,228.00	n/a	n/a	285.00	252.00	30.80	n/a	n/a	400.00	n/a
2033	1,780.93	118.02	875.00	3,500.00	n/a	n/a	317.00	261.00	30.80	n/a	n/a	400.00	n/a
2034	1,916.05	117.52	875.00	3,500.00	n/a	n/a	348.00	270.00	30.80	n/a	n/a	400.00	n/a
2035	2,075.04	117.01	875.00	3,500.00	n/a	n/a	377.00	272.00	30.80	n/a	n/a	400.00	n/a
2036	2,264.25	116.40	875.00	3,500.00	n/a	n/a	404.00	287.00	30.80	n/a	n/a	400.00	n/a
2037	2,454.09	67.75	975.00	3,900.00	n/a	n/a	429.00	296.00	30.80	n/a	n/a	400.00	n/a
2038	2,631.80	41.47	1,075.00	4,300.00	n/a	n/a	452.00	303.00	30.80	n/a	n/a	400.00	n/a
2039	2,811.35	16.93	1,175.00	4,700.00	n/a	n/a	471.00	310.00	30.80	n/a	n/a	400.00	n/a
2040	2,960.40	16.93	1,275.00	5,100.00	n/a	n/a	487.00	306.00	30.80	n/a	n/a	400.00	n/a
2041	3,145.02	16.93	1,275.00	5,100.00	n/a	n/a	503.00	314.00	30.80	n/a	n/a	400.00	n/a
2042	3,232.39	16.93	1,275.00	5,100.00	n/a	n/a	514.00	330.00	30.80	n/a	n/a	400.00	n/a
2043	3,320.52	16.93	1,275.00	5,100.00	n/a	n/a	523.00	336.00	30.80	n/a	n/a	400.00	n/a

Instructions

For each of the portfolios listed on the "Portfolios" tab, list the annual goals for actions over the study period

Note: This column reflects both the EE that was previously deemed cost effective by Energy Trust and any additional EE selected in this portfolio	Note: this column reflects both the DR that was previously deemed cost effective by PGE and any additional DR selected in this portfolio

UM 2225 Order Summary/Rubric references: C.2(a)-(i), C.3

22 Portfolio22 WY in 2028

Year	Clean energy resources (MWa) System resources	Clean energy resources (MWa) Voluntary programs	Energy Storage (MW) System resources	Energy Storage (MWh) System resources	Energy Storage (MW) Voluntary programs	Energy Storage (MWh) Voluntary programs	Energy Efficiency (MWa)	Demand Response (MW)	CBREs (MWa) System resources	CBREs (MW or MWa) Voluntary programs	Retirements (list unit)	Transmission Projects	Operational Changes
2023	n/a	85.49	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2024	138.60	112.47	-	-	n/a	n/a	30.00	133.00	-	n/a	n/a	-	n/a
2025	138.61	113.21	475.00	1,900.00	n/a	n/a	60.00	162.00	-	n/a	n/a	-	n/a
2026	633.42	114.47	475.00	1,900.00	n/a	n/a	90.00	183.00	12.54	n/a	n/a	-	n/a
2027	696.48	115.74	475.00	1,900.00	n/a	n/a	120.00	199.00	16.01	n/a	n/a	-	n/a
2028	972.16	116.89	475.00	1,900.00	n/a	n/a	150.00	211.00	21.57	n/a	n/a	400.00	n/a
2029	1,237.96	118.28	475.00	1,900.00	n/a	n/a	183.00	218.00	26.77	n/a	n/a	400.00	n/a
2030	1,409.78	119.55	607.00	2,428.00	n/a	n/a	216.00	228.00	30.80	n/a	n/a	400.00	n/a
2031	1,519.72	119.04	707.00	2,828.00	n/a	n/a	251.00	242.00	30.80	n/a	n/a	400.00	n/a
2032	1,650.35	118.41	807.00	3,228.00	n/a	n/a	285.00	252.00	30.80	n/a	n/a	400.00	n/a
2033	1,780.93	118.02	875.00	3,500.00	n/a	n/a	317.00	261.00	30.80	n/a	n/a	400.00	n/a
2034	1,916.05	117.52	875.00	3,500.00	n/a	n/a	348.00	270.00	30.80	n/a	n/a	400.00	n/a
2035	2,075.04	117.01	875.00	3,500.00	n/a	n/a	377.00	272.00	30.80	n/a	n/a	400.00	n/a
2036	2,264.39	116.40	875.00	3,500.00	n/a	n/a	404.00	287.00	30.80	n/a	n/a	400.00	n/a
2037	2,454.08	67.75	975.00	3,900.00	n/a	n/a	429.00	296.00	30.80	n/a	n/a	400.00	n/a
2038	2,631.79	41.47	1,075.00	4,300.00	n/a	n/a	452.00	303.00	30.80	n/a	n/a	400.00	n/a
2039	2,811.35	16.93	1,175.00	4,700.00	n/a	n/a	471.00	310.00	30.80	n/a	n/a	400.00	n/a
2040	2,960.40	16.93	1,275.00	5,100.00	n/a	n/a	487.00	306.00	30.80	n/a	n/a	400.00	n/a
2041	3,145.02	16.93	1,275.00	5,100.00	n/a	n/a	503.00	314.00	30.80	n/a	n/a	400.00	n/a
2042	3,232.39	16.93	1,275.00	5,100.00	n/a	n/a	514.00	330.00	30.80	n/a	n/a	400.00	n/a
2043	3,320.52	16.93	1,275.00	5,100.00	n/a	n/a	523.00	336.00	30.80	n/a	n/a	400.00	n/a

23 Portfolio23 NV in 2028

Year	Clean energy resources (MWa) System resources	Clean energy resources (MWa) Voluntary programs	Energy Storage (MW) System resources	Energy Storage (MWh) System resources	Energy Storage (MW) Voluntary programs	Energy Storage (MWh) Voluntary programs	Energy Efficiency (MWa)	Demand Response (MW)	CBREs (MWa) System resources	CBREs (MW or MWa) Voluntary programs	Retirements (list unit)	Transmission Projects	Operational Changes
2023	n/a	85.49	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2024	138.60	112.47	-	-	n/a	n/a	30.00	133.00	-	n/a	n/a	-	n/a
2025	138.61	113.21	475.00	1,900.00	n/a	n/a	60.00	162.00	-	n/a	n/a	-	n/a
2026	633.41	114.47	475.00	1,900.00	n/a	n/a	90.00	183.00	12.55	n/a	n/a	-	n/a
2027	695.10	115.74	475.00	1,900.00	n/a	n/a	120.00	199.00	16.01	n/a	n/a	-	n/a
2028	972.16	116.89	475.00	1,900.00	n/a	n/a	150.00	211.00	21.57	n/a	n/a	400.00	n/a
2029	1,237.95	118.28	475.00	1,900.00	n/a	n/a	183.00	218.00	26.77	n/a	n/a	400.00	n/a
2030	1,409.78	119.55	607.00	2,428.00	n/a	n/a	216.00	228.00	30.79	n/a	n/a	400.00	n/a
2031	1,519.72	119.04	707.00	2,828.00	n/a	n/a	251.00	242.00	30.80	n/a	n/a	400.00	n/a
2032	1,650.35	118.41	807.00	3,228.00	n/a	n/a	285.00	252.00	30.80	n/a	n/a	400.00	n/a
2033	1,780.93	118.02	875.00	3,500.00	n/a	n/a	317.00	261.00	30.80	n/a	n/a	400.00	n/a
2034	1,916.05	117.52	875.00	3,500.00	n/a	n/a	348.00	270.00	30.80	n/a	n/a	400.00	n/a
2035	2,075.04	117.01	875.00	3,500.00	n/a	n/a	377.00	272.00	30.80	n/a	n/a	400.00	n/a
2036	2,264.25	116.40	875.00	3,500.00	n/a	n/a	404.00	287.00	30.80	n/a	n/a	400.00	n/a
2037	2,454.09	67.75	975.00	3,900.00	n/a	n/a	429.00	296.00	30.80	n/a	n/a	400.00	n/a
2038	2,631.80	41.47	1,075.00	4,300.00	n/a	n/a	452.00	303.00	30.80	n/a	n/a	400.00	n/a
2039	2,811.35	16.93	1,175.00	4,700.00	n/a	n/a	471.00	310.00	30.80	n/a	n/a	400.00	n/a
2040	2,960.40	16.93	1,275.00	5,100.00	n/a	n/a	487.00	306.00	30.80	n/a	n/a	400.00	n/a
2041	3,145.02	16.93	1,275.00	5,100.00	n/a	n/a	503.00	314.00	30.80	n/a	n/a	400.00	n/a
2042	3,232.39	16.93	1,275.00	5,100.00	n/a	n/a	514.00	330.00	30.80	n/a	n/a	400.00	n/a
2043	3,320.52	16.93	1,275.00	5,100.00	n/a	n/a	523.00	336.00	30.80	n/a	n/a	400.00	n/a

Instructions

For each of the portfolios listed on the "Portfolios" tab, list the annual goals for actions over the study period

UM 2225 Order Summary/Rubric references: C.2(a)-(i), C.3

24	Portfolio24	Oregon-only resources												
	Clean energy resources (MWa)	Clean energy resources (MWa)	Energy Storage (MW)	Energy Storage (MWh)	Energy Storage (MW)	Energy Storage (MWh)			CBREs (MWa)	CBREs (MW or MWa)				
Year	System resources	Voluntary programs	System resources	System resources	Voluntary programs	Voluntary programs	Energy Efficiency (MWa)	Demand Response (MW)	System resources	Voluntary programs	Retirements (list unit)	Transmission Projects	Operational Changes	
2023	n/a	85.49	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
2024	138.60	112.47	-	-	n/a	n/a	30.00	133.00	-	n/a	n/a	-	n/a	
2025	138.61	113.21	475.00	1,900.00	n/a	n/a	60.00	162.00	-	n/a	n/a	-	n/a	
2026	633.43	114.47	475.00	1,900.00	n/a	n/a	90.00	183.00	12.54	n/a	n/a	-	n/a	
2027	743.16	115.74	475.00	1,900.00	n/a	n/a	120.00	199.00	16.00	n/a	n/a	250.00	n/a	
2028	972.17	116.89	475.00	1,900.00	n/a	n/a	150.00	211.00	21.56	n/a	n/a	400.00	n/a	
2029	1,237.94	118.28	475.00	1,900.00	n/a	n/a	183.00	218.00	26.77	n/a	n/a	400.00	n/a	
2030	1,414.95	119.55	975.00	3,900.00	n/a	n/a	216.00	228.00	30.80	n/a	n/a	400.00	n/a	
2031	1,523.34	119.04	975.00	3,900.00	n/a	n/a	251.00	242.00	30.80	n/a	n/a	400.00	n/a	
2032	1,652.78	118.41	975.00	3,900.00	n/a	n/a	285.00	252.00	30.80	n/a	n/a	400.00	n/a	
2033	1,782.27	118.02	975.00	3,900.00	n/a	n/a	317.00	261.00	30.80	n/a	n/a	400.00	n/a	
2034	1,917.45	117.52	975.00	3,900.00	n/a	n/a	348.00	270.00	30.80	n/a	n/a	400.00	n/a	
2035	2,075.03	117.01	975.00	3,900.00	n/a	n/a	377.00	272.00	30.80	n/a	n/a	400.00	n/a	
2036	2,264.29	116.40	975.00	3,900.00	n/a	n/a	404.00	287.00	30.80	n/a	n/a	400.00	n/a	
2037	2,454.06	67.75	975.00	3,900.00	n/a	n/a	429.00	296.00	30.80	n/a	n/a	400.00	n/a	
2038	2,631.78	41.47	1,075.00	4,300.00	n/a	n/a	452.00	303.00	30.80	n/a	n/a	400.00	n/a	
2039	2,811.33	16.93	1,175.00	4,700.00	n/a	n/a	471.00	310.00	30.80	n/a	n/a	400.00	n/a	
2040	2,960.37	16.93	1,275.00	5,100.00	n/a	n/a	487.00	306.00	30.80	n/a	n/a	400.00	n/a	
2041	3,145.00	16.93	1,275.00	5,100.00	n/a	n/a	503.00	314.00	30.80	n/a	n/a	400.00	n/a	
2042	3,232.36	16.93	1,275.00	5,100.00	n/a	n/a	514.00	330.00	30.80	n/a	n/a	400.00	n/a	
2043	3,320.50	16.93	1,275.00	5,100.00	n/a	n/a	523.00	336.00	30.80	n/a	n/a	400.00	n/a	

Note: This column reflects both the EE that was previously deemed cost effective by Energy Trust and any additional EE selected in this portfolio

Note: this column reflects both the DR that was previously deemed cost effective by PGE and any additional DR selected in this portfolio

25	Portfolio25	Physical RPS												
	Clean energy resources (MWa)	Clean energy resources (MWa)	Energy Storage (MW)	Energy Storage (MWh)	Energy Storage (MW)	Energy Storage (MWh)			CBREs (MWa)	CBREs (MW or MWa)				
Year	System resources	Voluntary programs	System resources	System resources	Voluntary programs	Voluntary programs	Energy Efficiency (MWa)	Demand Response (MW)	System resources	Voluntary programs	Retirements (list unit)	Transmission Projects	Operational Changes	
2023	n/a	85.49	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
2024	138.60	112.47	-	-	n/a	n/a	30.00	133.00	-	n/a	n/a	-	n/a	
2025	138.61	113.21	475.00	1,900.00	n/a	n/a	60.00	162.00	-	n/a	n/a	-	n/a	
2026	633.42	114.47	475.00	1,900.00	n/a	n/a	90.00	183.00	12.54	n/a	n/a	-	n/a	
2027	734.27	115.74	475.00	1,900.00	n/a	n/a	120.00	199.00	16.01	n/a	n/a	228.00	n/a	
2028	972.18	116.89	475.00	1,900.00	n/a	n/a	150.00	211.00	21.56	n/a	n/a	400.00	n/a	
2029	1,237.96	118.28	475.00	1,900.00	n/a	n/a	183.00	218.00	26.77	n/a	n/a	400.00	n/a	
2030	1,412.73	119.55	816.00	3,264.00	n/a	n/a	216.00	228.00	30.80	n/a	n/a	400.00	n/a	
2031	1,522.55	119.04	916.00	3,664.00	n/a	n/a	251.00	242.00	30.80	n/a	n/a	400.00	n/a	
2032	1,651.95	118.41	916.00	3,664.00	n/a	n/a	285.00	252.00	30.80	n/a	n/a	400.00	n/a	
2033	1,781.48	118.02	916.00	3,664.00	n/a	n/a	317.00	261.00	30.80	n/a	n/a	400.00	n/a	
2034	1,916.63	117.52	916.00	3,664.00	n/a	n/a	348.00	270.00	30.80	n/a	n/a	400.00	n/a	
2035	2,075.03	117.01	916.00	3,664.00	n/a	n/a	377.00	272.00	30.80	n/a	n/a	400.00	n/a	
2036	2,264.40	116.40	916.00	3,664.00	n/a	n/a	404.00	287.00	30.80	n/a	n/a	400.00	n/a	
2037	2,454.08	67.75	975.00	3,900.00	n/a	n/a	429.00	296.00	30.80	n/a	n/a	400.00	n/a	
2038	2,631.79	41.47	1,075.00	4,300.00	n/a	n/a	452.00	303.00	30.80	n/a	n/a	400.00	n/a	
2039	2,811.35	16.93	1,175.00	4,700.00	n/a	n/a	471.00	310.00	30.80	n/a	n/a	400.00	n/a	
2040	2,960.40	16.93	1,275.00	5,100.00	n/a	n/a	487.00	306.00	30.80	n/a	n/a	400.00	n/a	
2041	3,145.01	16.93	1,275.00	5,100.00	n/a	n/a	503.00	314.00	30.80	n/a	n/a	400.00	n/a	
2042	3,232.38	16.93	1,275.00	5,100.00	n/a	n/a	514.00	330.00	30.80	n/a	n/a	400.00	n/a	
2043	3,320.52	16.93	1,275.00	5,100.00	n/a	n/a	523.00	336.00	30.80	n/a	n/a	400.00	n/a	

Instructions

For each of the portfolios listed on the "Portfolios" tab, list the annual goals for actions over the study period

UM 2225 Order Summary/Rubric references: C.2(a)-(i), C.3

								Note: This column reflects both the EE that was previously deemed cost effective by Energy Trust and any additional EE selected in this portfolio	Note: this column reflects both the DR that was previously deemed cost effective by PGE and any additional DR selected in this portfolio					
26	Portfolio26	Hydrogen blending								CBREs (MWa)	CBREs (MW or MWa)			
Year	Clean energy resources (MWa) System resources	Clean energy resources (MWa) Voluntary programs	Energy Storage (MW) System resources	Energy Storage (MWh) System resources	Energy Storage (MW) Voluntary programs	Energy Storage (MWh) Voluntary programs	Energy Efficiency (MWa)	Demand Response (MW)	System resources	Voluntary programs	Retirements (list unit)	Transmission Projects	Operational Changes
2023	n/a	85.49	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2024	138.60	112.47	-	-	n/a	n/a	30.00	133.00	rush,	n/a	n/a	-	n/a
2025	138.61	113.21	475.00	1,900.00	n/a	n/a	60.00	162.00	-	n/a	n/a	-	n/a
2026	633.42	114.47	475.00	1,900.00	n/a	n/a	90.00	183.00	12.54	n/a	n/a	-	n/a
2027	734.27	115.74	475.00	1,900.00	n/a	n/a	120.00	199.00	16.01	n/a	n/a	228.00	n/a
2028	972.18	116.89	475.00	1,900.00	n/a	n/a	150.00	211.00	21.56	n/a	n/a	400.00	n/a
2029	1,125.96	118.28	475.00	1,900.00	n/a	n/a	183.00	218.00	26.76	n/a	n/a	400.00	n/a
2030	1,303.22	119.55	921.00	3,684.00	n/a	n/a	216.00	228.00	30.79	n/a	n/a	400.00	n/a
2031	1,413.35	119.04	975.00	3,900.00	n/a	n/a	251.00	242.00	30.80	n/a	n/a	400.00	n/a
2032	1,549.81	118.41	975.00	3,900.00	n/a	n/a	285.00	252.00	30.80	n/a	n/a	400.00	n/a
2033	1,682.29	118.02	975.00	3,900.00	n/a	n/a	317.00	261.00	30.80	n/a	n/a	400.00	n/a
2034	1,821.46	117.52	975.00	3,900.00	n/a	n/a	348.00	270.00	30.80	n/a	n/a	400.00	n/a
2035	2,012.42	117.01	975.00	3,900.00	n/a	n/a	377.00	272.00	30.80	n/a	n/a	400.00	n/a
2036	2,201.78	116.40	975.00	3,900.00	n/a	n/a	404.00	287.00	30.80	n/a	n/a	400.00	n/a
2037	2,391.47	67.75	975.00	3,900.00	n/a	n/a	429.00	296.00	30.80	n/a	n/a	400.00	n/a
2038	2,580.29	41.47	1,075.00	4,300.00	n/a	n/a	452.00	303.00	30.80	n/a	n/a	400.00	n/a
2039	2,770.81	16.93	1,175.00	4,700.00	n/a	n/a	471.00	310.00	30.80	n/a	n/a	400.00	n/a
2040	2,960.40	16.93	1,275.00	5,100.00	n/a	n/a	487.00	306.00	30.80	n/a	n/a	400.00	n/a
2041	3,145.01	16.93	1,275.00	5,100.00	n/a	n/a	503.00	314.00	30.80	n/a	n/a	400.00	n/a
2042	3,232.38	16.93	1,275.00	5,100.00	n/a	n/a	514.00	330.00	30.80	n/a	n/a	400.00	n/a
2043	3,320.52	16.93	1,275.00	5,100.00	n/a	n/a	523.00	336.00	30.80	n/a	n/a	400.00	n/a

27	Portfolio27	Hydrogen building							CBREs (MWa)	CBREs (MW or MWa)			
Year	Clean energy resources (MWa) System resources	Clean energy resources (MWa) Voluntary programs	Energy Storage (MW) System resources	Energy Storage (MWh) System resources	Energy Storage (MW) Voluntary programs	Energy Storage (MWh) Voluntary programs	Energy Efficiency (MWa)	Demand Response (MW)	System resources	Voluntary programs	Retirements (list unit)	Transmission Projects	Operational Changes
2023	n/a	85.49	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2024	138.60	112.47	-	-	n/a	n/a	30.00	133.00	-	n/a	n/a	-	n/a
2025	138.61	113.21	475.00	1,900.00	n/a	n/a	60.00	162.00	-	n/a	n/a	-	n/a
2026	633.43	114.47	475.00	1,900.00	n/a	n/a	90.00	183.00	12.54	n/a	n/a	-	n/a
2027	734.29	115.74	475.00	1,900.00	n/a	n/a	120.00	199.00	16.01	n/a	n/a	228.00	n/a
2028	972.18	116.89	475.00	1,900.00	n/a	n/a	150.00	211.00	21.56	n/a	n/a	400.00	n/a
2029	1,237.95	118.28	475.00	1,900.00	n/a	n/a	183.00	218.00	26.77	n/a	n/a	400.00	n/a
2030	1,409.77	119.55	607.00	2,428.00	n/a	n/a	216.00	228.00	30.80	n/a	n/a	400.00	n/a
2031	1,519.72	119.04	707.00	2,828.00	n/a	n/a	251.00	242.00	30.80	n/a	n/a	400.00	n/a
2032	1,650.37	118.41	807.00	3,228.00	n/a	n/a	285.00	252.00	30.80	n/a	n/a	400.00	n/a
2033	1,780.93	118.02	875.00	3,500.00	n/a	n/a	317.00	261.00	30.80	n/a	n/a	400.00	n/a
2034	1,916.05	117.52	875.00	3,500.00	n/a	n/a	348.00	270.00	30.80	n/a	n/a	400.00	n/a
2035	2,074.15	117.01	875.00	3,500.00	n/a	n/a	377.00	272.00	30.80	n/a	n/a	400.00	n/a
2036	2,263.67	116.40	875.00	3,500.00	n/a	n/a	404.00	287.00	30.80	n/a	n/a	400.00	n/a
2037	2,454.07	67.75	975.00	3,900.00	n/a	n/a	429.00	296.00	30.80	n/a	n/a	400.00	n/a
2038	2,631.80	41.47	1,075.00	4,300.00	n/a	n/a	452.00	303.00	30.80	n/a	n/a	400.00	n/a
2039	2,811.36	16.93	1,175.00	4,700.00	n/a	n/a	471.00	310.00	30.80	n/a	n/a	400.00	n/a
2040	2,960.40	16.93	1,275.00	5,100.00	n/a	n/a	487.00	306.00	30.80	n/a	n/a	400.00	n/a
2041	3,145.01	16.93	1,275.00	5,100.00	n/a	n/a	503.00	314.00	30.80	n/a	n/a	400.00	n/a
2042	3,232.39	16.93	1,275.00	5,100.00	n/a	n/a	514.00	330.00	30.80	n/a	n/a	400.00	n/a
2043	3,320.53	16.93	1,275.00	5,100.00	n/a	n/a	523.00	336.00	30.80	n/a	n/a	400.00	n/a

Instructions

For each of the portfolios listed on the "Portfolios" tab, list the annual goals for actions over the study period

UM 2225 Order Summary/Rubric references: C.2(a)-(i), C.3

	Note: This column reflects both the EE that was previously deemed cost effective by Energy Trust and any additional EE selected in this portfolio	Note: this column reflects both the DR that was previously deemed cost effective by PGE and any additional DR selected in this portfolio

28 Portfolio28 Offshore wind

Year	Clean energy resources (MWa) System resources	Clean energy resources (MWa) Voluntary programs	Energy Storage (MW) System resources	Energy Storage (MWh) System resources	Energy Storage (MW) Voluntary programs	Energy Storage (MWh) Voluntary programs	Energy Efficiency (MWa)	Demand Response (MW)	CBREs (MWa) System resources	CBREs (MW or MWa) Voluntary programs	Retirements (list unit)	Transmission Projects	Operational Changes
2023	n/a	85.49	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2024	138.60	112.47	-	-	n/a	n/a	30.00	133.00	-	n/a	n/a	-	n/a
2025	138.60	113.21	475.00	1,900.00	n/a	n/a	60.00	162.00	-	n/a	n/a	-	n/a
2026	633.41	114.47	475.00	1,900.00	n/a	n/a	90.00	183.00	12.54	n/a	n/a	-	n/a
2027	734.24	115.74	475.00	1,900.00	n/a	n/a	120.00	199.00	16.01	n/a	n/a	228.00	n/a
2028	972.19	116.89	475.00	1,900.00	n/a	n/a	150.00	211.00	21.56	n/a	n/a	400.00	n/a
2029	1,237.95	118.28	475.00	1,900.00	n/a	n/a	183.00	218.00	26.77	n/a	n/a	400.00	n/a
2030	1,412.73	119.55	816.00	3,264.00	n/a	n/a	216.00	228.00	30.80	n/a	n/a	400.00	n/a
2031	1,480.10	119.04	916.00	3,664.00	n/a	n/a	251.00	242.00	30.80	n/a	n/a	400.00	n/a
2032	1,753.45	118.41	1,016.00	4,064.00	n/a	n/a	285.00	252.00	30.80	n/a	n/a	400.00	n/a
2033	1,782.91	118.02	1,016.00	4,064.00	n/a	n/a	317.00	261.00	30.80	n/a	n/a	400.00	n/a
2034	1,918.09	117.52	1,016.00	4,064.00	n/a	n/a	348.00	270.00	30.80	n/a	n/a	400.00	n/a
2035	2,075.66	117.01	1,016.00	4,064.00	n/a	n/a	377.00	272.00	30.80	n/a	n/a	400.00	n/a
2036	2,265.11	116.40	1,016.00	4,064.00	n/a	n/a	404.00	287.00	30.80	n/a	n/a	400.00	n/a
2037	2,454.69	67.75	1,016.00	4,064.00	n/a	n/a	429.00	296.00	30.80	n/a	n/a	400.00	n/a
2038	2,631.85	41.47	1,075.00	4,300.00	n/a	n/a	452.00	303.00	30.80	n/a	n/a	400.00	n/a
2039	2,811.40	16.93	1,175.00	4,700.00	n/a	n/a	471.00	310.00	30.80	n/a	n/a	400.00	n/a
2040	2,960.45	16.93	1,275.00	5,100.00	n/a	n/a	487.00	306.00	30.80	n/a	n/a	400.00	n/a
2041	3,145.08	16.93	1,275.00	5,100.00	n/a	n/a	503.00	314.00	30.80	n/a	n/a	400.00	n/a
2042	3,232.43	16.93	1,275.00	5,100.00	n/a	n/a	514.00	330.00	30.80	n/a	n/a	400.00	n/a
2043	3,320.59	16.93	1,275.00	5,100.00	n/a	n/a	523.00	336.00	30.80	n/a	n/a	400.00	n/a

29 Portfolio29 Long Duration Storage

Year	Clean energy resources (MWa) System resources	Clean energy resources (MWa) Voluntary programs	Energy Storage (MW) System resources	Energy Storage (MWh) System resources	Energy Storage (MW) Voluntary programs	Energy Storage (MWh) Voluntary programs	Energy Efficiency (MWa)	Demand Response (MW)	CBREs (MWa) System resources	CBREs (MW or MWa) Voluntary programs	Retirements (list unit)	Transmission Projects	Operational Changes
2023	n/a	85.49	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2024	138.60	112.47	-	-	n/a	n/a	30.00	133.00	-	n/a	n/a	-	n/a
2025	138.61	113.21	475.00	1,900.00	n/a	n/a	60.00	162.00	-	n/a	n/a	-	n/a
2026	633.44	114.47	475.00	1,900.00	n/a	n/a	90.00	183.00	12.54	n/a	n/a	-	n/a
2027	734.29	115.74	475.00	1,900.00	n/a	n/a	120.00	199.00	16.01	n/a	n/a	228.00	n/a
2028	977.74	116.89	614.00	5,236.00	n/a	n/a	150.00	211.00	21.56	n/a	n/a	400.00	n/a
2029	1,243.68	118.28	614.00	5,236.00	n/a	n/a	183.00	218.00	26.77	n/a	n/a	400.00	n/a
2030	1,415.86	119.55	747.00	5,236.00	n/a	n/a	216.00	228.00	30.80	n/a	n/a	400.00	n/a
2031	1,525.55	119.04	847.00	5,236.00	n/a	n/a	251.00	242.00	30.80	n/a	n/a	400.00	n/a
2032	1,656.44	118.41	947.00	5,236.00	n/a	n/a	285.00	252.00	30.80	n/a	n/a	400.00	n/a
2033	1,787.08	118.02	1,014.00	5,236.00	n/a	n/a	317.00	261.00	30.80	n/a	n/a	400.00	n/a
2034	1,922.48	117.52	1,014.00	5,236.00	n/a	n/a	348.00	270.00	30.80	n/a	n/a	400.00	n/a
2035	2,080.79	117.01	1,014.00	5,236.00	n/a	n/a	377.00	272.00	30.80	n/a	n/a	400.00	n/a
2036	2,270.15	116.40	1,014.00	5,236.00	n/a	n/a	404.00	287.00	30.80	n/a	n/a	400.00	n/a
2037	2,459.83	67.75	1,114.00	5,236.00	n/a	n/a	429.00	296.00	30.80	n/a	n/a	400.00	n/a
2038	2,637.35	41.47	1,214.00	5,236.00	n/a	n/a	452.00	303.00	30.80	n/a	n/a	400.00	n/a
2039	2,817.18	16.93	1,314.00	5,236.00	n/a	n/a	471.00	310.00	30.80	n/a	n/a	400.00	n/a
2040	2,966.61	16.93	1,414.00	5,236.00	n/a	n/a	487.00	306.00	30.80	n/a	n/a	400.00	n/a
2041	3,151.06	16.93	1,414.00	5,236.00	n/a	n/a	503.00	314.00	30.80	n/a	n/a	400.00	n/a
2042	3,238.86	16.93	1,414.00	5,236.00	n/a	n/a	514.00	330.00	30.80	n/a	n/a	400.00	n/a
2043	3,326.89	16.93	1,414.00	5,236.00	n/a	n/a	523.00	336.00	30.80	n/a	n/a	400.00	n/a

Instructions

For each of the portfolios listed on the "Portfolios" tab, list the annual goals for actions over the study period

UM 2225 Order Summary/Rubric references: C.2(a)-(i), C.3

Note: This column reflects both the EE that was previously deemed cost effective by Energy Trust and any additional EE selected in this portfolio

Note: this column reflects both the DR that was previously deemed cost effective by PGE and any additional DR selected in this portfolio

30 Portfolio30 Pumped hydro

Year	Clean energy resources (MWa) System resources	Clean energy resources (MWa) Voluntary programs	Energy Storage (MW) System resources	Energy Storage (MWh) System resources	Energy Storage (MW) Voluntary programs	Energy Storage (MWh) Voluntary programs	Energy Efficiency (MWa)	Demand Response (MW)	CBREs (MWa) System resources	CBREs (MW or MWa) Voluntary programs	Retirements (list unit)	Transmission Projects	Operational Changes
2023	n/a	85.49	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2024	138.60	112.47	-	-	n/a	n/a	30.00	133.00	-	n/a	n/a	-	n/a
2025	138.61	113.21	475.00	1,900.00	n/a	n/a	60.00	162.00	-	n/a	n/a	-	n/a
2026	633.44	114.47	475.00	1,900.00	n/a	n/a	90.00	183.00	12.54	n/a	n/a	-	n/a
2027	734.30	115.74	475.00	1,900.00	n/a	n/a	120.00	199.00	16.01	n/a	n/a	228.00	n/a
2028	983.78	116.89	808.00	5,230.00	n/a	n/a	150.00	211.00	21.56	n/a	n/a	400.00	n/a
2029	1,249.76	118.28	808.00	5,230.00	n/a	n/a	183.00	218.00	26.76	n/a	n/a	400.00	n/a
2030	1,423.14	119.55	941.00	5,762.00	n/a	n/a	216.00	228.00	30.79	n/a	n/a	400.00	n/a
2031	1,532.48	119.04	1,041.00	6,162.00	n/a	n/a	251.00	242.00	30.80	n/a	n/a	400.00	n/a
2032	1,663.98	118.41	1,141.00	6,562.00	n/a	n/a	285.00	252.00	30.80	n/a	n/a	400.00	n/a
2033	1,795.45	118.02	1,208.00	6,830.00	n/a	n/a	317.00	261.00	30.80	n/a	n/a	400.00	n/a
2034	1,931.44	117.52	1,208.00	6,830.00	n/a	n/a	348.00	270.00	30.80	n/a	n/a	400.00	n/a
2035	2,088.10	117.01	1,208.00	6,830.00	n/a	n/a	377.00	272.00	30.80	n/a	n/a	400.00	n/a
2036	2,277.46	116.40	1,208.00	6,830.00	n/a	n/a	404.00	287.00	30.80	n/a	n/a	400.00	n/a
2037	2,467.14	67.75	1,308.00	7,230.00	n/a	n/a	429.00	296.00	30.80	n/a	n/a	400.00	n/a
2038	2,644.88	41.47	1,408.00	7,630.00	n/a	n/a	452.00	303.00	30.80	n/a	n/a	400.00	n/a
2039	2,824.64	16.93	1,508.00	8,030.00	n/a	n/a	471.00	310.00	30.80	n/a	n/a	400.00	n/a
2040	2,974.86	16.93	1,608.00	8,430.00	n/a	n/a	487.00	306.00	30.80	n/a	n/a	400.00	n/a
2041	3,159.53	16.93	1,608.00	8,430.00	n/a	n/a	503.00	314.00	30.80	n/a	n/a	400.00	n/a
2042	3,248.48	16.93	1,608.00	8,430.00	n/a	n/a	514.00	330.00	30.80	n/a	n/a	400.00	n/a
2043	3,336.08	16.93	1,608.00	8,430.00	n/a	n/a	523.00	336.00	30.80	n/a	n/a	400.00	n/a

31 Portfolio31 RTO

Year	Clean energy resources (MWa) System resources	Clean energy resources (MWa) Voluntary programs	Energy Storage (MW) System resources	Energy Storage (MWh) System resources	Energy Storage (MW) Voluntary programs	Energy Storage (MWh) Voluntary programs	Energy Efficiency (MWa)	Demand Response (MW)	CBREs (MWa) System resources	CBREs (MW or MWa) Voluntary programs	Retirements (list unit)	Transmission Projects	Operational Changes
2023	n/a	85.49	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2024	138.60	112.47	-	-	n/a	n/a	30.00	133.00	-	n/a	n/a	-	n/a
2025	138.61	113.21	475.00	1,900.00	n/a	n/a	60.00	162.00	-	n/a	n/a	-	n/a
2026	633.42	114.47	475.00	1,900.00	n/a	n/a	90.00	183.00	12.54	n/a	n/a	-	n/a
2027	734.27	115.74	475.00	1,900.00	n/a	n/a	120.00	199.00	16.01	n/a	n/a	228.00	n/a
2028	972.18	116.89	475.00	1,900.00	n/a	n/a	150.00	211.00	21.56	n/a	n/a	400.00	n/a
2029	1,237.96	118.28	475.00	1,900.00	n/a	n/a	183.00	218.00	26.77	n/a	n/a	400.00	n/a
2030	1,412.73	119.55	816.00	3,264.00	n/a	n/a	216.00	228.00	30.80	n/a	n/a	400.00	n/a
2031	1,522.55	119.04	916.00	3,664.00	n/a	n/a	251.00	242.00	30.80	n/a	n/a	400.00	n/a
2032	1,651.95	118.41	916.00	3,664.00	n/a	n/a	285.00	252.00	30.80	n/a	n/a	400.00	n/a
2033	1,781.48	118.02	916.00	3,664.00	n/a	n/a	317.00	261.00	30.80	n/a	n/a	400.00	n/a
2034	1,916.63	117.52	916.00	3,664.00	n/a	n/a	348.00	270.00	30.80	n/a	n/a	400.00	n/a
2035	2,075.03	117.01	916.00	3,664.00	n/a	n/a	377.00	272.00	30.80	n/a	n/a	400.00	n/a
2036	2,264.40	116.40	916.00	3,664.00	n/a	n/a	404.00	287.00	30.80	n/a	n/a	400.00	n/a
2037	2,454.08	67.75	975.00	3,900.00	n/a	n/a	429.00	296.00	30.80	n/a	n/a	400.00	n/a
2038	2,631.79	41.47	1,075.00	4,300.00	n/a	n/a	452.00	303.00	30.80	n/a	n/a	400.00	n/a
2039	2,811.35	16.93	1,175.00	4,700.00	n/a	n/a	471.00	310.00	30.80	n/a	n/a	400.00	n/a
2040	2,960.40	16.93	1,275.00	5,100.00	n/a	n/a	487.00	306.00	30.80	n/a	n/a	400.00	n/a
2041	3,145.01	16.93	1,275.00	5,100.00	n/a	n/a	503.00	314.00	30.80	n/a	n/a	400.00	n/a
2042	3,232.38	16.93	1,275.00	5,100.00	n/a	n/a	514.00	330.00	30.80	n/a	n/a	400.00	n/a
2043	3,320.52	16.93	1,275.00	5,100.00	n/a	n/a	523.00	336.00	30.80	n/a	n/a	400.00	n/a

Instructions

For each of the portfolios listed on the "Portfolios" tab, list the annual goals for actions over the study period

UM 2225 Order Summary/Rubric references: C.2(a)-(i), C.3

								Note: This column reflects both the EE that was previously deemed cost effective by Energy Trust and any additional EE selected in this portfolio	Note: this column reflects both the DR that was previously deemed cost effective by PGE and any additional DR selected in this portfolio					
32	Portfolio32	Min Avg LT cost												
	Clean energy resources (MWa)	Clean energy resources (MWa)	Energy Storage (MW)	Energy Storage (MWh)	Energy Storage (MW)	Energy Storage (MWh)				CBREs (MWa)	CBREs (MW or MWa)			
Year	System resources	Voluntary programs	System resources	System resources	Voluntary programs	Voluntary programs	Energy Efficiency (MWa)	Demand Response (MW)		System resources	Voluntary programs	Retirements (list unit)	Transmission Projects	Operational Changes
2023	n/a	85.49	n/a	n/a	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	n/a
2024	138.60	112.47	-	-	n/a	n/a	30.00	133.00		-	n/a	n/a	-	n/a
2025	138.61	113.21	475.00	1,900.00	n/a	n/a	60.00	162.00		-	n/a	n/a	-	n/a
2026	633.42	114.47	475.00	1,900.00	n/a	n/a	90.00	183.00		12.54	n/a	n/a	-	n/a
2027	734.27	115.74	475.00	1,900.00	n/a	n/a	120.00	199.00		16.01	n/a	n/a	228.00	n/a
2028	972.18	116.89	475.00	1,900.00	n/a	n/a	150.00	211.00		21.56	n/a	n/a	400.00	n/a
2029	1,237.96	118.28	475.00	1,900.00	n/a	n/a	183.00	218.00		26.77	n/a	n/a	400.00	n/a
2030	1,412.73	119.55	816.00	3,264.00	n/a	n/a	216.00	228.00		30.80	n/a	n/a	400.00	n/a
2031	1,522.55	119.04	916.00	3,664.00	n/a	n/a	251.00	242.00		30.80	n/a	n/a	400.00	n/a
2032	1,651.95	118.41	916.00	3,664.00	n/a	n/a	285.00	252.00		30.80	n/a	n/a	400.00	n/a
2033	1,781.48	118.02	916.00	3,664.00	n/a	n/a	317.00	261.00		30.80	n/a	n/a	400.00	n/a
2034	1,916.63	117.52	916.00	3,664.00	n/a	n/a	348.00	270.00		30.80	n/a	n/a	400.00	n/a
2035	2,075.03	117.01	916.00	3,664.00	n/a	n/a	377.00	272.00		30.80	n/a	n/a	400.00	n/a
2036	2,264.40	116.40	916.00	3,664.00	n/a	n/a	404.00	287.00		30.80	n/a	n/a	400.00	n/a
2037	2,454.08	67.75	975.00	3,900.00	n/a	n/a	429.00	296.00		30.80	n/a	n/a	400.00	n/a
2038	2,631.79	41.47	1,075.00	4,300.00	n/a	n/a	452.00	303.00		30.80	n/a	n/a	400.00	n/a
2039	2,811.35	16.93	1,175.00	4,700.00	n/a	n/a	471.00	310.00		30.80	n/a	n/a	400.00	n/a
2040	2,960.40	16.93	1,275.00	5,100.00	n/a	n/a	487.00	306.00		30.80	n/a	n/a	400.00	n/a
2041	3,145.01	16.93	1,275.00	5,100.00	n/a	n/a	503.00	314.00		30.80	n/a	n/a	400.00	n/a
2042	3,232.38	16.93	1,275.00	5,100.00	n/a	n/a	514.00	330.00		30.80	n/a	n/a	400.00	n/a
2043	3,320.52	16.93	1,275.00	5,100.00	n/a	n/a	523.00	336.00		30.80	n/a	n/a	400.00	n/a

33	Portfolio33	Min Avg ST cost												
	Clean energy resources (MWa)	Clean energy resources (MWa)	Energy Storage (MW)	Energy Storage (MWh)	Energy Storage (MW)	Energy Storage (MWh)				CBREs (MWa)	CBREs (MW or MWa)			
Year	System resources	Voluntary programs	System resources	System resources	Voluntary programs	Voluntary programs	Energy Efficiency (MWa)	Demand Response (MW)		System resources	Voluntary programs	Retirements (list unit)	Transmission Projects	Operational Changes
2023	n/a	85.49	n/a	n/a	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	n/a
2024	138.60	112.47	-	-	n/a	n/a	30.00	133.00		-	n/a	n/a	-	n/a
2025	138.61	113.21	475.00	1,900.00	n/a	n/a	60.00	162.00		-	n/a	n/a	-	n/a
2026	442.55	114.47	649.00	2,596.00	n/a	n/a	90.00	183.00		12.54	n/a	n/a	-	n/a
2027	502.30	115.74	649.00	2,596.00	n/a	n/a	120.00	199.00		16.00	n/a	n/a	137.00	n/a
2028	627.69	116.89	649.00	2,596.00	n/a	n/a	150.00	211.00		21.56	n/a	n/a	253.00	n/a
2029	871.47	118.28	649.00	2,596.00	n/a	n/a	183.00	218.00		26.77	n/a	n/a	400.00	n/a
2030	1,016.00	119.55	684.00	2,736.00	n/a	n/a	216.00	228.00		30.80	n/a	n/a	400.00	n/a
2031	1,116.35	119.04	784.00	3,136.00	n/a	n/a	251.00	242.00		30.80	n/a	n/a	400.00	n/a
2032	1,225.52	118.41	884.00	3,536.00	n/a	n/a	285.00	252.00		30.80	n/a	n/a	400.00	n/a
2033	1,334.43	118.02	984.00	3,936.00	n/a	n/a	317.00	261.00		30.80	n/a	n/a	400.00	n/a
2034	1,443.95	117.52	1,084.00	4,336.00	n/a	n/a	348.00	270.00		30.80	n/a	n/a	400.00	n/a
2035	1,565.72	117.01	1,184.00	4,736.00	n/a	n/a	377.00	272.00		30.80	n/a	n/a	400.00	n/a
2036	1,755.01	116.40	1,275.00	5,100.00	n/a	n/a	404.00	287.00		30.80	n/a	n/a	400.00	n/a
2037	1,899.87	67.75	1,275.00	5,100.00	n/a	n/a	429.00	296.00		30.80	n/a	n/a	400.00	n/a
2038	2,088.99	41.47	1,275.00	5,100.00	n/a	n/a	452.00	303.00		30.80	n/a	n/a	400.00	n/a
2039	2,234.96	16.93	1,275.00	5,100.00	n/a	n/a	471.00	310.00		30.80	n/a	n/a	400.00	n/a
2040	2,424.47	16.93	1,275.00	5,100.00	n/a	n/a	487.00	306.00		30.80	n/a	n/a	400.00	n/a
2041	2,513.33	16.93	1,275.00	5,100.00	n/a	n/a	503.00	314.00		30.80	n/a	n/a	400.00	n/a
2042	2,648.57	16.93	1,275.00	5,100.00	n/a	n/a	514.00	330.00		30.80	n/a	n/a	400.00	n/a
2043	2,647.98	16.93	1,275.00	5,100.00	n/a	n/a	523.00	336.00		30.80	n/a	n/a	400.00	n/a

Instructions

For each of the portfolios listed on the "Portfolios" tab, list the annual goals for actions over the study period

UM 2225 Order Summary/Rubric references: C.2(a)-(i), C.3

								Note: This column reflects both the EE that was previously deemed cost effective by Energy Trust and any additional EE selected in this portfolio	Note: this column reflects both the DR that was previously deemed cost effective by PGE and any additional DR selected in this portfolio					
34	Portfolio34	Min Ref ST cost												
	Clean energy resources (MWa)	Clean energy resources (MWa)	Energy Storage (MW)	Energy Storage (MWh)	Energy Storage (MW)	Energy Storage (MWh)				CBREs (MWa)	CBREs (MW or MWa)			
Year	System resources	Voluntary programs	System resources	System resources	Voluntary programs	Voluntary programs	Energy Efficiency (MWa)	Demand Response (MW)		System resources	Voluntary programs	Retirements (list unit)	Transmission Projects	Operational Changes
2023	n/a	85.49	n/a	n/a	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	n/a
2024	138.60	112.47	-	-	n/a	n/a	30.00	133.00		-	n/a	n/a	-	n/a
2025	138.61	113.21	475.00	1,900.00	n/a	n/a	60.00	162.00		-	n/a	n/a	-	n/a
2026	675.99	114.47	475.00	1,900.00	n/a	n/a	90.00	183.00		12.54	n/a	n/a	-	n/a
2027	773.28	115.74	475.00	1,900.00	n/a	n/a	120.00	199.00		16.00	n/a	n/a	220.00	n/a
2028	972.22	116.89	475.00	1,900.00	n/a	n/a	150.00	211.00		21.56	n/a	n/a	400.00	n/a
2029	1,237.99	118.28	475.00	1,900.00	n/a	n/a	183.00	218.00		26.77	n/a	n/a	400.00	n/a
2030	1,418.61	119.55	1,231.00	4,924.00	n/a	n/a	216.00	228.00		30.80	n/a	n/a	400.00	n/a
2031	1,627.47	119.04	1,275.00	5,100.00	n/a	n/a	251.00	242.00		30.80	n/a	n/a	400.00	n/a
2032	1,657.29	118.41	1,275.00	5,100.00	n/a	n/a	285.00	252.00		30.80	n/a	n/a	400.00	n/a
2033	1,786.57	118.02	1,275.00	5,100.00	n/a	n/a	317.00	261.00		30.80	n/a	n/a	400.00	n/a
2034	1,975.10	117.52	1,275.00	5,100.00	n/a	n/a	348.00	270.00		30.80	n/a	n/a	400.00	n/a
2035	2,160.07	117.01	1,275.00	5,100.00	n/a	n/a	377.00	272.00		30.80	n/a	n/a	400.00	n/a
2036	2,349.36	116.40	1,275.00	5,100.00	n/a	n/a	404.00	287.00		30.80	n/a	n/a	400.00	n/a
2037	2,539.48	67.75	1,275.00	5,100.00	n/a	n/a	429.00	296.00		30.80	n/a	n/a	400.00	n/a
2038	2,728.56	41.47	1,275.00	5,100.00	n/a	n/a	452.00	303.00		30.80	n/a	n/a	400.00	n/a
2039	2,813.18	16.93	1,275.00	5,100.00	n/a	n/a	471.00	310.00		30.80	n/a	n/a	400.00	n/a
2040	2,960.77	16.93	1,275.00	5,100.00	n/a	n/a	487.00	306.00		30.80	n/a	n/a	400.00	n/a
2041	3,145.40	16.93	1,275.00	5,100.00	n/a	n/a	503.00	314.00		30.80	n/a	n/a	400.00	n/a
2042	3,232.74	16.93	1,275.00	5,100.00	n/a	n/a	514.00	330.00		30.80	n/a	n/a	400.00	n/a
2043	3,320.88	16.93	1,275.00	5,100.00	n/a	n/a	523.00	336.00		30.80	n/a	n/a	400.00	n/a

35	Portfolio35	SoA in 2027 Plus												
	Clean energy resources (MWa)	Clean energy resources (MWa)	Energy Storage (MW)	Energy Storage (MWh)	Energy Storage (MW)	Energy Storage (MWh)				CBREs (MWa)	CBREs (MW or MWa)			
Year	System resources	Voluntary programs	System resources	System resources	Voluntary programs	Voluntary programs	Energy Efficiency (MWa)	Demand Response (MW)		System resources	Voluntary programs	Retirements (list unit)	Transmission Projects	Operational Changes
2023	n/a	85.49	n/a	n/a	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	n/a
2024	138.60	112.47	-	-	n/a	n/a	30.00	133.00		-	n/a	n/a	-	n/a
2025	138.61	113.21	475.00	1,900.00	n/a	n/a	60.00	162.00		-	n/a	n/a	-	n/a
2026	618.32	114.47	475.00	1,900.00	n/a	n/a	90.00	183.00		12.55	n/a	n/a	-	n/a
2027	791.80	115.74	475.00	1,900.00	n/a	n/a	120.00	199.00		16.01	n/a	n/a	400.00	n/a
2028	972.18	116.89	475.00	1,900.00	n/a	n/a	150.00	211.00		21.57	n/a	n/a	400.00	n/a
2029	1,237.95	118.28	475.00	1,900.00	n/a	n/a	183.00	218.00		26.76	n/a	n/a	953.00	n/a
2030	1,407.90	119.55	475.00	1,900.00	n/a	n/a	216.00	228.00		30.78	n/a	n/a	1,200.00	n/a
2031	1,516.56	119.04	475.00	1,900.00	n/a	n/a	251.00	242.00		30.79	n/a	n/a	1,200.00	n/a
2032	1,645.98	118.41	507.00	2,028.00	n/a	n/a	285.00	252.00		30.80	n/a	n/a	1,200.00	n/a
2033	1,777.26	118.02	607.00	2,428.00	n/a	n/a	317.00	261.00		30.80	n/a	n/a	1,200.00	n/a
2034	1,913.67	117.52	707.00	2,828.00	n/a	n/a	348.00	270.00		30.80	n/a	n/a	1,200.00	n/a
2035	2,074.89	117.01	775.00	3,100.00	n/a	n/a	377.00	272.00		30.80	n/a	n/a	1,200.00	n/a
2036	2,263.80	116.40	875.00	3,500.00	n/a	n/a	404.00	287.00		30.80	n/a	n/a	1,200.00	n/a
2037	2,454.08	67.75	975.00	3,900.00	n/a	n/a	429.00	296.00		30.80	n/a	n/a	1,200.00	n/a
2038	2,631.78	41.47	1,075.00	4,300.00	n/a	n/a	452.00	303.00		30.80	n/a	n/a	1,200.00	n/a
2039	2,811.34	16.93	1,175.00	4,700.00	n/a	n/a	471.00	310.00		30.80	n/a	n/a	1,200.00	n/a
2040	2,960.38	16.93	1,275.00	5,100.00	n/a	n/a	487.00	306.00		30.80	n/a	n/a	1,200.00	n/a
2041	3,145.01	16.93	1,275.00	5,100.00	n/a	n/a	503.00	314.00		30.80	n/a	n/a	1,200.00	n/a
2042	3,232.37	16.93	1,275.00	5,100.00	n/a	n/a	514.00	330.00		30.80	n/a	n/a	1,200.00	n/a
2043	3,320.50	16.93	1,275.00	5,100.00	n/a	n/a	523.00	336.00		30.80	n/a	n/a	1,200.00	n/a

Instructions

For each of the portfolios listed on the "Portfolios" tab, list the annual goals for actions over the study period

UM 2225 Order Summary/Rubric references: C.2(a)-(i), C.3

36	Portfolio36	50 Mwa EE						Note: This column reflects both the EE that was previously deemed cost effective by Energy Trust and any additional EE selected in this portfolio	Note: this column reflects both the DR that was previously deemed cost effective by PGE and any additional DR selected in this portfolio					
	Clean energy resources (MWa)	Clean energy resources (MWa)	Energy Storage (MW)	Energy Storage (MWh)	Energy Storage (MW)	Energy Storage (MWh)			CBREs (MWa)	CBREs (MW or MWa)				
Year	System resources	Voluntary programs	System resources	System resources	Voluntary programs	Voluntary programs	Energy Efficiency (MWa)	Demand Response (MW)	System resources	Voluntary programs	Retirements (list unit)	Transmission Projects	Operational Changes	
2023	n/a	85.49	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
2024	138.60	112.47	-	-	n/a	n/a	30.00	133.00	-	n/a	n/a	-	n/a	
2025	138.61	113.21	475.00	1,900.00	n/a	n/a	60.00	162.00	-	n/a	n/a	-	n/a	
2026	630.17	114.47	475.00	1,900.00	n/a	n/a	100.06	183.00	12.55	n/a	n/a	-	n/a	
2027	716.16	115.74	475.00	1,900.00	n/a	n/a	140.09	199.00	16.01	n/a	n/a	194.00	n/a	
2028	942.18	116.89	475.00	1,900.00	n/a	n/a	180.12	211.00	21.57	n/a	n/a	400.00	n/a	
2029	1,197.96	118.28	475.00	1,900.00	n/a	n/a	223.15	218.00	26.76	n/a	n/a	400.00	n/a	
2030	1,360.18	119.55	636.00	2,544.00	n/a	n/a	266.18	228.00	30.79	n/a	n/a	400.00	n/a	
2031	1,470.11	119.04	736.00	2,944.00	n/a	n/a	301.23	242.00	30.80	n/a	n/a	400.00	n/a	
2032	1,600.78	118.41	836.00	3,344.00	n/a	n/a	335.28	252.00	30.80	n/a	n/a	400.00	n/a	
2033	1,730.93	118.02	875.00	3,500.00	n/a	n/a	367.33	261.00	30.80	n/a	n/a	400.00	n/a	
2034	1,866.05	117.52	875.00	3,500.00	n/a	n/a	398.38	270.00	30.80	n/a	n/a	400.00	n/a	
2035	2,025.03	117.01	875.00	3,500.00	n/a	n/a	427.43	272.00	30.80	n/a	n/a	400.00	n/a	
2036	2,214.40	116.40	875.00	3,500.00	n/a	n/a	454.48	287.00	30.80	n/a	n/a	400.00	n/a	
2037	2,404.08	67.75	975.00	3,900.00	n/a	n/a	479.53	296.00	30.80	n/a	n/a	400.00	n/a	
2038	2,581.79	41.47	1,075.00	4,300.00	n/a	n/a	502.58	303.00	30.80	n/a	n/a	400.00	n/a	
2039	2,761.36	16.93	1,175.00	4,700.00	n/a	n/a	521.63	310.00	30.80	n/a	n/a	400.00	n/a	
2040	2,910.40	16.93	1,275.00	5,100.00	n/a	n/a	537.68	306.00	30.80	n/a	n/a	400.00	n/a	
2041	3,095.01	16.93	1,275.00	5,100.00	n/a	n/a	553.73	314.00	30.80	n/a	n/a	400.00	n/a	
2042	3,182.39	16.93	1,275.00	5,100.00	n/a	n/a	564.78	330.00	30.80	n/a	n/a	400.00	n/a	
2043	3,270.52	16.93	1,275.00	5,100.00	n/a	n/a	573.83	336.00	30.80	n/a	n/a	400.00	n/a	

37	Portfolio37	25 Mwa EE												
	Clean energy resources (MWa)	Clean energy resources (MWa)	Energy Storage (MW)	Energy Storage (MWh)	Energy Storage (MW)	Energy Storage (MWh)			CBREs (MWa)	CBREs (MW or MWa)				
Year	System resources	Voluntary programs	System resources	System resources	Voluntary programs	Voluntary programs	Energy Efficiency (MWa)	Demand Response (MW)	System resources	Voluntary programs	Retirements (list unit)	Transmission Projects	Operational Changes	
2023	n/a	85.49	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
2024	138.60	112.47	-	-	n/a	n/a	30.00	133.00	-	n/a	n/a	-	n/a	
2025	138.61	113.21	475.00	1,900.00	n/a	n/a	60.00	162.00	-	n/a	n/a	-	n/a	
2026	631.80	114.47	475.00	1,900.00	n/a	n/a	95.06	183.00	12.55	n/a	n/a	-	n/a	
2027	725.96	115.74	475.00	1,900.00	n/a	n/a	130.09	199.00	16.01	n/a	n/a	213.00	n/a	
2028	957.18	116.89	475.00	1,900.00	n/a	n/a	165.12	211.00	21.57	n/a	n/a	400.00	n/a	
2029	1,217.96	118.28	475.00	1,900.00	n/a	n/a	203.15	218.00	26.77	n/a	n/a	400.00	n/a	
2030	1,385.99	119.55	693.00	2,772.00	n/a	n/a	241.18	228.00	30.80	n/a	n/a	400.00	n/a	
2031	1,495.89	119.04	793.00	3,172.00	n/a	n/a	276.23	242.00	30.80	n/a	n/a	400.00	n/a	
2032	1,626.35	118.41	875.00	3,500.00	n/a	n/a	310.28	252.00	30.80	n/a	n/a	400.00	n/a	
2033	1,755.93	118.02	875.00	3,500.00	n/a	n/a	342.33	261.00	30.80	n/a	n/a	400.00	n/a	
2034	1,891.05	117.52	875.00	3,500.00	n/a	n/a	373.38	270.00	30.80	n/a	n/a	400.00	n/a	
2035	2,050.03	117.01	875.00	3,500.00	n/a	n/a	402.43	272.00	30.80	n/a	n/a	400.00	n/a	
2036	2,239.40	116.40	875.00	3,500.00	n/a	n/a	429.48	287.00	30.80	n/a	n/a	400.00	n/a	
2037	2,429.08	67.75	975.00	3,900.00	n/a	n/a	454.53	296.00	30.80	n/a	n/a	400.00	n/a	
2038	2,606.79	41.47	1,075.00	4,300.00	n/a	n/a	477.58	303.00	30.80	n/a	n/a	400.00	n/a	
2039	2,786.36	16.93	1,175.00	4,700.00	n/a	n/a	496.63	310.00	30.80	n/a	n/a	400.00	n/a	
2040	2,935.40	16.93	1,275.00	5,100.00	n/a	n/a	512.68	306.00	30.80	n/a	n/a	400.00	n/a	
2041	3,120.01	16.93	1,275.00	5,100.00	n/a	n/a	528.73	314.00	30.80	n/a	n/a	400.00	n/a	
2042	3,207.39	16.93	1,275.00	5,100.00	n/a	n/a	539.78	330.00	30.80	n/a	n/a	400.00	n/a	
2043	3,295.52	16.93	1,275.00	5,100.00	n/a	n/a	548.83	336.00	30.80	n/a	n/a	400.00	n/a	

Instructions

For each of the portfolios listed on the "Portfolios" tab, list the annual goals for actions over the study period

UM 2225 Order Summary/Rubric references: C.2(a)-(i), C.3

38	Portfolio38	70 Mwa EE					Note: This column reflects both the EE that was previously deemed cost effective by Energy Trust and any additional EE selected in this portfolio	Note: this column reflects both the DR that was previously deemed cost effective by PGE and any additional DR selected in this portfolio					
	Clean energy resources (MWa)	Clean energy resources (MWa)	Energy Storage (MW)	Energy Storage (MWh)	Energy Storage (MW)	Energy Storage (MWh)			CBREs (MWa)	CBREs (MW or MWa)			
Year	System resources	Voluntary programs	System resources	System resources	Voluntary programs	Voluntary programs	Energy Efficiency (MWa)	Demand Response (MW)	System resources	Voluntary programs	Retirements (list unit)	Transmission Projects	Operational Changes
2023	n/a	85.49	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2024	138.60	112.47	-	-	n/a	n/a	30.00	133.00	-	n/a	n/a	-	n/a
2025	138.61	113.21	475.00	1,900.00	n/a	n/a	60.00	162.00	-	n/a	n/a	-	n/a
2026	628.62	114.47	475.00	1,900.00	n/a	n/a	106.04	183.00	12.55	n/a	n/a	-	n/a
2027	705.32	115.74	475.00	1,900.00	n/a	n/a	149.05	199.00	16.01	n/a	n/a	173.00	n/a
2028	930.24	116.89	475.00	1,900.00	n/a	n/a	192.06	211.00	21.57	n/a	n/a	400.00	n/a
2029	1,181.04	118.28	475.00	1,900.00	n/a	n/a	240.07	218.00	26.76	n/a	n/a	400.00	n/a
2030	1,339.88	119.55	607.00	2,428.00	n/a	n/a	286.08	228.00	30.79	n/a	n/a	400.00	n/a
2031	1,449.82	119.04	707.00	2,828.00	n/a	n/a	321.13	242.00	30.80	n/a	n/a	400.00	n/a
2032	1,580.46	118.41	807.00	3,228.00	n/a	n/a	355.18	252.00	30.80	n/a	n/a	400.00	n/a
2033	1,711.03	118.02	875.00	3,500.00	n/a	n/a	387.23	261.00	30.80	n/a	n/a	400.00	n/a
2034	1,846.15	117.52	875.00	3,500.00	n/a	n/a	418.28	270.00	30.80	n/a	n/a	400.00	n/a
2035	2,005.13	117.01	875.00	3,500.00	n/a	n/a	447.33	272.00	30.80	n/a	n/a	400.00	n/a
2036	2,194.50	116.40	875.00	3,500.00	n/a	n/a	474.38	287.00	30.80	n/a	n/a	400.00	n/a
2037	2,384.18	67.75	975.00	3,900.00	n/a	n/a	499.43	296.00	30.80	n/a	n/a	400.00	n/a
2038	2,561.89	41.47	1,075.00	4,300.00	n/a	n/a	522.48	303.00	30.80	n/a	n/a	400.00	n/a
2039	2,741.46	16.93	1,175.00	4,700.00	n/a	n/a	541.53	310.00	30.80	n/a	n/a	400.00	n/a
2040	2,890.50	16.93	1,275.00	5,100.00	n/a	n/a	557.58	306.00	30.80	n/a	n/a	400.00	n/a
2041	3,075.11	16.93	1,275.00	5,100.00	n/a	n/a	573.63	314.00	30.80	n/a	n/a	400.00	n/a
2042	3,162.49	16.93	1,275.00	5,100.00	n/a	n/a	584.68	330.00	30.80	n/a	n/a	400.00	n/a
2043	3,250.62	16.93	1,275.00	5,100.00	n/a	n/a	593.73	336.00	30.80	n/a	n/a	400.00	n/a

39	Portfolio39	Optimized											
	Clean energy resources (MWa)	Clean energy resources (MWa)	Energy Storage (MW)	Energy Storage (MWh)	Energy Storage (MW)	Energy Storage (MWh)			CBREs (MWa)	CBREs (MW or MWa)			
Year	System resources	Voluntary programs	System resources	System resources	Voluntary programs	Voluntary programs	Energy Efficiency (MWa)	Demand Response (MW)	System resources	Voluntary programs	Retirements (list unit)	Transmission Projects	Operational Changes
2023	n/a	85.49	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2024	138.60	112.47	-	-	n/a	n/a	30.00	133.00	-	n/a	n/a	-	n/a
2025	138.61	113.21	475.00	1,900.00	n/a	n/a	60.00	162.00	-	n/a	n/a	-	n/a
2026	629.89	114.47	475.00	1,900.00	n/a	n/a	102.00	183.00	12.50	n/a	n/a	-	n/a
2027	712.91	115.74	475.00	1,900.00	n/a	n/a	142.00	199.00	15.96	n/a	n/a	187.00	n/a
2028	940.17	116.89	475.00	1,900.00	n/a	n/a	182.00	211.00	21.53	n/a	n/a	400.00	n/a
2029	1,194.95	118.28	475.00	1,900.00	n/a	n/a	226.00	218.00	26.73	n/a	n/a	817.00	n/a
2030	1,354.90	119.55	475.00	1,900.00	n/a	n/a	269.00	228.00	30.76	n/a	n/a	1,171.00	n/a
2031	1,463.55	119.04	475.00	1,900.00	n/a	n/a	304.00	242.00	30.77	n/a	n/a	1,171.00	n/a
2032	1,592.51	118.41	475.00	1,900.00	n/a	n/a	338.00	252.00	30.77	n/a	n/a	1,171.00	n/a
2033	1,723.81	118.02	575.00	2,300.00	n/a	n/a	370.00	261.00	30.78	n/a	n/a	1,171.00	n/a
2034	1,860.23	117.52	675.00	2,700.00	n/a	n/a	401.00	270.00	30.80	n/a	n/a	1,171.00	n/a
2035	2,012.62	117.01	775.00	3,100.00	n/a	n/a	430.00	272.00	30.80	n/a	n/a	1,171.00	n/a
2036	2,201.56	116.40	875.00	3,500.00	n/a	n/a	457.00	287.00	30.80	n/a	n/a	1,171.00	n/a
2037	2,401.07	67.75	975.00	3,900.00	n/a	n/a	483.00	296.00	30.80	n/a	n/a	1,200.00	n/a
2038	2,578.79	41.47	1,075.00	4,300.00	n/a	n/a	506.00	303.00	30.80	n/a	n/a	1,200.00	n/a
2039	2,758.34	16.93	1,175.00	4,700.00	n/a	n/a	525.00	310.00	30.80	n/a	n/a	1,200.00	n/a
2040	2,907.39	16.93	1,275.00	5,100.00	n/a	n/a	541.00	306.00	30.80	n/a	n/a	1,200.00	n/a
2041	3,092.02	16.93	1,275.00	5,100.00	n/a	n/a	557.00	314.00	30.80	n/a	n/a	1,200.00	n/a
2042	3,179.37	16.93	1,275.00	5,100.00	n/a	n/a	568.00	330.00	30.80	n/a	n/a	1,200.00	n/a
2043	3,267.50	16.93	1,275.00	5,100.00	n/a	n/a	577.00	336.00	30.80	n/a	n/a	1,200.00	n/a

Instructions

For each of the portfolios listed on the "Portfolios" tab, list the annual GHG emissions based on the DEQ methodology over the study period under Reference Case assumptions
For each year, break out the contributions of individual fossil fuel resources, market purchases, and market sales to the total GHG emissions per the DEQ methodology
UM 2225 Order Summary/Rubric references: C.4(a)

PGE note: Forecasts of generation from existing thermal output are based on economic dispatch using prices forecasted in this CEP/IRP. Forecasts of unspecified and other emitting market purchases are a function of historical purchases and a linear decline emission reduction glidepath. Neither reflect operational realities.

40	Portfolio40	Preferred		PGE owned GHG emitting generation (retail)					
		Included in retail total	*Not included in retail total*	Beaver	Carty	Coyote	PW1	PW2	Colstrip
Year	Total Retail GHG Emissions (metric tons)	Market Purchases (metric tons)	Market sales (metric tons)	Fossil fuel resource 1 (metric tons)	Fossil fuel resource 2 (metric tons)	Fossil fuel resource 3 (metric tons)	Fossil fuel resource 4 (metric tons)	Fossil fuel resource 5 (metric tons)	Fossil fuel resource 6 (metric tons)
2023	5,887,117	2,351,875	2,097,049	41,539	919,175	509,985	641,895	130,219	1,292,430
2024	5,308,316	1,802,933	1,865,467	137,208	879,158	490,395	635,821	175,051	1,187,749
2025	5,049,607	1,705,195	1,790,077	142,367	837,292	463,866	563,301	176,532	1,161,054
2026	4,363,686	1,366,816	2,265,765	167,981	721,455	393,273	519,881	156,078	1,038,201
2027	3,677,764	1,091,731	2,920,645	222,701	579,927	317,101	480,068	167,172	819,064
2028	2,991,843	811,290	3,817,679	360,534	435,432	240,102	385,570	187,487	571,428
2029	2,305,921	629,845	4,198,793	276,854	338,557	187,835	295,418	144,426	432,985
2030	1,620,000	550,194	2,882,753	231,882	295,412	164,415	256,135	121,962	-
2031	1,458,000	496,626	2,957,038	213,644	262,290	145,762	230,531	109,147	-
2032	1,296,000	461,739	2,823,141	187,525	226,122	127,262	199,112	94,241	-
2033	1,134,000	410,730	2,828,792	158,824	200,937	109,031	171,174	83,304	-
2034	972,000	361,878	2,780,984	136,906	165,578	93,414	144,128	70,096	-
2035	810,000	303,939	2,825,533	109,880	140,332	77,564	120,283	58,001	-
2036	648,000	254,336	2,695,013	78,402	113,496	62,321	95,522	43,923	-
2037	486,000	192,423	2,732,068	66,499	80,170	44,470	68,615	33,822	-
2038	324,000	133,719	2,617,541	40,467	52,898	29,551	46,191	21,175	-
2039	162,000	68,292	2,594,418	18,400	26,833	14,838	23,117	10,520	-
2040	-	-	2,475,750	-	-	-	-	-	-
2041	-	-	2,459,879	-	-	-	-	-	-
2042	-	-	2,209,453	-	-	-	-	-	-
2043	-	-	2,300,472	-	-	-	-	-	-
sources:	GHG model_linear decline: retail CO2	GHG model_linear decline: market gas, market landfill, market waste, market wood, market ACS, market unspecified	GHG model_linear decline: wholesale carbon of thermal plants, market gas, market landfill, market waste, market wood, market ACS, market unspecified	GHG model_linear decline: retail carbon	GHG model_linear decline: retail carbon	GHG model_linear decline: retail carbon	GHG model_linear decline: retail carbon	GHG model_linear decline: retail carbon	GHG model_linear decline: retail carbon

1	Portfolio1	Linear decline		PGE owned GHG emitting generation (retail)					
		Included in retail total	*Not included in retail total*	Beaver	Carty	Coyote	PW1	PW2	Colstrip
Year	Total Retail GHG Emissions (metric tons)	Market Purchases (metric tons)	Market sales (metric tons)	Fossil fuel resource 1 (metric tons)	Fossil fuel resource 2 (metric tons)	Fossil fuel resource 3 (metric tons)	Fossil fuel resource 4 (metric tons)	Fossil fuel resource 5 (metric tons)	Fossil fuel resource 6 (metric tons)
2023	5,887,117	2,351,875	2,097,049	41,539	919,175	509,985	641,895	130,219	1,292,430
2024	5,308,316	1,802,933	1,865,467	137,208	879,158	490,395	635,821	175,051	1,187,749
2025	5,049,607	1,705,195	1,790,077	142,367	837,292	463,866	563,301	176,532	1,161,054
2026	4,363,686	1,366,816	2,265,765	167,981	721,455	393,273	519,881	156,078	1,038,201
2027	3,677,764	1,091,731	2,920,645	222,701	579,927	317,101	480,068	167,172	819,064
2028	2,991,843	811,290	3,817,679	360,534	435,432	240,102	385,570	187,487	571,428
2029	2,305,921	629,845	4,198,793	276,854	338,557	187,835	295,418	144,426	432,985
2030	1,620,000	550,194	2,882,753	231,882	295,412	164,415	256,135	121,962	-
2031	1,458,000	496,626	2,957,038	213,644	262,290	145,762	230,531	109,147	-
2032	1,296,000	461,739	2,823,141	187,525	226,122	127,262	199,112	94,241	-
2033	1,134,000	410,730	2,828,792	158,824	200,937	109,031	171,174	83,304	-
2034	972,000	361,878	2,780,984	136,906	165,578	93,414	144,128	70,096	-
2035	810,000	303,939	2,825,533	109,880	140,332	77,564	120,283	58,001	-
2036	648,000	254,336	2,695,013	78,402	113,496	62,321	95,522	43,923	-
2037	486,000	192,423	2,732,068	66,499	80,170	44,470	68,615	33,822	-
2038	324,000	133,719	2,617,541	40,467	52,898	29,551	46,191	21,175	-
2039	162,000	68,292	2,594,418	18,400	26,833	14,838	23,117	10,520	-
2040	-	-	2,475,750	-	-	-	-	-	-
2041	-	-	2,459,879	-	-	-	-	-	-
2042	-	-	2,209,453	-	-	-	-	-	-
2043	-	-	2,300,472	-	-	-	-	-	-

Instructions

For each of the portfolios listed on the "Portfolios" tab, list the annual GHG emissions based on the DEQ methodology over the study period under Reference Case assumptions
For each year, break out the contributions of individual fossil fuel resources, market purchases, and market sales to the total GHG emissions per the DEQ methodology
UM 2225 Order Summary/Rubric references: C.4(a)

PGE note: Forecasts of generation from existing thermal output are based on economic dispatch using prices forecasted in this CEP/IRP. Forecasts of unspecified and other emitting market purchases are a function of historical purchases and a linear decline emission reduction glidepath. Neither reflect operational realities.

2	Portfolio2	Front-loaded decline		PGE owned GHG emitting generation (retail)					
		Included in retail total	*Not included in retail total*	Beaver	Carty	Coyote	PW1	PW2	Colstrip
Year	Total Retail GHG Emissions (metric tons)	Market Purchases (metric tons)	Market sales (metric tons)	Fossil fuel resource 1 (metric tons)	Fossil fuel resource 2 (metric tons)	Fossil fuel resource 3 (metric tons)	Fossil fuel resource 4 (metric tons)	Fossil fuel resource 5 (metric tons)	Fossil fuel resource 6 (metric tons)
2023	5,887,117	2,351,875	2,097,049	41,539	919,175	509,985	641,895	130,219	1,292,430
2024	5,308,316	1,802,933	1,865,467	137,208	879,158	490,395	635,821	175,051	1,187,749
2025	5,049,607	1,705,195	1,790,077	142,367	837,292	463,866	563,301	176,532	1,161,054
2026	3,279,487	1,027,218	2,899,475	126,245	542,203	295,561	390,712	117,299	780,250
2027	2,394,427	710,777	3,698,634	144,991	377,565	206,450	312,551	108,838	533,256
2028	1,951,897	529,291	4,483,543	235,214	284,079	156,644	251,548	122,318	372,803
2029	1,730,632	472,709	4,565,636	207,784	254,093	140,973	221,716	108,394	324,963
2030	1,620,000	550,194	2,882,753	231,882	295,412	164,415	256,135	121,962	-
2031	1,458,000	496,626	2,957,038	213,644	262,290	145,762	230,531	109,147	-
2032	1,296,000	461,739	2,823,141	187,525	226,122	127,262	199,112	94,241	-
2033	1,134,000	410,730	2,828,792	158,824	200,937	109,031	171,174	83,304	-
2034	972,000	361,878	2,780,984	136,906	165,578	93,414	144,128	70,096	-
2035	810,000	303,939	2,825,533	109,880	140,332	77,564	120,283	58,001	-
2036	648,000	254,336	2,695,013	78,402	113,496	62,321	95,522	43,923	-
2037	486,000	192,423	2,732,068	66,499	80,170	44,470	68,615	33,822	-
2038	324,000	133,719	2,617,541	40,467	52,898	29,551	46,191	21,175	-
2039	162,000	68,292	2,594,418	18,400	26,833	14,838	23,117	10,520	-
2040	-	-	2,475,750	-	-	-	-	-	-
2041	-	-	2,459,879	-	-	-	-	-	-
2042	-	-	2,209,453	-	-	-	-	-	-
2043	-	-	2,300,472	-	-	-	-	-	-

3	Portfolio3	Back-loaded decline		PGE owned GHG emitting generation (retail)					
		Included in retail total	*Not included in retail total*	Beaver	Carty	Coyote	PW1	PW2	Colstrip
Year	Total Retail GHG Emissions (metric tons)	Market Purchases (metric tons)	Market sales (metric tons)	Fossil fuel resource 1 (metric tons)	Fossil fuel resource 2 (metric tons)	Fossil fuel resource 3 (metric tons)	Fossil fuel resource 4 (metric tons)	Fossil fuel resource 5 (metric tons)	Fossil fuel resource 6 (metric tons)
2023	5,887,117	2,351,875	2,097,049	41,539	919,175	509,985	641,895	130,219	1,292,430
2024	5,308,316	1,802,933	1,865,467	137,208	879,158	490,395	635,821	175,051	1,187,749
2025	5,049,607	1,705,195	1,790,077	142,367	837,292	463,866	563,301	176,532	1,161,054
2026	4,938,974	1,547,011	1,929,510	190,127	816,568	445,120	588,420	176,655	1,175,073
2027	4,717,710	1,400,435	2,290,206	285,673	743,911	406,767	615,815	214,443	1,050,667
2028	4,275,180	1,159,289	2,995,974	515,183	622,209	343,092	550,958	267,909	816,539
2029	3,390,120	925,985	3,507,435	407,026	497,740	276,151	434,318	212,333	636,566
2030	1,620,000	550,194	2,882,753	231,882	295,412	164,415	256,135	121,962	-
2031	1,458,000	496,626	2,957,038	213,644	262,290	145,762	230,531	109,147	-
2032	1,296,000	461,739	2,823,141	187,525	226,122	127,262	199,112	94,241	-
2033	1,134,000	410,730	2,828,792	158,824	200,937	109,031	171,174	83,304	-
2034	972,000	361,878	2,780,984	136,906	165,578	93,414	144,128	70,096	-
2035	810,000	303,939	2,825,533	109,880	140,332	77,564	120,283	58,001	-
2036	648,000	254,336	2,695,013	78,402	113,496	62,321	95,522	43,923	-
2037	486,000	192,423	2,732,068	66,499	80,170	44,470	68,615	33,822	-
2038	324,000	133,719	2,617,541	40,467	52,898	29,551	46,191	21,175	-
2039	162,000	68,292	2,594,418	18,400	26,833	14,838	23,117	10,520	-
2040	-	-	2,475,750	-	-	-	-	-	-
2041	-	-	2,459,879	-	-	-	-	-	-
2042	-	-	2,209,453	-	-	-	-	-	-
2043	-	-	2,300,472	-	-	-	-	-	-

Instructions

For each of the portfolios listed on the "Portfolios" tab, list the annual GHG emissions based on the DEQ methodology over the study period under Reference Case assumptions
For each year, break out the contributions of individual fossil fuel resources, market purchases, and market sales to the total GHG emissions per the DEQ methodology
UM 2225 Order Summary/Rubric references: C.4(a)

PGE note: Forecasts of generation from existing thermal output are based on economic dispatch using prices forecasted in this CEP/IRP. Forecasts of unspecified and other emitting market purchases are a function of historical purchases and a linear decline emission reduction glidepath. Neither reflect operational realities.

4	Portfolio4	100% emissions reduction by 2035		PGE owned GHG emitting generation (retail)					
	Included in retail total	*Not included in retail total*		Beaver	Carty	Coyote	PW1	PW2	Colstrip
Year	Total Retail GHG Emissions (metric tons)	Market Purchases (metric tons)	Market sales (metric tons)	Fossil fuel resource 1 (metric tons)	Fossil fuel resource 2 (metric tons)	Fossil fuel resource 3 (metric tons)	Fossil fuel resource 4 (metric tons)	Fossil fuel resource 5 (metric tons)	Fossil fuel resource 6 (metric tons)
2023	5,887,117	2,351,875	2,097,049	41,539	919,175	509,985	641,895	130,219	1,292,430
2024	5,308,316	1,802,933	1,865,467	137,208	879,158	490,395	635,821	175,051	1,187,749
2025	5,049,607	1,705,195	1,790,077	142,367	837,292	463,866	563,301	176,532	1,161,054
2026	4,363,686	1,366,816	2,265,765	167,981	721,455	393,273	519,881	156,078	1,038,201
2027	3,677,764	1,091,731	2,920,645	222,701	579,927	317,101	480,068	167,172	819,064
2028	2,991,843	811,290	3,817,679	360,534	435,432	240,102	385,570	187,487	571,428
2029	2,305,921	629,845	4,198,793	276,854	338,557	187,835	295,418	144,426	432,985
2030	1,620,000	550,194	2,882,753	231,882	295,412	164,415	256,135	121,962	-
2031	1,296,000	441,446	3,045,839	189,906	233,147	129,566	204,917	97,019	-
2032	972,000	346,304	2,994,013	140,644	169,591	95,446	149,334	70,681	-
2033	648,000	234,703	3,081,286	90,757	114,821	62,303	97,814	47,602	-
2034	324,000	120,626	3,108,955	45,635	55,193	31,138	48,043	23,365	-
2035	-	-	3,221,129	-	-	-	-	-	-
2036	-	-	2,994,410	-	-	-	-	-	-
2037	-	-	2,951,594	-	-	-	-	-	-
2038	-	-	2,752,941	-	-	-	-	-	-
2039	-	-	2,654,609	-	-	-	-	-	-
2040	-	-	2,475,750	-	-	-	-	-	-
2041	-	-	2,459,879	-	-	-	-	-	-
2042	-	-	2,209,453	-	-	-	-	-	-
2043	-	-	2,300,472	-	-	-	-	-	-

5	Portfolio5	2-yr forward shift in targets		PGE owned GHG emitting generation (retail)					
	Included in retail total	*Not included in retail total*		Beaver	Carty	Coyote	PW1	PW2	Colstrip
Year	Total Retail GHG Emissions (metric tons)	Market Purchases (metric tons)	Market sales (metric tons)	Fossil fuel resource 1 (metric tons)	Fossil fuel resource 2 (metric tons)	Fossil fuel resource 3 (metric tons)	Fossil fuel resource 4 (metric tons)	Fossil fuel resource 5 (metric tons)	Fossil fuel resource 6 (metric tons)
2023	5,887,117	2,351,875	2,097,049	41,539	919,175	509,985	641,895	130,219	1,292,430
2024	5,308,316	1,802,933	1,865,467	137,208	879,158	490,395	635,821	175,051	1,187,749
2025	5,049,607	1,705,195	1,790,077	142,367	837,292	463,866	563,301	176,532	1,161,054
2026	3,906,405	1,223,584	2,533,044	150,378	645,852	352,061	465,402	139,723	929,406
2027	2,763,202	820,246	3,475,074	167,321	435,715	238,247	360,688	125,601	615,384
2028	1,620,000	439,291	4,696,053	195,219	235,774	130,009	208,775	101,519	309,412
2029	1,458,000	398,241	4,739,485	175,051	214,065	118,765	186,789	91,319	273,770
2030	1,296,000	440,155	3,060,783	185,505	236,329	131,532	204,908	97,570	-
2031	1,134,000	386,265	3,134,640	166,168	204,003	113,370	179,302	84,892	-
2032	972,000	346,304	2,994,013	140,644	169,591	95,446	149,334	70,681	-
2033	810,000	293,378	2,997,121	113,446	143,527	77,879	122,267	59,503	-
2034	648,000	241,252	2,944,970	91,271	110,385	62,276	96,086	46,731	-
2035	486,000	182,364	2,988,259	65,928	84,199	46,539	72,170	34,801	-
2036	324,000	127,168	2,850,321	39,201	56,748	31,161	47,761	21,961	-
2037	162,000	64,141	2,885,898	22,166	26,723	14,823	22,872	11,274	-
2038	-	-	2,752,941	-	-	-	-	-	-
2039	-	-	2,654,609	-	-	-	-	-	-
2040	-	-	2,475,750	-	-	-	-	-	-
2041	-	-	2,459,879	-	-	-	-	-	-
2042	-	-	2,209,453	-	-	-	-	-	-
2043	-	-	2,300,472	-	-	-	-	-	-

Instructions

For each of the portfolios listed on the "Portfolios" tab, list the annual GHG emissions based on the DEQ methodology over the study period under Reference Case assumptions
For each year, break out the contributions of individual fossil fuel resources, market purchases, and market sales to the total GHG emissions per the DEQ methodology
UM 2225 Order Summary/Rubric references: C.4(a)

PGE note: Forecasts of generation from existing thermal output are based on economic dispatch using prices forecasted in this CEP/IRP. Forecasts of unspecified and other emitting market purchases are a function of historical purchases and a linear decline emission reduction glidepath. Neither reflect operational realities.

6	Portfolio6	Optimize NCE		PGE owned GHG emitting generation (retail)					
	Included in retail total		*Not included in retail total*	Beaver	Carty	Coyote	PW1	PW2	Colstrip
Year	Total Retail GHG Emissions (metric tons)	Market Purchases (metric tons)	Market sales (metric tons)	Fossil fuel resource 1 (metric tons)	Fossil fuel resource 2 (metric tons)	Fossil fuel resource 3 (metric tons)	Fossil fuel resource 4 (metric tons)	Fossil fuel resource 5 (metric tons)	Fossil fuel resource 6 (metric tons)
2023	5,887,117	2,351,875	2,097,049	41,539	919,175	509,985	641,895	130,219	1,292,430
2024	5,308,316	1,802,933	1,865,467	137,208	879,158	490,395	635,821	175,051	1,187,749
2025	5,049,607	1,705,195	1,790,077	142,367	837,292	463,866	563,301	176,532	1,161,054
2026	4,363,686	1,366,816	2,265,765	167,981	721,455	393,273	519,881	156,078	1,038,201
2027	3,677,764	1,091,731	2,920,645	222,701	579,927	317,101	480,068	167,172	819,064
2028	2,991,843	811,290	3,817,679	360,534	435,432	240,102	385,570	187,487	571,428
2029	2,305,921	629,845	4,198,793	276,854	338,557	187,835	295,418	144,426	432,985
2030	1,620,000	550,194	2,882,753	231,882	295,412	164,415	256,135	121,962	-
2031	1,458,000	496,626	2,957,038	213,644	262,290	145,762	230,531	109,147	-
2032	1,296,000	461,739	2,823,141	187,525	226,122	127,262	199,112	94,241	-
2033	1,134,000	410,730	2,828,792	158,824	200,937	109,031	171,174	83,304	-
2034	972,000	361,878	2,780,984	136,906	165,578	93,414	144,128	70,096	-
2035	810,000	303,939	2,825,533	109,880	140,332	77,564	120,283	58,001	-
2036	648,000	254,336	2,695,013	78,402	113,496	62,321	95,522	43,923	-
2037	486,000	192,423	2,732,068	66,499	80,170	44,470	68,615	33,822	-
2038	324,000	133,719	2,617,541	40,467	52,898	29,551	46,191	21,175	-
2039	162,000	68,292	2,594,418	18,400	26,833	14,838	23,117	10,520	-
2040	-	-	2,475,750	-	-	-	-	-	-
2041	-	-	2,459,879	-	-	-	-	-	-
2042	-	-	2,209,453	-	-	-	-	-	-
2043	-	-	2,300,472	-	-	-	-	-	-

7	Portfolio7	Zero NCE		PGE owned GHG emitting generation (retail)					
	Included in retail total		*Not included in retail total*	Beaver	Carty	Coyote	PW1	PW2	Colstrip
Year	Total Retail GHG Emissions (metric tons)	Market Purchases (metric tons)	Market sales (metric tons)	Fossil fuel resource 1 (metric tons)	Fossil fuel resource 2 (metric tons)	Fossil fuel resource 3 (metric tons)	Fossil fuel resource 4 (metric tons)	Fossil fuel resource 5 (metric tons)	Fossil fuel resource 6 (metric tons)
2023	5,887,117	2,351,875	2,097,049	41,539	919,175	509,985	641,895	130,219	1,292,430
2024	5,308,316	1,802,933	1,865,467	137,208	879,158	490,395	635,821	175,051	1,187,749
2025	5,049,607	1,705,195	1,790,077	142,367	837,292	463,866	563,301	176,532	1,161,054
2026	4,363,686	1,366,816	2,265,765	167,981	721,455	393,273	519,881	156,078	1,038,201
2027	3,677,764	1,091,731	2,920,645	222,701	579,927	317,101	480,068	167,172	819,064
2028	2,991,843	811,290	3,817,679	360,534	435,432	240,102	385,570	187,487	571,428
2029	2,305,921	629,845	4,198,793	276,854	338,557	187,835	295,418	144,426	432,985
2030	1,620,000	550,194	2,882,753	231,882	295,412	164,415	256,135	121,962	-
2031	1,458,000	496,626	2,957,038	213,644	262,290	145,762	230,531	109,147	-
2032	1,296,000	461,739	2,823,141	187,525	226,122	127,262	199,112	94,241	-
2033	1,134,000	410,730	2,828,792	158,824	200,937	109,031	171,174	83,304	-
2034	972,000	361,878	2,780,984	136,906	165,578	93,414	144,128	70,096	-
2035	810,000	303,939	2,825,533	109,880	140,332	77,564	120,283	58,001	-
2036	648,000	254,336	2,695,013	78,402	113,496	62,321	95,522	43,923	-
2037	486,000	192,423	2,732,068	66,499	80,170	44,470	68,615	33,822	-
2038	324,000	133,719	2,617,541	40,467	52,898	29,551	46,191	21,175	-
2039	162,000	68,292	2,594,418	18,400	26,833	14,838	23,117	10,520	-
2040	-	-	2,475,750	-	-	-	-	-	-
2041	-	-	2,459,879	-	-	-	-	-	-
2042	-	-	2,209,453	-	-	-	-	-	-
2043	-	-	2,300,472	-	-	-	-	-	-

Instructions

For each of the portfolios listed on the "Portfolios" tab, list the annual GHG emissions based on the DEQ methodology over the study period under Reference Case assumptions
For each year, break out the contributions of individual fossil fuel resources, market purchases, and market sales to the total GHG emissions per the DEQ methodology
UM 2225 Order Summary/Rubric references: C.4(a)

PGE note: Forecasts of generation from existing thermal output are based on economic dispatch using prices forecasted in this CEP/IRP. Forecasts of unspecified and other emitting market purchases are a function of historical purchases and a linear decline emission reduction glidepath. Neither reflect operational realities.

8	Portfolio8	60 MWa EE		PGE owned GHG emitting generation (retail)					
		Included in retail total	*Not included in retail total*	Beaver	Carty	Coyote	PW1	PW2	Colstrip
Year	Total Retail GHG Emissions (metric tons)	Market Purchases (metric tons)	Market sales (metric tons)	Fossil fuel resource 1 (metric tons)	Fossil fuel resource 2 (metric tons)	Fossil fuel resource 3 (metric tons)	Fossil fuel resource 4 (metric tons)	Fossil fuel resource 5 (metric tons)	Fossil fuel resource 6 (metric tons)
2023	5,887,117	2,351,875	2,097,049	41,539	919,175	509,985	641,895	130,219	1,292,430
2024	5,308,316	1,802,933	1,865,467	137,208	879,158	490,395	635,821	175,051	1,187,749
2025	5,049,607	1,705,195	1,790,077	142,367	837,292	463,866	563,301	176,532	1,161,054
2026	4,363,686	1,366,816	2,265,765	167,981	721,455	393,273	519,881	156,078	1,038,201
2027	3,677,764	1,091,731	2,920,645	222,701	579,927	317,101	480,068	167,172	819,064
2028	2,991,843	811,290	3,817,679	360,534	435,432	240,102	385,570	187,487	571,428
2029	2,305,921	629,845	4,198,793	276,854	338,557	187,835	295,418	144,426	432,985
2030	1,620,000	550,194	2,882,753	231,882	295,412	164,415	256,135	121,962	-
2031	1,458,000	496,626	2,957,038	213,644	262,290	145,762	230,531	109,147	-
2032	1,296,000	461,739	2,823,141	187,525	226,122	127,262	199,112	94,241	-
2033	1,134,000	410,730	2,828,792	158,824	200,937	109,031	171,174	83,304	-
2034	972,000	361,878	2,780,984	136,906	165,578	93,414	144,128	70,096	-
2035	810,000	303,939	2,825,533	109,880	140,332	77,564	120,283	58,001	-
2036	648,000	254,336	2,695,013	78,402	113,496	62,321	95,522	43,923	-
2037	486,000	192,423	2,732,068	66,499	80,170	44,470	68,615	33,822	-
2038	324,000	133,719	2,617,541	40,467	52,898	29,551	46,191	21,175	-
2039	162,000	68,292	2,594,418	18,400	26,833	14,838	23,117	10,520	-
2040	-	-	2,475,750	-	-	-	-	-	-
2041	-	-	2,459,879	-	-	-	-	-	-
2042	-	-	2,209,453	-	-	-	-	-	-
2043	-	-	2,300,472	-	-	-	-	-	-

9	Portfolio9	Default CBREs		PGE owned GHG emitting generation (retail)					
		Included in retail total	*Not included in retail total*	Beaver	Carty	Coyote	PW1	PW2	Colstrip
Year	Total Retail GHG Emissions (metric tons)	Market Purchases (metric tons)	Market sales (metric tons)	Fossil fuel resource 1 (metric tons)	Fossil fuel resource 2 (metric tons)	Fossil fuel resource 3 (metric tons)	Fossil fuel resource 4 (metric tons)	Fossil fuel resource 5 (metric tons)	Fossil fuel resource 6 (metric tons)
2023	5,887,117	2,351,875	2,097,049	41,539	919,175	509,985	641,895	130,219	1,292,430
2024	5,308,316	1,802,933	1,865,467	137,208	879,158	490,395	635,821	175,051	1,187,749
2025	5,049,607	1,705,195	1,790,077	142,367	837,292	463,866	563,301	176,532	1,161,054
2026	4,363,686	1,366,816	2,265,765	167,981	721,455	393,273	519,881	156,078	1,038,201
2027	3,677,764	1,091,731	2,920,645	222,701	579,927	317,101	480,068	167,172	819,064
2028	2,991,843	811,290	3,817,679	360,534	435,432	240,102	385,570	187,487	571,428
2029	2,305,921	629,845	4,198,793	276,854	338,557	187,835	295,418	144,426	432,985
2030	1,620,000	550,194	2,882,753	231,882	295,412	164,415	256,135	121,962	-
2031	1,458,000	496,626	2,957,038	213,644	262,290	145,762	230,531	109,147	-
2032	1,296,000	461,739	2,823,141	187,525	226,122	127,262	199,112	94,241	-
2033	1,134,000	410,730	2,828,792	158,824	200,937	109,031	171,174	83,304	-
2034	972,000	361,878	2,780,984	136,906	165,578	93,414	144,128	70,096	-
2035	810,000	303,939	2,825,533	109,880	140,332	77,564	120,283	58,001	-
2036	648,000	254,336	2,695,013	78,402	113,496	62,321	95,522	43,923	-
2037	486,000	192,423	2,732,068	66,499	80,170	44,470	68,615	33,822	-
2038	324,000	133,719	2,617,541	40,467	52,898	29,551	46,191	21,175	-
2039	162,000	68,292	2,594,418	18,400	26,833	14,838	23,117	10,520	-
2040	-	-	2,475,750	-	-	-	-	-	-
2041	-	-	2,459,879	-	-	-	-	-	-
2042	-	-	2,209,453	-	-	-	-	-	-
2043	-	-	2,300,472	-	-	-	-	-	-

Instructions

For each of the portfolios listed on the "Portfolios" tab, list the annual GHG emissions based on the DEQ methodology over the study period under Reference Case assumptions
For each year, break out the contributions of individual fossil fuel resources, market purchases, and market sales to the total GHG emissions per the DEQ methodology
UM 2225 Order Summary/Rubric references: C.4(a)

PGE note: Forecasts of generation from existing thermal output are based on economic dispatch using prices forecasted in this CEP/IRP. Forecasts of unspecified and other emitting market purchases are a function of historical purchases and a linear decline emission reduction glidepath. Neither reflect operational realities.

10	Portfolio10	CBRE - 75%			PGE owned GHG emitting generation (retail)					
		Included in retail total	*Not included in retail total*	Beaver	Carty	Coyote	PW1	PW2	Colstrip
Year	Total Retail GHG Emissions (metric tons)	Market Purchases (metric tons)	Market sales (metric tons)	Fossil fuel resource 1 (metric tons)	Fossil fuel resource 2 (metric tons)	Fossil fuel resource 3 (metric tons)	Fossil fuel resource 4 (metric tons)	Fossil fuel resource 5 (metric tons)	Fossil fuel resource 6 (metric tons)
2023	5,887,117	2,351,875	2,097,049	41,539	919,175	509,985	641,895	130,219	1,292,430
2024	5,308,316	1,802,933	1,865,467	137,208	879,158	490,395	635,821	175,051	1,187,749
2025	5,049,607	1,705,195	1,790,077	142,367	837,292	463,866	563,301	176,532	1,161,054
2026	4,363,686	1,366,816	2,265,765	167,981	721,455	393,273	519,881	156,078	1,038,201
2027	3,677,764	1,091,731	2,920,645	222,701	579,927	317,101	480,068	167,172	819,064
2028	2,991,843	811,290	3,817,679	360,534	435,432	240,102	385,570	187,487	571,428
2029	2,305,921	629,845	4,198,793	276,854	338,557	187,835	295,418	144,426	432,985
2030	1,620,000	550,194	2,882,753	231,882	295,412	164,415	256,135	121,962	-
2031	1,458,000	496,626	2,957,038	213,644	262,290	145,762	230,531	109,147	-
2032	1,296,000	461,739	2,823,141	187,525	226,122	127,262	199,112	94,241	-
2033	1,134,000	410,730	2,828,792	158,824	200,937	109,031	171,174	83,304	-
2034	972,000	361,878	2,780,984	136,906	165,578	93,414	144,128	70,096	-
2035	810,000	303,939	2,825,533	109,880	140,332	77,564	120,283	58,001	-
2036	648,000	254,336	2,695,013	78,402	113,496	62,321	95,522	43,923	-
2037	486,000	192,423	2,732,068	66,499	80,170	44,470	68,615	33,822	-
2038	324,000	133,719	2,617,541	40,467	52,898	29,551	46,191	21,175	-
2039	162,000	68,292	2,594,418	18,400	26,833	14,838	23,117	10,520	-
2040	-	-	2,475,750	-	-	-	-	-	-
2041	-	-	2,459,879	-	-	-	-	-	-
2042	-	-	2,209,453	-	-	-	-	-	-
2043	-	-	2,300,472	-	-	-	-	-	-

11	Portfolio11	CBRE - zero			PGE owned GHG emitting generation (retail)					
		Included in retail total	*Not included in retail total*	Beaver	Carty	Coyote	PW1	PW2	Colstrip
Year	Total Retail GHG Emissions (metric tons)	Market Purchases (metric tons)	Market sales (metric tons)	Fossil fuel resource 1 (metric tons)	Fossil fuel resource 2 (metric tons)	Fossil fuel resource 3 (metric tons)	Fossil fuel resource 4 (metric tons)	Fossil fuel resource 5 (metric tons)	Fossil fuel resource 6 (metric tons)
2023	5,887,117	2,351,875	2,097,049	41,539	919,175	509,985	641,895	130,219	1,292,430
2024	5,308,316	1,802,933	1,865,467	137,208	879,158	490,395	635,821	175,051	1,187,749
2025	5,049,607	1,705,195	1,790,077	142,367	837,292	463,866	563,301	176,532	1,161,054
2026	4,363,686	1,366,816	2,265,765	167,981	721,455	393,273	519,881	156,078	1,038,201
2027	3,677,764	1,091,731	2,920,645	222,701	579,927	317,101	480,068	167,172	819,064
2028	2,991,843	811,290	3,817,679	360,534	435,432	240,102	385,570	187,487	571,428
2029	2,305,921	629,845	4,198,793	276,854	338,557	187,835	295,418	144,426	432,985
2030	1,620,000	550,194	2,882,753	231,882	295,412	164,415	256,135	121,962	-
2031	1,458,000	496,626	2,957,038	213,644	262,290	145,762	230,531	109,147	-
2032	1,296,000	461,739	2,823,141	187,525	226,122	127,262	199,112	94,241	-
2033	1,134,000	410,730	2,828,792	158,824	200,937	109,031	171,174	83,304	-
2034	972,000	361,878	2,780,984	136,906	165,578	93,414	144,128	70,096	-
2035	810,000	303,939	2,825,533	109,880	140,332	77,564	120,283	58,001	-
2036	648,000	254,336	2,695,013	78,402	113,496	62,321	95,522	43,923	-
2037	486,000	192,423	2,732,068	66,499	80,170	44,470	68,615	33,822	-
2038	324,000	133,719	2,617,541	40,467	52,898	29,551	46,191	21,175	-
2039	162,000	68,292	2,594,418	18,400	26,833	14,838	23,117	10,520	-
2040	-	-	2,475,750	-	-	-	-	-	-
2041	-	-	2,459,879	-	-	-	-	-	-
2042	-	-	2,209,453	-	-	-	-	-	-
2043	-	-	2,300,472	-	-	-	-	-	-

Instructions

For each of the portfolios listed on the "Portfolios" tab, list the annual GHG emissions based on the DEQ methodology over the study period under Reference Case assumptions
For each year, break out the contributions of individual fossil fuel resources, market purchases, and market sales to the total GHG emissions per the DEQ methodology
UM 2225 Order Summary/Rubric references: C.4(a)

PGE note: Forecasts of generation from existing thermal output are based on economic dispatch using prices forecasted in this CEP/IRP. Forecasts of unspecified and other emitting market purchases are a function of historical purchases and a linear decline emission reduction glidepath. Neither reflect operational realities.

12	Portfolio12	CBRE - microgrid			PGE owned GHG emitting generation (retail)					
		Included in retail total	*Not included in retail total*		Beaver	Carty	Coyote	PW1	PW2	Colstrip
Year	Total Retail GHG Emissions (metric tons)	Market Purchases (metric tons)	Market sales (metric tons)		Fossil fuel resource 1 (metric tons)	Fossil fuel resource 2 (metric tons)	Fossil fuel resource 3 (metric tons)	Fossil fuel resource 4 (metric tons)	Fossil fuel resource 5 (metric tons)	Fossil fuel resource 6 (metric tons)
2023	5,887,117	2,351,875	2,097,049		41,539	919,175	509,985	641,895	130,219	1,292,430
2024	5,308,316	1,802,933	1,865,467		137,208	879,158	490,395	635,821	175,051	1,187,749
2025	5,049,607	1,705,195	1,790,077		142,367	837,292	463,866	563,301	176,532	1,161,054
2026	4,363,686	1,366,816	2,265,765		167,981	721,455	393,273	519,881	156,078	1,038,201
2027	3,677,764	1,091,731	2,920,645		222,701	579,927	317,101	480,068	167,172	819,064
2028	2,991,843	811,290	3,817,679		360,534	435,432	240,102	385,570	187,487	571,428
2029	2,305,921	629,845	4,198,793		276,854	338,557	187,835	295,418	144,426	432,985
2030	1,620,000	550,194	2,882,753		231,882	295,412	164,415	256,135	121,962	-
2031	1,458,000	496,626	2,957,038		213,644	262,290	145,762	230,531	109,147	-
2032	1,296,000	461,739	2,823,141		187,525	226,122	127,262	199,112	94,241	-
2033	1,134,000	410,730	2,828,792		158,824	200,937	109,031	171,174	83,304	-
2034	972,000	361,878	2,780,984		136,906	165,578	93,414	144,128	70,096	-
2035	810,000	303,939	2,825,533		109,880	140,332	77,564	120,283	58,001	-
2036	648,000	254,336	2,695,013		78,402	113,496	62,321	95,522	43,923	-
2037	486,000	192,423	2,732,068		66,499	80,170	44,470	68,615	33,822	-
2038	324,000	133,719	2,617,541		40,467	52,898	29,551	46,191	21,175	-
2039	162,000	68,292	2,594,418		18,400	26,833	14,838	23,117	10,520	-
2040	-	-	2,475,750		-	-	-	-	-	-
2041	-	-	2,459,879		-	-	-	-	-	-
2042	-	-	2,209,453		-	-	-	-	-	-
2043	-	-	2,300,472		-	-	-	-	-	-

13	Portfolio13	CBRE - optimize			PGE owned GHG emitting generation (retail)					
		Included in retail total	*Not included in retail total*		Beaver	Carty	Coyote	PW1	PW2	Colstrip
Year	Total Retail GHG Emissions (metric tons)	Market Purchases (metric tons)	Market sales (metric tons)		Fossil fuel resource 1 (metric tons)	Fossil fuel resource 2 (metric tons)	Fossil fuel resource 3 (metric tons)	Fossil fuel resource 4 (metric tons)	Fossil fuel resource 5 (metric tons)	Fossil fuel resource 6 (metric tons)
2023	5,887,117	2,351,875	2,097,049		41,539	919,175	509,985	641,895	130,219	1,292,430
2024	5,308,316	1,802,933	1,865,467		137,208	879,158	490,395	635,821	175,051	1,187,749
2025	5,049,607	1,705,195	1,790,077		142,367	837,292	463,866	563,301	176,532	1,161,054
2026	4,363,686	1,366,816	2,265,765		167,981	721,455	393,273	519,881	156,078	1,038,201
2027	3,677,764	1,091,731	2,920,645		222,701	579,927	317,101	480,068	167,172	819,064
2028	2,991,843	811,290	3,817,679		360,534	435,432	240,102	385,570	187,487	571,428
2029	2,305,921	629,845	4,198,793		276,854	338,557	187,835	295,418	144,426	432,985
2030	1,620,000	550,194	2,882,753		231,882	295,412	164,415	256,135	121,962	-
2031	1,458,000	496,626	2,957,038		213,644	262,290	145,762	230,531	109,147	-
2032	1,296,000	461,739	2,823,141		187,525	226,122	127,262	199,112	94,241	-
2033	1,134,000	410,730	2,828,792		158,824	200,937	109,031	171,174	83,304	-
2034	972,000	361,878	2,780,984		136,906	165,578	93,414	144,128	70,096	-
2035	810,000	303,939	2,825,533		109,880	140,332	77,564	120,283	58,001	-
2036	648,000	254,336	2,695,013		78,402	113,496	62,321	95,522	43,923	-
2037	486,000	192,423	2,732,068		66,499	80,170	44,470	68,615	33,822	-
2038	324,000	133,719	2,617,541		40,467	52,898	29,551	46,191	21,175	-
2039	162,000	68,292	2,594,418		18,400	26,833	14,838	23,117	10,520	-
2040	-	-	2,475,750		-	-	-	-	-	-
2041	-	-	2,459,879		-	-	-	-	-	-
2042	-	-	2,209,453		-	-	-	-	-	-
2043	-	-	2,300,472		-	-	-	-	-	-

Instructions

For each of the portfolios listed on the "Portfolios" tab, list the annual GHG emissions based on the DEQ methodology over the study period under Reference Case assumptions
For each year, break out the contributions of individual fossil fuel resources, market purchases, and market sales to the total GHG emissions per the DEQ methodology
UM 2225 Order Summary/Rubric references: C.4(a)

PGE note: Forecasts of generation from existing thermal output are based on economic dispatch using prices forecasted in this CEP/IRP. Forecasts of unspecified and other emitting market purchases are a function of historical purchases and a linear decline emission reduction glidepath. Neither reflect operational realities.

14	Portfolio14	Unconstrained Tx			PGE owned GHG emitting generation (retail)					
		Included in retail total	*Not included in retail total*		Beaver	Carty	Coyote	PW1	PW2	Colstrip
Year	Total Retail GHG Emissions (metric tons)	Market Purchases (metric tons)	Market sales (metric tons)		Fossil fuel resource 1 (metric tons)	Fossil fuel resource 2 (metric tons)	Fossil fuel resource 3 (metric tons)	Fossil fuel resource 4 (metric tons)	Fossil fuel resource 5 (metric tons)	Fossil fuel resource 6 (metric tons)
2023	5,887,117	2,351,875	2,097,049		41,539	919,175	509,985	641,895	130,219	1,292,430
2024	5,308,316	1,802,933	1,865,467		137,208	879,158	490,395	635,821	175,051	1,187,749
2025	5,049,607	1,705,195	1,790,077		142,367	837,292	463,866	563,301	176,532	1,161,054
2026	4,363,686	1,366,816	2,265,765		167,981	721,455	393,273	519,881	156,078	1,038,201
2027	3,677,764	1,091,731	2,920,645		222,701	579,927	317,101	480,068	167,172	819,064
2028	2,991,843	811,290	3,817,679		360,534	435,432	240,102	385,570	187,487	571,428
2029	2,305,921	629,845	4,198,793		276,854	338,557	187,835	295,418	144,426	432,985
2030	1,620,000	550,194	2,882,753		231,882	295,412	164,415	256,135	121,962	-
2031	1,458,000	496,626	2,957,038		213,644	262,290	145,762	230,531	109,147	-
2032	1,296,000	461,739	2,823,141		187,525	226,122	127,262	199,112	94,241	-
2033	1,134,000	410,730	2,828,792		158,824	200,937	109,031	171,174	83,304	-
2034	972,000	361,878	2,780,984		136,906	165,578	93,414	144,128	70,096	-
2035	810,000	303,939	2,825,533		109,880	140,332	77,564	120,283	58,001	-
2036	648,000	254,336	2,695,013		78,402	113,496	62,321	95,522	43,923	-
2037	486,000	192,423	2,732,068		66,499	80,170	44,470	68,615	33,822	-
2038	324,000	133,719	2,617,541		40,467	52,898	29,551	46,191	21,175	-
2039	162,000	68,292	2,594,418		18,400	26,833	14,838	23,117	10,520	-
2040	-	-	2,475,750		-	-	-	-	-	-
2041	-	-	2,459,879		-	-	-	-	-	-
2042	-	-	2,209,453		-	-	-	-	-	-
2043	-	-	2,300,472		-	-	-	-	-	-

15	Portfolio15	No Upgrades			PGE owned GHG emitting generation (retail)					
		Included in retail total	*Not included in retail total*		Beaver	Carty	Coyote	PW1	PW2	Colstrip
Year	Total Retail GHG Emissions (metric tons)	Market Purchases (metric tons)	Market sales (metric tons)		Fossil fuel resource 1 (metric tons)	Fossil fuel resource 2 (metric tons)	Fossil fuel resource 3 (metric tons)	Fossil fuel resource 4 (metric tons)	Fossil fuel resource 5 (metric tons)	Fossil fuel resource 6 (metric tons)
2023	5,887,117	2,351,875	2,097,049		41,539	919,175	509,985	641,895	130,219	1,292,430
2024	5,308,316	1,802,933	1,865,467		137,208	879,158	490,395	635,821	175,051	1,187,749
2025	5,049,607	1,705,195	1,790,077		142,367	837,292	463,866	563,301	176,532	1,161,054
2026	4,363,686	1,366,816	2,265,765		167,981	721,455	393,273	519,881	156,078	1,038,201
2027	3,677,764	1,091,731	2,920,645		222,701	579,927	317,101	480,068	167,172	819,064
2028	2,991,843	811,290	3,817,679		360,534	435,432	240,102	385,570	187,487	571,428
2029	2,305,921	629,845	4,198,793		276,854	338,557	187,835	295,418	144,426	432,985
2030	1,620,000	550,194	2,882,753		231,882	295,412	164,415	256,135	121,962	-
2031	1,458,000	496,626	2,957,038		213,644	262,290	145,762	230,531	109,147	-
2032	1,296,000	461,739	2,823,141		187,525	226,122	127,262	199,112	94,241	-
2033	1,134,000	410,730	2,828,792		158,824	200,937	109,031	171,174	83,304	-
2034	972,000	361,878	2,780,984		136,906	165,578	93,414	144,128	70,096	-
2035	810,000	303,939	2,825,533		109,880	140,332	77,564	120,283	58,001	-
2036	648,000	254,336	2,695,013		78,402	113,496	62,321	95,522	43,923	-
2037	486,000	192,423	2,732,068		66,499	80,170	44,470	68,615	33,822	-
2038	324,000	133,719	2,617,541		40,467	52,898	29,551	46,191	21,175	-
2039	162,000	68,292	2,594,418		18,400	26,833	14,838	23,117	10,520	-
2040	-	-	2,475,750		-	-	-	-	-	-
2041	-	-	2,459,879		-	-	-	-	-	-
2042	-	-	2,209,453		-	-	-	-	-	-
2043	-	-	2,300,472		-	-	-	-	-	-

Instructions

For each of the portfolios listed on the "Portfolios" tab, list the annual GHG emissions based on the DEQ methodology over the study period under Reference Case assumptions
For each year, break out the contributions of individual fossil fuel resources, market purchases, and market sales to the total GHG emissions per the DEQ methodology
UM 2225 Order Summary/Rubric references: C.4(a)

PGE note: Forecasts of generation from existing thermal output are based on economic dispatch using prices forecasted in this CEP/IRP. Forecasts of unspecified and other emitting market purchases are a function of historical purchases and a linear decline emission reduction glidepath. Neither reflect operational realities.

16	Portfolio16	Unconstrained SoA		PGE owned GHG emitting generation (retail)					
	Included in retail total	*Not included in retail total*		Beaver	Carty	Coyote	PW1	PW2	Colstrip
Year	Total Retail GHG Emissions (metric tons)	Market Purchases (metric tons)	Market sales (metric tons)	Fossil fuel resource 1 (metric tons)	Fossil fuel resource 2 (metric tons)	Fossil fuel resource 3 (metric tons)	Fossil fuel resource 4 (metric tons)	Fossil fuel resource 5 (metric tons)	Fossil fuel resource 6 (metric tons)
2023	5,887,117	2,351,875	2,097,049	41,539	919,175	509,985	641,895	130,219	1,292,430
2024	5,308,316	1,802,933	1,865,467	137,208	879,158	490,395	635,821	175,051	1,187,749
2025	5,049,607	1,705,195	1,790,077	142,367	837,292	463,866	563,301	176,532	1,161,054
2026	4,363,686	1,366,816	2,265,765	167,981	721,455	393,273	519,881	156,078	1,038,201
2027	3,677,764	1,091,731	2,920,645	222,701	579,927	317,101	480,068	167,172	819,064
2028	2,991,843	811,290	3,817,679	360,534	435,432	240,102	385,570	187,487	571,428
2029	2,305,921	629,845	4,198,793	276,854	338,557	187,835	295,418	144,426	432,985
2030	1,620,000	550,194	2,882,753	231,882	295,412	164,415	256,135	121,962	-
2031	1,458,000	496,626	2,957,038	213,644	262,290	145,762	230,531	109,147	-
2032	1,296,000	461,739	2,823,141	187,525	226,122	127,262	199,112	94,241	-
2033	1,134,000	410,730	2,828,792	158,824	200,937	109,031	171,174	83,304	-
2034	972,000	361,878	2,780,984	136,906	165,578	93,414	144,128	70,096	-
2035	810,000	303,939	2,825,533	109,880	140,332	77,564	120,283	58,001	-
2036	648,000	254,336	2,695,013	78,402	113,496	62,321	95,522	43,923	-
2037	486,000	192,423	2,732,068	66,499	80,170	44,470	68,615	33,822	-
2038	324,000	133,719	2,617,541	40,467	52,898	29,551	46,191	21,175	-
2039	162,000	68,292	2,594,418	18,400	26,833	14,838	23,117	10,520	-
2040	-	-	2,475,750	-	-	-	-	-	-
2041	-	-	2,459,879	-	-	-	-	-	-
2042	-	-	2,209,453	-	-	-	-	-	-
2043	-	-	2,300,472	-	-	-	-	-	-

17	Portfolio17	Unconstrained SoA Plus		PGE owned GHG emitting generation (retail)					
	Included in retail total	*Not included in retail total*		Beaver	Carty	Coyote	PW1	PW2	Colstrip
Year	Total Retail GHG Emissions (metric tons)	Market Purchases (metric tons)	Market sales (metric tons)	Fossil fuel resource 1 (metric tons)	Fossil fuel resource 2 (metric tons)	Fossil fuel resource 3 (metric tons)	Fossil fuel resource 4 (metric tons)	Fossil fuel resource 5 (metric tons)	Fossil fuel resource 6 (metric tons)
2023	5,887,117	2,351,875	2,097,049	41,539	919,175	509,985	641,895	130,219	1,292,430
2024	5,308,316	1,802,933	1,865,467	137,208	879,158	490,395	635,821	175,051	1,187,749
2025	5,049,607	1,705,195	1,790,077	142,367	837,292	463,866	563,301	176,532	1,161,054
2026	4,363,686	1,366,816	2,265,765	167,981	721,455	393,273	519,881	156,078	1,038,201
2027	3,677,764	1,091,731	2,920,645	222,701	579,927	317,101	480,068	167,172	819,064
2028	2,991,843	811,290	3,817,679	360,534	435,432	240,102	385,570	187,487	571,428
2029	2,305,921	629,845	4,198,793	276,854	338,557	187,835	295,418	144,426	432,985
2030	1,620,000	550,194	2,882,753	231,882	295,412	164,415	256,135	121,962	-
2031	1,458,000	496,626	2,957,038	213,644	262,290	145,762	230,531	109,147	-
2032	1,296,000	461,739	2,823,141	187,525	226,122	127,262	199,112	94,241	-
2033	1,134,000	410,730	2,828,792	158,824	200,937	109,031	171,174	83,304	-
2034	972,000	361,878	2,780,984	136,906	165,578	93,414	144,128	70,096	-
2035	810,000	303,939	2,825,533	109,880	140,332	77,564	120,283	58,001	-
2036	648,000	254,336	2,695,013	78,402	113,496	62,321	95,522	43,923	-
2037	486,000	192,423	2,732,068	66,499	80,170	44,470	68,615	33,822	-
2038	324,000	133,719	2,617,541	40,467	52,898	29,551	46,191	21,175	-
2039	162,000	68,292	2,594,418	18,400	26,833	14,838	23,117	10,520	-
2040	-	-	2,475,750	-	-	-	-	-	-
2041	-	-	2,459,879	-	-	-	-	-	-
2042	-	-	2,209,453	-	-	-	-	-	-
2043	-	-	2,300,472	-	-	-	-	-	-

Instructions

For each of the portfolios listed on the "Portfolios" tab, list the annual GHG emissions based on the DEQ methodology over the study period under Reference Case assumptions
For each year, break out the contributions of individual fossil fuel resources, market purchases, and market sales to the total GHG emissions per the DEQ methodology
UM 2225 Order Summary/Rubric references: C.4(a)

PGE note: Forecasts of generation from existing thermal output are based on economic dispatch using prices forecasted in this CEP/IRP. Forecasts of unspecified and other emitting market purchases are a function of historical purchases and a linear decline emission reduction glidepath. Neither reflect operational realities.

18	Portfolio18	SoA in 2027		PGE owned GHG emitting generation (retail)					
	Included in retail total	*Not included in retail total*		Beaver	Carty	Coyote	PW1	PW2	Colstrip
Year	Total Retail GHG Emissions (metric tons)	Market Purchases (metric tons)	Market sales (metric tons)	Fossil fuel resource 1 (metric tons)	Fossil fuel resource 2 (metric tons)	Fossil fuel resource 3 (metric tons)	Fossil fuel resource 4 (metric tons)	Fossil fuel resource 5 (metric tons)	Fossil fuel resource 6 (metric tons)
2023	5,887,117	2,351,875	2,097,049	41,539	919,175	509,985	641,895	130,219	1,292,430
2024	5,308,316	1,802,933	1,865,467	137,208	879,158	490,395	635,821	175,051	1,187,749
2025	5,049,607	1,705,195	1,790,077	142,367	837,292	463,866	563,301	176,532	1,161,054
2026	4,363,686	1,366,816	2,265,765	167,981	721,455	393,273	519,881	156,078	1,038,201
2027	3,677,764	1,091,731	2,920,645	222,701	579,927	317,101	480,068	167,172	819,064
2028	2,991,843	811,290	3,817,679	360,534	435,432	240,102	385,570	187,487	571,428
2029	2,305,921	629,845	4,198,793	276,854	338,557	187,835	295,418	144,426	432,985
2030	1,620,000	550,194	2,882,753	231,882	295,412	164,415	256,135	121,962	-
2031	1,458,000	496,626	2,957,038	213,644	262,290	145,762	230,531	109,147	-
2032	1,296,000	461,739	2,823,141	187,525	226,122	127,262	199,112	94,241	-
2033	1,134,000	410,730	2,828,792	158,824	200,937	109,031	171,174	83,304	-
2034	972,000	361,878	2,780,984	136,906	165,578	93,414	144,128	70,096	-
2035	810,000	303,939	2,825,533	109,880	140,332	77,564	120,283	58,001	-
2036	648,000	254,336	2,695,013	78,402	113,496	62,321	95,522	43,923	-
2037	486,000	192,423	2,732,068	66,499	80,170	44,470	68,615	33,822	-
2038	324,000	133,719	2,617,541	40,467	52,898	29,551	46,191	21,175	-
2039	162,000	68,292	2,594,418	18,400	26,833	14,838	23,117	10,520	-
2040	-	-	2,475,750	-	-	-	-	-	-
2041	-	-	2,459,879	-	-	-	-	-	-
2042	-	-	2,209,453	-	-	-	-	-	-
2043	-	-	2,300,472	-	-	-	-	-	-

19	Portfolio19	SoA in 2029		PGE owned GHG emitting generation (retail)					
	Included in retail total	*Not included in retail total*		Beaver	Carty	Coyote	PW1	PW2	Colstrip
Year	Total Retail GHG Emissions (metric tons)	Market Purchases (metric tons)	Market sales (metric tons)	Fossil fuel resource 1 (metric tons)	Fossil fuel resource 2 (metric tons)	Fossil fuel resource 3 (metric tons)	Fossil fuel resource 4 (metric tons)	Fossil fuel resource 5 (metric tons)	Fossil fuel resource 6 (metric tons)
2023	5,887,117	2,351,875	2,097,049	41,539	919,175	509,985	641,895	130,219	1,292,430
2024	5,308,316	1,802,933	1,865,467	137,208	879,158	490,395	635,821	175,051	1,187,749
2025	5,049,607	1,705,195	1,790,077	142,367	837,292	463,866	563,301	176,532	1,161,054
2026	4,363,686	1,366,816	2,265,765	167,981	721,455	393,273	519,881	156,078	1,038,201
2027	3,677,764	1,091,731	2,920,645	222,701	579,927	317,101	480,068	167,172	819,064
2028	2,991,843	811,290	3,817,679	360,534	435,432	240,102	385,570	187,487	571,428
2029	2,305,921	629,845	4,198,793	276,854	338,557	187,835	295,418	144,426	432,985
2030	1,620,000	550,194	2,882,753	231,882	295,412	164,415	256,135	121,962	-
2031	1,458,000	496,626	2,957,038	213,644	262,290	145,762	230,531	109,147	-
2032	1,296,000	461,739	2,823,141	187,525	226,122	127,262	199,112	94,241	-
2033	1,134,000	410,730	2,828,792	158,824	200,937	109,031	171,174	83,304	-
2034	972,000	361,878	2,780,984	136,906	165,578	93,414	144,128	70,096	-
2035	810,000	303,939	2,825,533	109,880	140,332	77,564	120,283	58,001	-
2036	648,000	254,336	2,695,013	78,402	113,496	62,321	95,522	43,923	-
2037	486,000	192,423	2,732,068	66,499	80,170	44,470	68,615	33,822	-
2038	324,000	133,719	2,617,541	40,467	52,898	29,551	46,191	21,175	-
2039	162,000	68,292	2,594,418	18,400	26,833	14,838	23,117	10,520	-
2040	-	-	2,475,750	-	-	-	-	-	-
2041	-	-	2,459,879	-	-	-	-	-	-
2042	-	-	2,209,453	-	-	-	-	-	-
2043	-	-	2,300,472	-	-	-	-	-	-

Instructions

For each of the portfolios listed on the "Portfolios" tab, list the annual GHG emissions based on the DEQ methodology over the study period under Reference Case assumptions
For each year, break out the contributions of individual fossil fuel resources, market purchases, and market sales to the total GHG emissions per the DEQ methodology
UM 2225 Order Summary/Rubric references: C.4(a)

PGE note: Forecasts of generation from existing thermal output are based on economic dispatch using prices forecasted in this CEP/IRP. Forecasts of unspecified and other emitting market purchases are a function of historical purchases and a linear decline emission reduction glidepath. Neither reflect operational realities.

20	Portfolio20	WY in 2026		PGE owned GHG emitting generation (retail)					
		Included in retail total	*Not included in retail total*	Beaver	Carty	Coyote	PW1	PW2	Colstrip
Year	Total Retail GHG Emissions (metric tons)	Market Purchases (metric tons)	Market sales (metric tons)	Fossil fuel resource 1 (metric tons)	Fossil fuel resource 2 (metric tons)	Fossil fuel resource 3 (metric tons)	Fossil fuel resource 4 (metric tons)	Fossil fuel resource 5 (metric tons)	Fossil fuel resource 6 (metric tons)
2023	5,887,117	2,351,875	2,097,049	41,539	919,175	509,985	641,895	130,219	1,292,430
2024	5,308,316	1,802,933	1,865,467	137,208	879,158	490,395	635,821	175,051	1,187,749
2025	5,049,607	1,705,195	1,790,077	142,367	837,292	463,866	563,301	176,532	1,161,054
2026	4,363,686	1,366,816	2,265,765	167,981	721,455	393,273	519,881	156,078	1,038,201
2027	3,677,764	1,091,731	2,920,645	222,701	579,927	317,101	480,068	167,172	819,064
2028	2,991,843	811,290	3,817,679	360,534	435,432	240,102	385,570	187,487	571,428
2029	2,305,921	629,845	4,198,793	276,854	338,557	187,835	295,418	144,426	432,985
2030	1,620,000	550,194	2,882,753	231,882	295,412	164,415	256,135	121,962	-
2031	1,458,000	496,626	2,957,038	213,644	262,290	145,762	230,531	109,147	-
2032	1,296,000	461,739	2,823,141	187,525	226,122	127,262	199,112	94,241	-
2033	1,134,000	410,730	2,828,792	158,824	200,937	109,031	171,174	83,304	-
2034	972,000	361,878	2,780,984	136,906	165,578	93,414	144,128	70,096	-
2035	810,000	303,939	2,825,533	109,880	140,332	77,564	120,283	58,001	-
2036	648,000	254,336	2,695,013	78,402	113,496	62,321	95,522	43,923	-
2037	486,000	192,423	2,732,068	66,499	80,170	44,470	68,615	33,822	-
2038	324,000	133,719	2,617,541	40,467	52,898	29,551	46,191	21,175	-
2039	162,000	68,292	2,594,418	18,400	26,833	14,838	23,117	10,520	-
2040	-	-	2,475,750	-	-	-	-	-	-
2041	-	-	2,459,879	-	-	-	-	-	-
2042	-	-	2,209,453	-	-	-	-	-	-
2043	-	-	2,300,472	-	-	-	-	-	-

21	Portfolio21	NV in 2026		PGE owned GHG emitting generation (retail)					
		Included in retail total	*Not included in retail total*	Beaver	Carty	Coyote	PW1	PW2	Colstrip
Year	Total Retail GHG Emissions (metric tons)	Market Purchases (metric tons)	Market sales (metric tons)	Fossil fuel resource 1 (metric tons)	Fossil fuel resource 2 (metric tons)	Fossil fuel resource 3 (metric tons)	Fossil fuel resource 4 (metric tons)	Fossil fuel resource 5 (metric tons)	Fossil fuel resource 6 (metric tons)
2023	5,887,117	2,351,875	2,097,049	41,539	919,175	509,985	641,895	130,219	1,292,430
2024	5,308,316	1,802,933	1,865,467	137,208	879,158	490,395	635,821	175,051	1,187,749
2025	5,049,607	1,705,195	1,790,077	142,367	837,292	463,866	563,301	176,532	1,161,054
2026	4,363,686	1,366,816	2,265,765	167,981	721,455	393,273	519,881	156,078	1,038,201
2027	3,677,764	1,091,731	2,920,645	222,701	579,927	317,101	480,068	167,172	819,064
2028	2,991,843	811,290	3,817,679	360,534	435,432	240,102	385,570	187,487	571,428
2029	2,305,921	629,845	4,198,793	276,854	338,557	187,835	295,418	144,426	432,985
2030	1,620,000	550,194	2,882,753	231,882	295,412	164,415	256,135	121,962	-
2031	1,458,000	496,626	2,957,038	213,644	262,290	145,762	230,531	109,147	-
2032	1,296,000	461,739	2,823,141	187,525	226,122	127,262	199,112	94,241	-
2033	1,134,000	410,730	2,828,792	158,824	200,937	109,031	171,174	83,304	-
2034	972,000	361,878	2,780,984	136,906	165,578	93,414	144,128	70,096	-
2035	810,000	303,939	2,825,533	109,880	140,332	77,564	120,283	58,001	-
2036	648,000	254,336	2,695,013	78,402	113,496	62,321	95,522	43,923	-
2037	486,000	192,423	2,732,068	66,499	80,170	44,470	68,615	33,822	-
2038	324,000	133,719	2,617,541	40,467	52,898	29,551	46,191	21,175	-
2039	162,000	68,292	2,594,418	18,400	26,833	14,838	23,117	10,520	-
2040	-	-	2,475,750	-	-	-	-	-	-
2041	-	-	2,459,879	-	-	-	-	-	-
2042	-	-	2,209,453	-	-	-	-	-	-
2043	-	-	2,300,472	-	-	-	-	-	-

Instructions

For each of the portfolios listed on the "Portfolios" tab, list the annual GHG emissions based on the DEQ methodology over the study period under Reference Case assumptions
For each year, break out the contributions of individual fossil fuel resources, market purchases, and market sales to the total GHG emissions per the DEQ methodology
UM 2225 Order Summary/Rubric references: C.4(a)

PGE note: Forecasts of generation from existing thermal output are based on economic dispatch using prices forecasted in this CEP/IRP. Forecasts of unspecified and other emitting market purchases are a function of historical purchases and a linear decline emission reduction glidepath. Neither reflect operational realities.

22	Portfolio22	WY in 2028		PGE owned GHG emitting generation (retail)					
		Included in retail total	*Not included in retail total*	Beaver	Carty	Coyote	PW1	PW2	Colstrip
Year	Total Retail GHG Emissions (metric tons)	Market Purchases (metric tons)	Market sales (metric tons)	Fossil fuel resource 1 (metric tons)	Fossil fuel resource 2 (metric tons)	Fossil fuel resource 3 (metric tons)	Fossil fuel resource 4 (metric tons)	Fossil fuel resource 5 (metric tons)	Fossil fuel resource 6 (metric tons)
2023	5,887,117	2,351,875	2,097,049	41,539	919,175	509,985	641,895	130,219	1,292,430
2024	5,308,316	1,802,933	1,865,467	137,208	879,158	490,395	635,821	175,051	1,187,749
2025	5,049,607	1,705,195	1,790,077	142,367	837,292	463,866	563,301	176,532	1,161,054
2026	4,363,686	1,366,816	2,265,765	167,981	721,455	393,273	519,881	156,078	1,038,201
2027	3,677,764	1,091,731	2,920,645	222,701	579,927	317,101	480,068	167,172	819,064
2028	2,991,843	811,290	3,817,679	360,534	435,432	240,102	385,570	187,487	571,428
2029	2,305,921	629,845	4,198,793	276,854	338,557	187,835	295,418	144,426	432,985
2030	1,620,000	550,194	2,882,753	231,882	295,412	164,415	256,135	121,962	-
2031	1,458,000	496,626	2,957,038	213,644	262,290	145,762	230,531	109,147	-
2032	1,296,000	461,739	2,823,141	187,525	226,122	127,262	199,112	94,241	-
2033	1,134,000	410,730	2,828,792	158,824	200,937	109,031	171,174	83,304	-
2034	972,000	361,878	2,780,984	136,906	165,578	93,414	144,128	70,096	-
2035	810,000	303,939	2,825,533	109,880	140,332	77,564	120,283	58,001	-
2036	648,000	254,336	2,695,013	78,402	113,496	62,321	95,522	43,923	-
2037	486,000	192,423	2,732,068	66,499	80,170	44,470	68,615	33,822	-
2038	324,000	133,719	2,617,541	40,467	52,898	29,551	46,191	21,175	-
2039	162,000	68,292	2,594,418	18,400	26,833	14,838	23,117	10,520	-
2040	-	-	2,475,750	-	-	-	-	-	-
2041	-	-	2,459,879	-	-	-	-	-	-
2042	-	-	2,209,453	-	-	-	-	-	-
2043	-	-	2,300,472	-	-	-	-	-	-

23	Portfolio23	NV in 2028		PGE owned GHG emitting generation (retail)					
		Included in retail total	*Not included in retail total*	Beaver	Carty	Coyote	PW1	PW2	Colstrip
Year	Total Retail GHG Emissions (metric tons)	Market Purchases (metric tons)	Market sales (metric tons)	Fossil fuel resource 1 (metric tons)	Fossil fuel resource 2 (metric tons)	Fossil fuel resource 3 (metric tons)	Fossil fuel resource 4 (metric tons)	Fossil fuel resource 5 (metric tons)	Fossil fuel resource 6 (metric tons)
2023	5,887,117	2,351,875	2,097,049	41,539	919,175	509,985	641,895	130,219	1,292,430
2024	5,308,316	1,802,933	1,865,467	137,208	879,158	490,395	635,821	175,051	1,187,749
2025	5,049,607	1,705,195	1,790,077	142,367	837,292	463,866	563,301	176,532	1,161,054
2026	4,363,686	1,366,816	2,265,765	167,981	721,455	393,273	519,881	156,078	1,038,201
2027	3,677,764	1,091,731	2,920,645	222,701	579,927	317,101	480,068	167,172	819,064
2028	2,991,843	811,290	3,817,679	360,534	435,432	240,102	385,570	187,487	571,428
2029	2,305,921	629,845	4,198,793	276,854	338,557	187,835	295,418	144,426	432,985
2030	1,620,000	550,194	2,882,753	231,882	295,412	164,415	256,135	121,962	-
2031	1,458,000	496,626	2,957,038	213,644	262,290	145,762	230,531	109,147	-
2032	1,296,000	461,739	2,823,141	187,525	226,122	127,262	199,112	94,241	-
2033	1,134,000	410,730	2,828,792	158,824	200,937	109,031	171,174	83,304	-
2034	972,000	361,878	2,780,984	136,906	165,578	93,414	144,128	70,096	-
2035	810,000	303,939	2,825,533	109,880	140,332	77,564	120,283	58,001	-
2036	648,000	254,336	2,695,013	78,402	113,496	62,321	95,522	43,923	-
2037	486,000	192,423	2,732,068	66,499	80,170	44,470	68,615	33,822	-
2038	324,000	133,719	2,617,541	40,467	52,898	29,551	46,191	21,175	-
2039	162,000	68,292	2,594,418	18,400	26,833	14,838	23,117	10,520	-
2040	-	-	2,475,750	-	-	-	-	-	-
2041	-	-	2,459,879	-	-	-	-	-	-
2042	-	-	2,209,453	-	-	-	-	-	-
2043	-	-	2,300,472	-	-	-	-	-	-

Instructions

For each of the portfolios listed on the "Portfolios" tab, list the annual GHG emissions based on the DEQ methodology over the study period under Reference Case assumptions
For each year, break out the contributions of individual fossil fuel resources, market purchases, and market sales to the total GHG emissions per the DEQ methodology
UM 2225 Order Summary/Rubric references: C.4(a)

PGE note: Forecasts of generation from existing thermal output are based on economic dispatch using prices forecasted in this CEP/IRP. Forecasts of unspecified and other emitting market purchases are a function of historical purchases and a linear decline emission reduction glidepath. Neither reflect operational realities.

24	Portfolio24	Oregon-only resources			PGE owned GHG emitting generation (retail)					
		Included in retail total	*Not included in retail total*		Beaver	Carty	Coyote	PW1	PW2	Colstrip
Year	Total Retail GHG Emissions (metric tons)	Market Purchases (metric tons)	Market sales (metric tons)		Fossil fuel resource 1 (metric tons)	Fossil fuel resource 2 (metric tons)	Fossil fuel resource 3 (metric tons)	Fossil fuel resource 4 (metric tons)	Fossil fuel resource 5 (metric tons)	Fossil fuel resource 6 (metric tons)
2023	5,887,117	2,351,875	2,097,049		41,539	919,175	509,985	641,895	130,219	1,292,430
2024	5,308,316	1,802,933	1,865,467		137,208	879,158	490,395	635,821	175,051	1,187,749
2025	5,049,607	1,705,195	1,790,077		142,367	837,292	463,866	563,301	176,532	1,161,054
2026	4,363,686	1,366,816	2,265,765		167,981	721,455	393,273	519,881	156,078	1,038,201
2027	3,677,764	1,091,731	2,920,645		222,701	579,927	317,101	480,068	167,172	819,064
2028	2,991,843	811,290	3,817,679		360,534	435,432	240,102	385,570	187,487	571,428
2029	2,305,921	629,845	4,198,793		276,854	338,557	187,835	295,418	144,426	432,985
2030	1,620,000	550,194	2,882,753		231,882	295,412	164,415	256,135	121,962	-
2031	1,458,000	496,626	2,957,038		213,644	262,290	145,762	230,531	109,147	-
2032	1,296,000	461,739	2,823,141		187,525	226,122	127,262	199,112	94,241	-
2033	1,134,000	410,730	2,828,792		158,824	200,937	109,031	171,174	83,304	-
2034	972,000	361,878	2,780,984		136,906	165,578	93,414	144,128	70,096	-
2035	810,000	303,939	2,825,533		109,880	140,332	77,564	120,283	58,001	-
2036	648,000	254,336	2,695,013		78,402	113,496	62,321	95,522	43,923	-
2037	486,000	192,423	2,732,068		66,499	80,170	44,470	68,615	33,822	-
2038	324,000	133,719	2,617,541		40,467	52,898	29,551	46,191	21,175	-
2039	162,000	68,292	2,594,418		18,400	26,833	14,838	23,117	10,520	-
2040	-	-	2,475,750		-	-	-	-	-	-
2041	-	-	2,459,879		-	-	-	-	-	-
2042	-	-	2,209,453		-	-	-	-	-	-
2043	-	-	2,300,472		-	-	-	-	-	-

25	Portfolio25	Physical RPS			PGE owned GHG emitting generation (retail)					
		Included in retail total	*Not included in retail total*		Beaver	Carty	Coyote	PW1	PW2	Colstrip
Year	Total Retail GHG Emissions (metric tons)	Market Purchases (metric tons)	Market sales (metric tons)		Fossil fuel resource 1 (metric tons)	Fossil fuel resource 2 (metric tons)	Fossil fuel resource 3 (metric tons)	Fossil fuel resource 4 (metric tons)	Fossil fuel resource 5 (metric tons)	Fossil fuel resource 6 (metric tons)
2023	5,887,117	2,351,875	2,097,049		41,539	919,175	509,985	641,895	130,219	1,292,430
2024	5,308,316	1,802,933	1,865,467		137,208	879,158	490,395	635,821	175,051	1,187,749
2025	5,049,607	1,705,195	1,790,077		142,367	837,292	463,866	563,301	176,532	1,161,054
2026	4,363,686	1,366,816	2,265,765		167,981	721,455	393,273	519,881	156,078	1,038,201
2027	3,677,764	1,091,731	2,920,645		222,701	579,927	317,101	480,068	167,172	819,064
2028	2,991,843	811,290	3,817,679		360,534	435,432	240,102	385,570	187,487	571,428
2029	2,305,921	629,845	4,198,793		276,854	338,557	187,835	295,418	144,426	432,985
2030	1,620,000	550,194	2,882,753		231,882	295,412	164,415	256,135	121,962	-
2031	1,458,000	496,626	2,957,038		213,644	262,290	145,762	230,531	109,147	-
2032	1,296,000	461,739	2,823,141		187,525	226,122	127,262	199,112	94,241	-
2033	1,134,000	410,730	2,828,792		158,824	200,937	109,031	171,174	83,304	-
2034	972,000	361,878	2,780,984		136,906	165,578	93,414	144,128	70,096	-
2035	810,000	303,939	2,825,533		109,880	140,332	77,564	120,283	58,001	-
2036	648,000	254,336	2,695,013		78,402	113,496	62,321	95,522	43,923	-
2037	486,000	192,423	2,732,068		66,499	80,170	44,470	68,615	33,822	-
2038	324,000	133,719	2,617,541		40,467	52,898	29,551	46,191	21,175	-
2039	162,000	68,292	2,594,418		18,400	26,833	14,838	23,117	10,520	-
2040	-	-	2,475,750		-	-	-	-	-	-
2041	-	-	2,459,879		-	-	-	-	-	-
2042	-	-	2,209,453		-	-	-	-	-	-
2043	-	-	2,300,472		-	-	-	-	-	-

Instructions

For each of the portfolios listed on the "Portfolios" tab, list the annual GHG emissions based on the DEQ methodology over the study period under Reference Case assumptions
For each year, break out the contributions of individual fossil fuel resources, market purchases, and market sales to the total GHG emissions per the DEQ methodology
UM 2225 Order Summary/Rubric references: C.4(a)

PGE note: Forecasts of generation from existing thermal output are based on economic dispatch using prices forecasted in this CEP/IRP. Forecasts of unspecified and other emitting market purchases are a function of historical purchases and a linear decline emission reduction glidepath. Neither reflect operational realities.

26	Portfolio26	Hydrogen blending			PGE owned GHG emitting generation (retail)					
		Included in retail total	*Not included in retail total*		Beaver	Carty	Coyote	PW1	PW2	Colstrip
Year	Total Retail GHG Emissions (metric tons)	Market Purchases (metric tons)	Market sales (metric tons)		Fossil fuel resource 1 (metric tons)	Fossil fuel resource 2 (metric tons)	Fossil fuel resource 3 (metric tons)	Fossil fuel resource 4 (metric tons)	Fossil fuel resource 5 (metric tons)	Fossil fuel resource 6 (metric tons)
2023	5,887,117	2,351,875	2,097,049		41,539	919,175	509,985	641,895	130,219	1,292,430
2024	5,308,316	1,802,933	1,865,467		137,208	879,158	490,395	635,821	175,051	1,187,749
2025	5,049,607	1,705,195	1,790,077		142,367	837,292	463,866	563,301	176,532	1,161,054
2026	4,363,686	1,366,816	2,265,765		167,981	721,455	393,273	519,881	156,078	1,038,201
2027	3,677,764	1,091,731	2,920,645		222,701	579,927	317,101	480,068	167,172	819,064
2028	2,991,843	811,290	3,817,679		360,534	435,432	240,102	385,570	187,487	571,428
2029	2,305,921	629,845	3,793,839		276,854	338,557	187,835	295,418	144,426	432,985
2030	1,620,000	550,194	2,482,813		231,882	295,412	164,415	256,135	121,962	-
2031	1,458,000	496,626	2,558,656		213,644	262,290	145,762	230,531	109,147	-
2032	1,296,000	461,739	2,451,074		187,525	226,122	127,262	199,112	94,241	-
2033	1,134,000	410,730	2,467,070		158,824	200,937	109,031	171,174	83,304	-
2034	972,000	361,878	2,434,546		136,906	165,578	93,414	144,128	70,096	-
2035	810,000	303,939	2,483,300		109,880	140,332	77,564	120,283	58,001	-
2036	648,000	254,336	2,375,776		78,402	113,496	62,321	95,522	43,923	-
2037	486,000	192,423	2,418,682		66,499	80,170	44,470	68,615	33,822	-
2038	324,000	133,719	2,323,950		40,467	52,898	29,551	46,191	21,175	-
2039	162,000	68,292	2,311,628		18,400	26,833	14,838	23,117	10,520	-
2040	-	-	2,475,750		-	-	-	-	-	-
2041	-	-	2,459,879		-	-	-	-	-	-
2042	-	-	2,209,453		-	-	-	-	-	-
2043	-	-	2,300,472		-	-	-	-	-	-

27	Portfolio27			PGE owned GHG emitting generation (retail)					
		Included in retail total	*Not included in retail total*	Beaver	Carty	Coyote	PW1	PW2	Colstrip
Year	Total Retail GHG Emissions (metric tons)	Market Purchases (metric tons)	Market sales (metric tons)	Fossil fuel resource 1 (metric tons)	Fossil fuel resource 2 (metric tons)	Fossil fuel resource 3 (metric tons)	Fossil fuel resource 4 (metric tons)	Fossil fuel resource 5 (metric tons)	Fossil fuel resource 6 (metric tons)
2023	5,887,117	2,351,875	2,097,049	41,539	919,175	509,985	641,895	130,219	1,292,430
2024	5,308,316	1,802,933	1,865,467	137,208	879,158	490,395	635,821	175,051	1,187,749
2025	5,049,607	1,705,195	1,790,077	142,367	837,292	463,866	563,301	176,532	1,161,054
2026	4,363,686	1,366,816	2,265,765	167,981	721,455	393,273	519,881	156,078	1,038,201
2027	3,677,764	1,091,731	2,920,645	222,701	579,927	317,101	480,068	167,172	819,064
2028	2,991,843	811,290	3,817,679	360,534	435,432	240,102	385,570	187,487	571,428
2029	2,305,921	629,845	4,198,793	276,854	338,557	187,835	295,418	144,426	432,985
2030	1,620,000	550,194	2,882,753	231,882	295,412	164,415	256,135	121,962	-
2031	1,458,000	496,626	2,957,038	213,644	262,290	145,762	230,531	109,147	-
2032	1,296,000	461,739	2,823,141	187,525	226,122	127,262	199,112	94,241	-
2033	1,134,000	410,730	2,828,792	158,824	200,937	109,031	171,174	83,304	-
2034	972,000	361,878	2,780,984	136,906	165,578	93,414	144,128	70,096	-
2035	810,000	303,939	2,825,533	109,880	140,332	77,564	120,283	58,001	-
2036	648,000	254,336	2,695,013	78,402	113,496	62,321	95,522	43,923	-
2037	486,000	192,423	2,732,068	66,499	80,170	44,470	68,615	33,822	-
2038	324,000	133,719	2,617,541	40,467	52,898	29,551	46,191	21,175	-
2039	162,000	68,292	2,594,418	18,400	26,833	14,838	23,117	10,520	-
2040	-	-	2,475,750	-	-	-	-	-	-
2041	-	-	2,459,879	-	-	-	-	-	-
2042	-	-	2,209,453	-	-	-	-	-	-
2043	-	-	2,300,472	-	-	-	-	-	-

Instructions

For each of the portfolios listed on the "Portfolios" tab, list the annual GHG emissions based on the DEQ methodology over the study period under Reference Case assumptions
For each year, break out the contributions of individual fossil fuel resources, market purchases, and market sales to the total GHG emissions per the DEQ methodology
UM 2225 Order Summary/Rubric references: C.4(a)

PGE note: Forecasts of generation from existing thermal output are based on economic dispatch using prices forecasted in this CEP/IRP. Forecasts of unspecified and other emitting market purchases are a function of historical purchases and a linear decline emission reduction glidepath. Neither reflect operational realities.

28 Portfolio28

		Included in retail total	*Not included in retail total*	PGE owned GHG emitting generation (retail)					
				Beaver	Carty	Coyote	PW1	PW2	Colstrip
Year	Total Retail GHG Emissions (metric tons)	Market Purchases (metric tons)	Market sales (metric tons)	Fossil fuel resource 1 (metric tons)	Fossil fuel resource 2 (metric tons)	Fossil fuel resource 3 (metric tons)	Fossil fuel resource 4 (metric tons)	Fossil fuel resource 5 (metric tons)	Fossil fuel resource 6 (metric tons)
2023	5,887,117	2,351,875	2,097,049	41,539	919,175	509,985	641,895	130,219	1,292,430
2024	5,308,316	1,802,933	1,865,467	137,208	879,158	490,395	635,821	175,051	1,187,749
2025	5,049,607	1,705,195	1,790,077	142,367	837,292	463,866	563,301	176,532	1,161,054
2026	4,363,686	1,366,816	2,265,765	167,981	721,455	393,273	519,881	156,078	1,038,201
2027	3,677,764	1,091,731	2,920,645	222,701	579,927	317,101	480,068	167,172	819,064
2028	2,991,843	811,290	3,817,679	360,534	435,432	240,102	385,570	187,487	571,428
2029	2,305,921	629,845	4,198,793	276,854	338,557	187,835	295,418	144,426	432,985
2030	1,620,000	550,194	2,882,753	231,882	295,412	164,415	256,135	121,962	-
2031	1,458,000	496,626	2,957,038	213,644	262,290	145,762	230,531	109,147	-
2032	1,296,000	461,739	2,823,141	187,525	226,122	127,262	199,112	94,241	-
2033	1,134,000	410,730	2,828,792	158,824	200,937	109,031	171,174	83,304	-
2034	972,000	361,878	2,780,984	136,906	165,578	93,414	144,128	70,096	-
2035	810,000	303,939	2,825,533	109,880	140,332	77,564	120,283	58,001	-
2036	648,000	254,336	2,695,013	78,402	113,496	62,321	95,522	43,923	-
2037	486,000	192,423	2,732,068	66,499	80,170	44,470	68,615	33,822	-
2038	324,000	133,719	2,617,541	40,467	52,898	29,551	46,191	21,175	-
2039	162,000	68,292	2,594,418	18,400	26,833	14,838	23,117	10,520	-
2040	-	-	2,475,750	-	-	-	-	-	-
2041	-	-	2,459,879	-	-	-	-	-	-
2042	-	-	2,209,453	-	-	-	-	-	-
2043	-	-	2,300,472	-	-	-	-	-	-

29 Portfolio29

		Included in retail total	*Not included in retail total*	PGE owned GHG emitting generation (retail)					
				Beaver	Carty	Coyote	PW1	PW2	Colstrip
Year	Total Retail GHG Emissions (metric tons)	Market Purchases (metric tons)	Market sales (metric tons)	Fossil fuel resource 1 (metric tons)	Fossil fuel resource 2 (metric tons)	Fossil fuel resource 3 (metric tons)	Fossil fuel resource 4 (metric tons)	Fossil fuel resource 5 (metric tons)	Fossil fuel resource 6 (metric tons)
2023	5,887,117	2,351,875	2,097,049	41,539	919,175	509,985	641,895	130,219	1,292,430
2024	5,308,316	1,802,933	1,865,467	137,208	879,158	490,395	635,821	175,051	1,187,749
2025	5,049,607	1,705,195	1,790,077	142,367	837,292	463,866	563,301	176,532	1,161,054
2026	4,363,686	1,366,816	2,265,765	167,981	721,455	393,273	519,881	156,078	1,038,201
2027	3,677,764	1,091,731	2,920,645	222,701	579,927	317,101	480,068	167,172	819,064
2028	2,991,843	811,290	3,817,679	360,534	435,432	240,102	385,570	187,487	571,428
2029	2,305,921	629,845	4,198,793	276,854	338,557	187,835	295,418	144,426	432,985
2030	1,620,000	550,194	2,882,753	231,882	295,412	164,415	256,135	121,962	-
2031	1,458,000	496,626	2,957,038	213,644	262,290	145,762	230,531	109,147	-
2032	1,296,000	461,739	2,823,141	187,525	226,122	127,262	199,112	94,241	-
2033	1,134,000	410,730	2,828,792	158,824	200,937	109,031	171,174	83,304	-
2034	972,000	361,878	2,780,984	136,906	165,578	93,414	144,128	70,096	-
2035	810,000	303,939	2,825,533	109,880	140,332	77,564	120,283	58,001	-
2036	648,000	254,336	2,695,013	78,402	113,496	62,321	95,522	43,923	-
2037	486,000	192,423	2,732,068	66,499	80,170	44,470	68,615	33,822	-
2038	324,000	133,719	2,617,541	40,467	52,898	29,551	46,191	21,175	-
2039	162,000	68,292	2,594,418	18,400	26,833	14,838	23,117	10,520	-
2040	-	-	2,475,750	-	-	-	-	-	-
2041	-	-	2,459,879	-	-	-	-	-	-
2042	-	-	2,209,453	-	-	-	-	-	-
2043	-	-	2,300,472	-	-	-	-	-	-

Instructions

For each of the portfolios listed on the "Portfolios" tab, list the annual GHG emissions based on the DEQ methodology over the study period under Reference Case assumptions
For each year, break out the contributions of individual fossil fuel resources, market purchases, and market sales to the total GHG emissions per the DEQ methodology
UM 2225 Order Summary/Rubric references: C.4(a)

PGE note: Forecasts of generation from existing thermal output are based on economic dispatch using prices forecasted in this CEP/IRP. Forecasts of unspecified and other emitting market purchases are a function of historical purchases and a linear decline emission reduction glidepath. Neither reflect operational realities.

30 Portfolio30

		Included in retail total	*Not included in retail total*	PGE owned GHG emitting generation (retail)					
				Beaver	Carty	Coyote	PW1	PW2	Colstrip
Year	Total Retail GHG Emissions (metric tons)	Market Purchases (metric tons)	Market sales (metric tons)	Fossil fuel resource 1 (metric tons)	Fossil fuel resource 2 (metric tons)	Fossil fuel resource 3 (metric tons)	Fossil fuel resource 4 (metric tons)	Fossil fuel resource 5 (metric tons)	Fossil fuel resource 6 (metric tons)
2023	5,887,117	2,351,875	2,097,049	41,539	919,175	509,985	641,895	130,219	1,292,430
2024	5,308,316	1,802,933	1,865,467	137,208	879,158	490,395	635,821	175,051	1,187,749
2025	5,049,607	1,705,195	1,790,077	142,367	837,292	463,866	563,301	176,532	1,161,054
2026	4,363,686	1,366,816	2,265,765	167,981	721,455	393,273	519,881	156,078	1,038,201
2027	3,677,764	1,091,731	2,920,645	222,701	579,927	317,101	480,068	167,172	819,064
2028	2,991,843	811,290	3,817,679	360,534	435,432	240,102	385,570	187,487	571,428
2029	2,305,921	629,845	4,198,793	276,854	338,557	187,835	295,418	144,426	432,985
2030	1,620,000	550,194	2,882,753	231,882	295,412	164,415	256,135	121,962	-
2031	1,458,000	496,626	2,957,038	213,644	262,290	145,762	230,531	109,147	-
2032	1,296,000	461,739	2,823,141	187,525	226,122	127,262	199,112	94,241	-
2033	1,134,000	410,730	2,828,792	158,824	200,937	109,031	171,174	83,304	-
2034	972,000	361,878	2,780,984	136,906	165,578	93,414	144,128	70,096	-
2035	810,000	303,939	2,825,533	109,880	140,332	77,564	120,283	58,001	-
2036	648,000	254,336	2,695,013	78,402	113,496	62,321	95,522	43,923	-
2037	486,000	192,423	2,732,068	66,499	80,170	44,470	68,615	33,822	-
2038	324,000	133,719	2,617,541	40,467	52,898	29,551	46,191	21,175	-
2039	162,000	68,292	2,594,418	18,400	26,833	14,838	23,117	10,520	-
2040	-	-	2,475,750	-	-	-	-	-	-
2041	-	-	2,459,879	-	-	-	-	-	-
2042	-	-	2,209,453	-	-	-	-	-	-
2043	-	-	2,300,472	-	-	-	-	-	-

31 Portfolio31

		Included in retail total	*Not included in retail total*	PGE owned GHG emitting generation (retail)					
				Beaver	Carty	Coyote	PW1	PW2	Colstrip
Year	Total Retail GHG Emissions (metric tons)	Market Purchases (metric tons)	Market sales (metric tons)	Fossil fuel resource 1 (metric tons)	Fossil fuel resource 2 (metric tons)	Fossil fuel resource 3 (metric tons)	Fossil fuel resource 4 (metric tons)	Fossil fuel resource 5 (metric tons)	Fossil fuel resource 6 (metric tons)
2023	5,887,117	2,351,875	2,097,049	41,539	919,175	509,985	641,895	130,219	1,292,430
2024	5,308,316	1,802,933	1,865,467	137,208	879,158	490,395	635,821	175,051	1,187,749
2025	5,049,607	1,705,195	1,790,077	142,367	837,292	463,866	563,301	176,532	1,161,054
2026	4,363,686	1,366,816	2,265,765	167,981	721,455	393,273	519,881	156,078	1,038,201
2027	3,677,764	1,091,731	2,920,645	222,701	579,927	317,101	480,068	167,172	819,064
2028	2,991,843	811,290	3,817,679	360,534	435,432	240,102	385,570	187,487	571,428
2029	2,305,921	629,845	4,198,793	276,854	338,557	187,835	295,418	144,426	432,985
2030	1,620,000	550,194	2,882,753	231,882	295,412	164,415	256,135	121,962	-
2031	1,458,000	496,626	2,957,038	213,644	262,290	145,762	230,531	109,147	-
2032	1,296,000	461,739	2,823,141	187,525	226,122	127,262	199,112	94,241	-
2033	1,134,000	410,730	2,828,792	158,824	200,937	109,031	171,174	83,304	-
2034	972,000	361,878	2,780,984	136,906	165,578	93,414	144,128	70,096	-
2035	810,000	303,939	2,825,533	109,880	140,332	77,564	120,283	58,001	-
2036	648,000	254,336	2,695,013	78,402	113,496	62,321	95,522	43,923	-
2037	486,000	192,423	2,732,068	66,499	80,170	44,470	68,615	33,822	-
2038	324,000	133,719	2,617,541	40,467	52,898	29,551	46,191	21,175	-
2039	162,000	68,292	2,594,418	18,400	26,833	14,838	23,117	10,520	-
2040	-	-	2,475,750	-	-	-	-	-	-
2041	-	-	2,459,879	-	-	-	-	-	-
2042	-	-	2,209,453	-	-	-	-	-	-
2043	-	-	2,300,472	-	-	-	-	-	-

Instructions

For each of the portfolios listed on the "Portfolios" tab, list the annual GHG emissions based on the DEQ methodology over the study period under Reference Case assumptions
For each year, break out the contributions of individual fossil fuel resources, market purchases, and market sales to the total GHG emissions per the DEQ methodology
UM 2225 Order Summary/Rubric references: C.4(a)

PGE note: Forecasts of generation from existing thermal output are based on economic dispatch using prices forecasted in this CEP/IRP. Forecasts of unspecified and other emitting market purchases are a function of historical purchases and a linear decline emission reduction glidepath. Neither reflect operational realities.

32	Portfolio32				PGE owned GHG emitting generation (retail)					
		Included in retail total	*Not included in retail total*	Beaver	Carty	Coyote	PW1	PW2	Colstrip
Year	Total Retail GHG Emissions (metric tons)	Market Purchases (metric tons)	Market sales (metric tons)	Fossil fuel resource 1 (metric tons)	Fossil fuel resource 2 (metric tons)	Fossil fuel resource 3 (metric tons)	Fossil fuel resource 4 (metric tons)	Fossil fuel resource 5 (metric tons)	Fossil fuel resource 6 (metric tons)
2023	5,887,117	2,351,875	2,097,049	41,539	919,175	509,985	641,895	130,219	1,292,430
2024	5,308,316	1,802,933	1,865,467	137,208	879,158	490,395	635,821	175,051	1,187,749
2025	5,049,607	1,705,195	1,790,077	142,367	837,292	463,866	563,301	176,532	1,161,054
2026	4,363,686	1,366,816	2,265,765	167,981	721,455	393,273	519,881	156,078	1,038,201
2027	3,677,764	1,091,731	2,920,645	222,701	579,927	317,101	480,068	167,172	819,064
2028	2,991,843	811,290	3,817,679	360,534	435,432	240,102	385,570	187,487	571,428
2029	2,305,921	629,845	4,198,793	276,854	338,557	187,835	295,418	144,426	432,985
2030	1,620,000	550,194	2,882,753	231,882	295,412	164,415	256,135	121,962	-
2031	1,458,000	496,626	2,957,038	213,644	262,290	145,762	230,531	109,147	-
2032	1,296,000	461,739	2,823,141	187,525	226,122	127,262	199,112	94,241	-
2033	1,134,000	410,730	2,828,792	158,824	200,937	109,031	171,174	83,304	-
2034	972,000	361,878	2,780,984	136,906	165,578	93,414	144,128	70,096	-
2035	810,000	303,939	2,825,533	109,880	140,332	77,564	120,283	58,001	-
2036	648,000	254,336	2,695,013	78,402	113,496	62,321	95,522	43,923	-
2037	486,000	192,423	2,732,068	66,499	80,170	44,470	68,615	33,822	-
2038	324,000	133,719	2,617,541	40,467	52,898	29,551	46,191	21,175	-
2039	162,000	68,292	2,594,418	18,400	26,833	14,838	23,117	10,520	-
2040	-	-	2,475,750	-	-	-	-	-	-
2041	-	-	2,459,879	-	-	-	-	-	-
2042	-	-	2,209,453	-	-	-	-	-	-
2043	-	-	2,300,472	-	-	-	-	-	-

33	Portfolio33				PGE owned GHG emitting generation (retail)					
		Included in retail total	*Not included in retail total*	Beaver	Carty	Coyote	PW1	PW2	Colstrip
Year	Total Retail GHG Emissions (metric tons)	Market Purchases (metric tons)	Market sales (metric tons)	Fossil fuel resource 1 (metric tons)	Fossil fuel resource 2 (metric tons)	Fossil fuel resource 3 (metric tons)	Fossil fuel resource 4 (metric tons)	Fossil fuel resource 5 (metric tons)	Fossil fuel resource 6 (metric tons)
2023	5,887,117	2,351,875	2,097,049	41,539	919,175	509,985	641,895	130,219	1,292,430
2024	5,308,316	1,802,933	1,865,467	137,208	879,158	490,395	635,821	175,051	1,187,749
2025	5,049,607	1,705,195	1,790,077	142,367	837,292	463,866	563,301	176,532	1,161,054
2026	4,363,686	1,366,816	2,265,765	167,981	721,455	393,273	519,881	156,078	1,038,201
2027	3,677,764	1,091,731	2,920,645	222,701	579,927	317,101	480,068	167,172	819,064
2028	2,991,843	811,290	3,817,679	360,534	435,432	240,102	385,570	187,487	571,428
2029	2,305,921	629,845	4,198,793	276,854	338,557	187,835	295,418	144,426	432,985
2030	1,620,000	550,194	2,882,753	231,882	295,412	164,415	256,135	121,962	-
2031	1,458,000	496,626	2,957,038	213,644	262,290	145,762	230,531	109,147	-
2032	1,296,000	461,739	2,823,141	187,525	226,122	127,262	199,112	94,241	-
2033	1,134,000	410,730	2,828,792	158,824	200,937	109,031	171,174	83,304	-
2034	972,000	361,878	2,780,984	136,906	165,578	93,414	144,128	70,096	-
2035	810,000	303,939	2,825,533	109,880	140,332	77,564	120,283	58,001	-
2036	648,000	254,336	2,695,013	78,402	113,496	62,321	95,522	43,923	-
2037	486,000	192,423	2,732,068	66,499	80,170	44,470	68,615	33,822	-
2038	324,000	133,719	2,617,541	40,467	52,898	29,551	46,191	21,175	-
2039	162,000	68,292	2,594,418	18,400	26,833	14,838	23,117	10,520	-
2040	-	-	2,475,750	-	-	-	-	-	-
2041	-	-	2,459,879	-	-	-	-	-	-
2042	-	-	2,209,453	-	-	-	-	-	-
2043	-	-	2,300,472	-	-	-	-	-	-

Instructions

For each of the portfolios listed on the "Portfolios" tab, list the annual GHG emissions based on the DEQ methodology over the study period under Reference Case assumptions
For each year, break out the contributions of individual fossil fuel resources, market purchases, and market sales to the total GHG emissions per the DEQ methodology
UM 2225 Order Summary/Rubric references: C.4(a)

PGE note: Forecasts of generation from existing thermal output are based on economic dispatch using prices forecasted in this CEP/IRP. Forecasts of unspecified and other emitting market purchases are a function of historical purchases and a linear decline emission reduction glidepath. Neither reflect operational realities.

34	Portfolio34				PGE owned GHG emitting generation (retail)					
		Included in retail total	*Not included in retail total*		Beaver	Carty	Coyote	PW1	PW2	Colstrip
Year	Total Retail GHG Emissions (metric tons)	Market Purchases (metric tons)	Market sales (metric tons)		Fossil fuel resource 1 (metric tons)	Fossil fuel resource 2 (metric tons)	Fossil fuel resource 3 (metric tons)	Fossil fuel resource 4 (metric tons)	Fossil fuel resource 5 (metric tons)	Fossil fuel resource 6 (metric tons)
2023	5,887,117	2,351,875	2,097,049		41,539	919,175	509,985	641,895	130,219	1,292,430
2024	5,308,316	1,802,933	1,865,467		137,208	879,158	490,395	635,821	175,051	1,187,749
2025	5,049,607	1,705,195	1,790,077		142,367	837,292	463,866	563,301	176,532	1,161,054
2026	4,363,686	1,366,816	2,265,765		167,981	721,455	393,273	519,881	156,078	1,038,201
2027	3,677,764	1,091,731	2,920,645		222,701	579,927	317,101	480,068	167,172	819,064
2028	2,991,843	811,290	3,817,679		360,534	435,432	240,102	385,570	187,487	571,428
2029	2,305,921	629,845	4,198,793		276,854	338,557	187,835	295,418	144,426	432,985
2030	1,620,000	550,194	2,882,753		231,882	295,412	164,415	256,135	121,962	-
2031	1,458,000	496,626	2,957,038		213,644	262,290	145,762	230,531	109,147	-
2032	1,296,000	461,739	2,823,141		187,525	226,122	127,262	199,112	94,241	-
2033	1,134,000	410,730	2,828,792		158,824	200,937	109,031	171,174	83,304	-
2034	972,000	361,878	2,780,984		136,906	165,578	93,414	144,128	70,096	-
2035	810,000	303,939	2,825,533		109,880	140,332	77,564	120,283	58,001	-
2036	648,000	254,336	2,695,013		78,402	113,496	62,321	95,522	43,923	-
2037	486,000	192,423	2,732,068		66,499	80,170	44,470	68,615	33,822	-
2038	324,000	133,719	2,617,541		40,467	52,898	29,551	46,191	21,175	-
2039	162,000	68,292	2,594,418		18,400	26,833	14,838	23,117	10,520	-
2040	-	-	2,475,750		-	-	-	-	-	-
2041	-	-	2,459,879		-	-	-	-	-	-
2042	-	-	2,209,453		-	-	-	-	-	-
2043	-	-	2,300,472		-	-	-	-	-	-

35	Portfolio35				PGE owned GHG emitting generation (retail)					
		Included in retail total	*Not included in retail total*		Beaver	Carty	Coyote	PW1	PW2	Colstrip
Year	Total Retail GHG Emissions (metric tons)	Market Purchases (metric tons)	Market sales (metric tons)		Fossil fuel resource 1 (metric tons)	Fossil fuel resource 2 (metric tons)	Fossil fuel resource 3 (metric tons)	Fossil fuel resource 4 (metric tons)	Fossil fuel resource 5 (metric tons)	Fossil fuel resource 6 (metric tons)
2023	5,887,117	2,351,875	2,097,049		41,539	919,175	509,985	641,895	130,219	1,292,430
2024	5,308,316	1,802,933	1,865,467		137,208	879,158	490,395	635,821	175,051	1,187,749
2025	5,049,607	1,705,195	1,790,077		142,367	837,292	463,866	563,301	176,532	1,161,054
2026	4,363,686	1,366,816	2,265,765		167,981	721,455	393,273	519,881	156,078	1,038,201
2027	3,677,764	1,091,731	2,920,645		222,701	579,927	317,101	480,068	167,172	819,064
2028	2,991,843	811,290	3,817,679		360,534	435,432	240,102	385,570	187,487	571,428
2029	2,305,921	629,845	4,198,793		276,854	338,557	187,835	295,418	144,426	432,985
2030	1,620,000	550,194	2,882,753		231,882	295,412	164,415	256,135	121,962	-
2031	1,458,000	496,626	2,957,038		213,644	262,290	145,762	230,531	109,147	-
2032	1,296,000	461,739	2,823,141		187,525	226,122	127,262	199,112	94,241	-
2033	1,134,000	410,730	2,828,792		158,824	200,937	109,031	171,174	83,304	-
2034	972,000	361,878	2,780,984		136,906	165,578	93,414	144,128	70,096	-
2035	810,000	303,939	2,825,533		109,880	140,332	77,564	120,283	58,001	-
2036	648,000	254,336	2,695,013		78,402	113,496	62,321	95,522	43,923	-
2037	486,000	192,423	2,732,068		66,499	80,170	44,470	68,615	33,822	-
2038	324,000	133,719	2,617,541		40,467	52,898	29,551	46,191	21,175	-
2039	162,000	68,292	2,594,418		18,400	26,833	14,838	23,117	10,520	-
2040	-	-	2,475,750		-	-	-	-	-	-
2041	-	-	2,459,879		-	-	-	-	-	-
2042	-	-	2,209,453		-	-	-	-	-	-
2043	-	-	2,300,472		-	-	-	-	-	-

Instructions

For each of the portfolios listed on the "Portfolios" tab, list the annual GHG emissions based on the DEQ methodology over the study period under Reference Case assumptions
For each year, break out the contributions of individual fossil fuel resources, market purchases, and market sales to the total GHG emissions per the DEQ methodology
UM 2225 Order Summary/Rubric references: C.4(a)

PGE note: Forecasts of generation from existing thermal output are based on economic dispatch using prices forecasted in this CEP/IRP. Forecasts of unspecified and other emitting market purchases are a function of historical purchases and a linear decline emission reduction glidepath. Neither reflect operational realities.

36 Portfolio36

		Included in retail total	*Not included in retail total*	PGE owned GHG emitting generation (retail)					
				Beaver	Carty	Coyote	PW1	PW2	Colstrip
Year	Total Retail GHG Emissions (metric tons)	Market Purchases (metric tons)	Market sales (metric tons)	Fossil fuel resource 1 (metric tons)	Fossil fuel resource 2 (metric tons)	Fossil fuel resource 3 (metric tons)	Fossil fuel resource 4 (metric tons)	Fossil fuel resource 5 (metric tons)	Fossil fuel resource 6 (metric tons)
2023	5,887,117	2,351,875	2,097,049	41,539	919,175	509,985	641,895	130,219	1,292,430
2024	5,308,316	1,802,933	1,865,467	137,208	879,158	490,395	635,821	175,051	1,187,749
2025	5,049,607	1,705,195	1,790,077	142,367	837,292	463,866	563,301	176,532	1,161,054
2026	4,363,686	1,366,816	2,265,765	167,981	721,455	393,273	519,881	156,078	1,038,201
2027	3,677,764	1,091,731	2,920,645	222,701	579,927	317,101	480,068	167,172	819,064
2028	2,991,843	811,290	3,817,679	360,534	435,432	240,102	385,570	187,487	571,428
2029	2,305,921	629,845	4,198,793	276,854	338,557	187,835	295,418	144,426	432,985
2030	1,620,000	550,194	2,882,753	231,882	295,412	164,415	256,135	121,962	-
2031	1,458,000	496,626	2,957,038	213,644	262,290	145,762	230,531	109,147	-
2032	1,296,000	461,739	2,823,141	187,525	226,122	127,262	199,112	94,241	-
2033	1,134,000	410,730	2,828,792	158,824	200,937	109,031	171,174	83,304	-
2034	972,000	361,878	2,780,984	136,906	165,578	93,414	144,128	70,096	-
2035	810,000	303,939	2,825,533	109,880	140,332	77,564	120,283	58,001	-
2036	648,000	254,336	2,695,013	78,402	113,496	62,321	95,522	43,923	-
2037	486,000	192,423	2,732,068	66,499	80,170	44,470	68,615	33,822	-
2038	324,000	133,719	2,617,541	40,467	52,898	29,551	46,191	21,175	-
2039	162,000	68,292	2,594,418	18,400	26,833	14,838	23,117	10,520	-
2040	-	-	2,475,750	-	-	-	-	-	-
2041	-	-	2,459,879	-	-	-	-	-	-
2042	-	-	2,209,453	-	-	-	-	-	-
2043	-	-	2,300,472	-	-	-	-	-	-

37 Portfolio37

		Included in retail total	*Not included in retail total*	PGE owned GHG emitting generation (retail)					
				Beaver	Carty	Coyote	PW1	PW2	Colstrip
Year	Total Retail GHG Emissions (metric tons)	Market Purchases (metric tons)	Market sales (metric tons)	Fossil fuel resource 1 (metric tons)	Fossil fuel resource 2 (metric tons)	Fossil fuel resource 3 (metric tons)	Fossil fuel resource 4 (metric tons)	Fossil fuel resource 5 (metric tons)	Fossil fuel resource 6 (metric tons)
2023	5,887,117	2,351,875	2,097,049	41,539	919,175	509,985	641,895	130,219	1,292,430
2024	5,308,316	1,802,933	1,865,467	137,208	879,158	490,395	635,821	175,051	1,187,749
2025	5,049,607	1,705,195	1,790,077	142,367	837,292	463,866	563,301	176,532	1,161,054
2026	4,363,686	1,366,816	2,265,765	167,981	721,455	393,273	519,881	156,078	1,038,201
2027	3,677,764	1,091,731	2,920,645	222,701	579,927	317,101	480,068	167,172	819,064
2028	2,991,843	811,290	3,817,679	360,534	435,432	240,102	385,570	187,487	571,428
2029	2,305,921	629,845	4,198,793	276,854	338,557	187,835	295,418	144,426	432,985
2030	1,620,000	550,194	2,882,753	231,882	295,412	164,415	256,135	121,962	-
2031	1,458,000	496,626	2,957,038	213,644	262,290	145,762	230,531	109,147	-
2032	1,296,000	461,739	2,823,141	187,525	226,122	127,262	199,112	94,241	-
2033	1,134,000	410,730	2,828,792	158,824	200,937	109,031	171,174	83,304	-
2034	972,000	361,878	2,780,984	136,906	165,578	93,414	144,128	70,096	-
2035	810,000	303,939	2,825,533	109,880	140,332	77,564	120,283	58,001	-
2036	648,000	254,336	2,695,013	78,402	113,496	62,321	95,522	43,923	-
2037	486,000	192,423	2,732,068	66,499	80,170	44,470	68,615	33,822	-
2038	324,000	133,719	2,617,541	40,467	52,898	29,551	46,191	21,175	-
2039	162,000	68,292	2,594,418	18,400	26,833	14,838	23,117	10,520	-
2040	-	-	2,475,750	-	-	-	-	-	-
2041	-	-	2,459,879	-	-	-	-	-	-
2042	-	-	2,209,453	-	-	-	-	-	-
2043	-	-	2,300,472	-	-	-	-	-	-

Instructions

For each of the portfolios listed on the "Portfolios" tab, list the annual GHG emissions based on the DEQ methodology over the study period under Reference Case assumptions
For each year, break out the contributions of individual fossil fuel resources, market purchases, and market sales to the total GHG emissions per the DEQ methodology
UM 2225 Order Summary/Rubric references: C.4(a)

PGE note: Forecasts of generation from existing thermal output are based on economic dispatch using prices forecasted in this CEP/IRP. Forecasts of unspecified and other emitting market purchases are a function of historical purchases and a linear decline emission reduction glidepath. Neither reflect operational realities.

38	Portfolio38				PGE owned GHG emitting generation (retail)					
		Included in retail total	*Not included in retail total*		Beaver	Carty	Coyote	PW1	PW2	Colstrip
Year	Total Retail GHG Emissions (metric tons)	Market Purchases (metric tons)	Market sales (metric tons)		Fossil fuel resource 1 (metric tons)	Fossil fuel resource 2 (metric tons)	Fossil fuel resource 3 (metric tons)	Fossil fuel resource 4 (metric tons)	Fossil fuel resource 5 (metric tons)	Fossil fuel resource 6 (metric tons)
2023	5,887,117	2,351,875	2,097,049		41,539	919,175	509,985	641,895	130,219	1,292,430
2024	5,308,316	1,802,933	1,865,467		137,208	879,158	490,395	635,821	175,051	1,187,749
2025	5,049,607	1,705,195	1,790,077		142,367	837,292	463,866	563,301	176,532	1,161,054
2026	4,363,686	1,366,816	2,265,765		167,981	721,455	393,273	519,881	156,078	1,038,201
2027	3,677,764	1,091,731	2,920,645		222,701	579,927	317,101	480,068	167,172	819,064
2028	2,991,843	811,290	3,817,679		360,534	435,432	240,102	385,570	187,487	571,428
2029	2,305,921	629,845	4,198,793		276,854	338,557	187,835	295,418	144,426	432,985
2030	1,620,000	550,194	2,882,753		231,882	295,412	164,415	256,135	121,962	-
2031	1,458,000	496,626	2,957,038		213,644	262,290	145,762	230,531	109,147	-
2032	1,296,000	461,739	2,823,141		187,525	226,122	127,262	199,112	94,241	-
2033	1,134,000	410,730	2,828,792		158,824	200,937	109,031	171,174	83,304	-
2034	972,000	361,878	2,780,984		136,906	165,578	93,414	144,128	70,096	-
2035	810,000	303,939	2,825,533		109,880	140,332	77,564	120,283	58,001	-
2036	648,000	254,336	2,695,013		78,402	113,496	62,321	95,522	43,923	-
2037	486,000	192,423	2,732,068		66,499	80,170	44,470	68,615	33,822	-
2038	324,000	133,719	2,617,541		40,467	52,898	29,551	46,191	21,175	-
2039	162,000	68,292	2,594,418		18,400	26,833	14,838	23,117	10,520	-
2040	-	-	2,475,750		-	-	-	-	-	-
2041	-	-	2,459,879		-	-	-	-	-	-
2042	-	-	2,209,453		-	-	-	-	-	-
2043	-	-	2,300,472		-	-	-	-	-	-

39	Portfolio39				PGE owned GHG emitting generation (retail)					
		Included in retail total	*Not included in retail total*		Beaver	Carty	Coyote	PW1	PW2	Colstrip
Year	Total Retail GHG Emissions (metric tons)	Market Purchases (metric tons)	Market sales (metric tons)		Fossil fuel resource 1 (metric tons)	Fossil fuel resource 2 (metric tons)	Fossil fuel resource 3 (metric tons)	Fossil fuel resource 4 (metric tons)	Fossil fuel resource 5 (metric tons)	Fossil fuel resource 6 (metric tons)
2023	5,887,117	2,351,875	2,097,049		41,539	919,175	509,985	641,895	130,219	1,292,430
2024	5,308,316	1,802,933	1,865,467		137,208	879,158	490,395	635,821	175,051	1,187,749
2025	5,049,607	1,705,195	1,790,077		142,367	837,292	463,866	563,301	176,532	1,161,054
2026	4,363,686	1,366,816	2,265,765		167,981	721,455	393,273	519,881	156,078	1,038,201
2027	3,677,764	1,091,731	2,920,645		222,701	579,927	317,101	480,068	167,172	819,064
2028	2,991,843	811,290	3,817,679		360,534	435,432	240,102	385,570	187,487	571,428
2029	2,305,921	629,845	4,198,793		276,854	338,557	187,835	295,418	144,426	432,985
2030	1,620,000	550,194	2,882,753		231,882	295,412	164,415	256,135	121,962	-
2031	1,458,000	496,626	2,957,038		213,644	262,290	145,762	230,531	109,147	-
2032	1,296,000	461,739	2,823,141		187,525	226,122	127,262	199,112	94,241	-
2033	1,134,000	410,730	2,828,792		158,824	200,937	109,031	171,174	83,304	-
2034	972,000	361,878	2,780,984		136,906	165,578	93,414	144,128	70,096	-
2035	810,000	303,939	2,825,533		109,880	140,332	77,564	120,283	58,001	-
2036	648,000	254,336	2,695,013		78,402	113,496	62,321	95,522	43,923	-
2037	486,000	192,423	2,732,068		66,499	80,170	44,470	68,615	33,822	-
2038	324,000	133,719	2,617,541		40,467	52,898	29,551	46,191	21,175	-
2039	162,000	68,292	2,594,418		18,400	26,833	14,838	23,117	10,520	-
2040	-	-	2,475,750		-	-	-	-	-	-
2041	-	-	2,459,879		-	-	-	-	-	-
2042	-	-	2,209,453		-	-	-	-	-	-
2043	-	-	2,300,472		-	-	-	-	-	-

Instructions

For each of the portfolios listed on the "Portfolios" tab, list the annual Customer Benefits Indicators (CBIs) over the study period under Reference Case assumptions

UM 2225 Order Summary/Rubric references: C.4(b)

40 Portfolio40 Preferred Portfolio

Year	CBRE Solar (pCBI)	CBRE Micro (pCBI)	CBRE Hydrc (pCBI)	rCBI (2023$)	CBI 5 (units)	CBI 6 (units)	CBI 7 (units)	CBI 8 (units)	CBI 9 (units)	CBI 10 (units)	…
2023	0	0	0	-							
2024	0	0	0	-							
2025	0	0	0	-							
2026	22	43	1	1,432,417							
2027	28	56	1	1,844,283							
2028	36	71	3	2,385,915							
2029	43	85	5	2,885,015							
2030	50	100	5	3,363,066							
2031	50	100	5	3,363,934							
2032	50	100	5	3,364,151							
2033	50	100	5	3,364,151							
2034	50	100	5	3,364,151							
2035	50	100	5	3,364,151							
2036	50	100	5	3,364,151							
2037	50	100	5	3,364,151							
2038	50	100	5	3,364,151							
2039	50	100	5	3,364,151							
2040	50	100	5	3,364,151							
2041	50	100	5	3,364,151							
2042	50	100	5	3,364,151							
2043	50	100	5	3,364,151							

1 Portfolio1

Year	CBRE Solar (pCBI)	CBRE Micro (pCBI)	CBRE Hydrc (pCBI)	rCBI (2023$)	CBI 5 (units)	CBI 6 (units)	CBI 7 (units)	CBI 8 (units)	CBI 9 (units)	CBI 10 (units)	…
2023	0	0	0	-							
2024	0	0	0	-							
2025	0	0	0	-							
2026	22	43	1	1,432,417							
2027	28	56	1	1,844,283							
2028	36	71	3	2,386,132							
2029	43	85	5	2,885,666							
2030	50	100	5	3,363,717							
2031	50	100	5	3,363,934							
2032	50	100	5	3,364,151							
2033	50	100	5	3,364,151							
2034	50	100	5	3,364,151							
2035	50	100	5	3,364,151							
2036	50	100	5	3,364,151							
2037	50	100	5	3,364,151							
2038	50	100	5	3,364,151							
2039	50	100	5	3,364,151							
2040	50	100	5	3,364,151							
2041	50	100	5	3,364,151							
2042	50	100	5	3,364,151							
2043	50	100	5	3,364,151							

Instructions

For each of the portfolios listed on the "Portfolios" tab, list the annual Customer Benefits Indicators (CBIs) over the study period under Reference Case assumptions

UM 2225 Order Summary/Rubric references: C.4(b)

2 Portfolio2

Year	CBRE Solar (pCBI)	CBRE Micro (pCBI)	CBRE Hydrc (pCBI)	rCBI (2023$)	CBI 5 (units)	CBI 6 (units)	CBI 7 (units)	CBI 8 (units)	CBI 9 (units)	CBI 10 (units)	…
2023	0	0	0	-							
2024	0	0	0	-							
2025	0	0	0	-							
2026	22	43	1	1,432,417							
2027	28	56	1	1,844,283							
2028	36	71	3	2,387,000							
2029	43	85	5	2,886,751							
2030	50	100	5	3,364,151							
2031	50	100	5	3,364,151							
2032	50	100	5	3,364,151							
2033	50	100	5	3,364,151							
2034	50	100	5	3,364,151							
2035	50	100	5	3,364,151							
2036	50	100	5	3,364,151							
2037	50	100	5	3,364,151							
2038	50	100	5	3,364,151							
2039	50	100	5	3,364,151							
2040	50	100	5	3,364,151							
2041	50	100	5	3,364,151							
2042	50	100	5	3,364,151							
2043	50	100	5	3,364,151							

3 Portfolio3

Year	CBRE Solar (pCBI)	CBRE Micro (pCBI)	CBRE Hydrc (pCBI)	rCBI (2023$)	CBI 5 (units)	CBI 6 (units)	CBI 7 (units)	CBI 8 (units)	CBI 9 (units)	CBI 10 (units)	…
2023	0	0	0	-							
2024	0	0	0	-							
2025	0	0	0	-							
2026	22	43	1	1,432,200							
2027	28	56	1	1,844,066							
2028	36	71	3	2,385,915							
2029	43	85	5	2,885,666							
2030	50	100	5	3,363,717							
2031	50	100	5	3,363,934							
2032	50	100	5	3,364,151							
2033	50	100	5	3,364,151							
2034	50	100	5	3,364,151							
2035	50	100	5	3,364,151							
2036	50	100	5	3,364,151							
2037	50	100	5	3,364,151							
2038	50	100	5	3,364,151							
2039	50	100	5	3,364,151							
2040	50	100	5	3,364,151							
2041	50	100	5	3,364,151							
2042	50	100	5	3,364,151							
2043	50	100	5	3,364,151							

Instructions

For each of the portfolios listed on the "Portfolios" tab, list the annual Customer Benefits Indicators (CBIs) over the study period under Reference Case assumptions

UM 2225 Order Summary/Rubric references: C.4(b)

4 Portfolio4

Year	CBRE Solar (pCBI)	CBRE Micro (pCBI)	CBRE Hydrc (pCBI)	rCBI (2023$)	CBI 5 (units)	CBI 6 (units)	CBI 7 (units)	CBI 8 (units)	CBI 9 (units)	CBI 10 (units)	…
2023	0	0	0	-							
2024	0	0	0	-							
2025	0	0	0	-							
2026	22	43	1	1,432,417							
2027	28	56	1	1,844,283							
2028	36	71	3	2,385,915							
2029	43	85	5	2,885,232							
2030	50	100	5	3,363,283							
2031	50	100	5	3,363,934							
2032	50	100	5	3,364,151							
2033	50	100	5	3,364,151							
2034	50	100	5	3,364,151							
2035	50	100	5	3,364,151							
2036	50	100	5	3,364,151							
2037	50	100	5	3,364,151							
2038	50	100	5	3,364,151							
2039	50	100	5	3,364,151							
2040	50	100	5	3,364,151							
2041	50	100	5	3,364,151							
2042	50	100	5	3,364,151							
2043	50	100	5	3,364,151							

5 Portfolio5

Year	CBRE Solar (pCBI)	CBRE Micro (pCBI)	CBRE Hydrc (pCBI)	rCBI (2023$)	CBI 5 (units)	CBI 6 (units)	CBI 7 (units)	CBI 8 (units)	CBI 9 (units)	CBI 10 (units)	…
2023	0	0	0	-							
2024	0	0	0	-							
2025	0	0	0	-							
2026	22	43	1	1,432,417							
2027	28	56	1	1,844,283							
2028	36	71	3	2,387,000							
2029	43	85	5	2,886,751							
2030	50	100	5	3,364,151							
2031	50	100	5	3,364,151							
2032	50	100	5	3,364,151							
2033	50	100	5	3,364,151							
2034	50	100	5	3,364,151							
2035	50	100	5	3,364,151							
2036	50	100	5	3,364,151							
2037	50	100	5	3,364,151							
2038	50	100	5	3,364,151							
2039	50	100	5	3,364,151							
2040	50	100	5	3,364,151							
2041	50	100	5	3,364,151							
2042	50	100	5	3,364,151							
2043	50	100	5	3,364,151							

Instructions

For each of the portfolios listed on the "Portfolios" tab, list the annual Customer Benefits Indicators (CBIs) over the study period under Reference Case assumptions

UM 2225 Order Summary/Rubric references: C.4(b)

6 Portfolio6

Year	CBRE Solar (pCBI)	CBRE Micro (pCBI)	CBRE Hydrc (pCBI)	rCBI (2023$)	CBI 5 (units)	CBI 6 (units)	CBI 7 (units)	CBI 8 (units)	CBI 9 (units)	CBI 10 (units)	…
2023	0	0	0	-							
2024	0	0	0	-							
2025	0	0	0	-							
2026	22	43	1	1,431,983							
2027	28	56	1	1,843,849							
2028	36	71	3	2,385,481							
2029	43	85	5	2,885,232							
2030	50	100	5	3,363,283							
2031	50	100	5	3,363,934							
2032	50	100	5	3,364,151							
2033	50	100	5	3,364,151							
2034	50	100	5	3,364,151							
2035	50	100	5	3,364,151							
2036	50	100	5	3,364,151							
2037	50	100	5	3,364,151							
2038	50	100	5	3,364,151							
2039	50	100	5	3,364,151							
2040	50	100	5	3,364,151							
2041	50	100	5	3,364,151							
2042	50	100	5	3,364,151							
2043	50	100	5	3,364,151							

7 Portfolio7

Year	CBRE Solar (pCBI)	CBRE Micro (pCBI)	CBRE Hydrc (pCBI)	rCBI (2023$)	CBI 5 (units)	CBI 6 (units)	CBI 7 (units)	CBI 8 (units)	CBI 9 (units)	CBI 10 (units)	…
2023	0	0	0	-							
2024	0	0	0	-							
2025	0	0	0	-							
2026	22	43	1	1,432,200							
2027	28	56	1	1,844,066							
2028	36	71	3	2,385,915							
2029	43	85	5	2,885,666							
2030	50	100	5	3,363,717							
2031	50	100	5	3,363,934							
2032	50	100	5	3,364,151							
2033	50	100	5	3,364,151							
2034	50	100	5	3,364,151							
2035	50	100	5	3,364,151							
2036	50	100	5	3,364,151							
2037	50	100	5	3,364,151							
2038	50	100	5	3,364,151							
2039	50	100	5	3,364,151							
2040	50	100	5	3,364,151							
2041	50	100	5	3,364,151							
2042	50	100	5	3,364,151							
2043	50	100	5	3,364,151							

Instructions

For each of the portfolios listed on the "Portfolios" tab, list the annual Customer Benefits Indicators (CBIs) over the study period under Reference Case assumptions

UM 2225 Order Summary/Rubric references: C.4(b)

8 Portfolio8

Year	CBRE Solar (pCBI)	CBRE Micro (pCBI)	CBRE Hydrc (pCBI)	rCBI (2023$)	CBI 5 (units)	CBI 6 (units)	CBI 7 (units)	CBI 8 (units)	CBI 9 (units)	CBI 10 (units)	...
2023	0	0	0	-							
2024	0	0	0	-							
2025	0	0	0	-							
2026	22	43	1	1,431,983							
2027	28	56	1	1,843,849							
2028	36	71	3	2,385,481							
2029	43	85	5	2,885,232							
2030	50	100	5	3,363,283							
2031	50	100	5	3,363,934							
2032	50	100	5	3,364,151							
2033	50	100	5	3,364,151							
2034	50	100	5	3,364,151							
2035	50	100	5	3,364,151							
2036	50	100	5	3,364,151							
2037	50	100	5	3,364,151							
2038	50	100	5	3,364,151							
2039	50	100	5	3,364,151							
2040	50	100	5	3,364,151							
2041	50	100	5	3,364,151							
2042	50	100	5	3,364,151							
2043	50	100	5	3,364,151							

9 Portfolio9

Year	CBRE Solar (pCBI)	CBRE Micro (pCBI)	CBRE Hydrc (pCBI)	rCBI (2023$)	CBI 5 (units)	CBI 6 (units)	CBI 7 (units)	CBI 8 (units)	CBI 9 (units)	CBI 10 (units)	...
2023	0	0	0	-							
2024	0	0	0	-							
2025	0	0	0	-							
2026	22	43	1	1,432,200							
2027	28	56	1	1,844,066							
2028	36	71	3	2,385,915							
2029	43	85	5	2,885,666							
2030	50	100	5	3,363,717							
2031	50	100	5	3,363,934							
2032	50	100	5	3,364,151							
2033	50	100	5	3,364,151							
2034	50	100	5	3,364,151							
2035	50	100	5	3,364,151							
2036	50	100	5	3,364,151							
2037	50	100	5	3,364,151							
2038	50	100	5	3,364,151							
2039	50	100	5	3,364,151							
2040	50	100	5	3,364,151							
2041	50	100	5	3,364,151							
2042	50	100	5	3,364,151							
2043	50	100	5	3,364,151							

Instructions

For each of the portfolios listed on the "Portfolios" tab, list the annual Customer Benefits Indicators (CBIs) over the study period under Reference Case assumptions

UM 2225 Order Summary/Rubric references: C.4(b)

10 Portfolio10

Year	CBRE Solar (pCBI)	CBRE Micro (pCBI)	CBRE Hydrc (pCBI)	rCBI (2023$)	CBI 5 (units)	CBI 6 (units)	CBI 7 (units)	CBI 8 (units)	CBI 9 (units)	CBI 10 (units)	…
2023	0	0	0	-							
2024	0	0	0	-							
2025	0	0	0	-							
2026	17	32	1	1,081,528							
2027	21	42	1	1,392,272							
2028	27	53	2	1,797,194							
2029	32	64	4	2,173,255							
2030	38	75	4	2,534,126							
2031	38	75	4	2,534,777							
2032	38	75	4	2,535,428							
2033	38	75	4	2,536,079							
2034	38	75	4	2,536,730							
2035	38	75	4	2,537,381							
2036	38	75	4	2,538,032							
2037	38	75	4	2,538,683							
2038	38	75	4	2,539,334							
2039	38	75	4	2,539,985							
2040	38	75	4	2,540,636							
2041	38	75	4	2,541,287							
2042	38	75	4	2,541,938							
2043	38	75	4	2,542,589							

11 Portfolio11

Year	CBRE Solar (pCBI)	CBRE Micro (pCBI)	CBRE Hydrc (pCBI)	rCBI (2023$)	CBI 5 (units)	CBI 6 (units)	CBI 7 (units)	CBI 8 (units)	CBI 9 (units)	CBI 10 (units)	…
2023	0	0	0	-							
2024	0	0	0	-							
2025	0	0	0	-							
2026	0	0	0	-							
2027	0	0	0	-							
2028	0	0	0	-							
2029	0	0	0	-							
2030	0	0	0	-							
2031	0	0	0	-							
2032	0	0	0	-							
2033	0	0	0	-							
2034	0	0	0	-							
2035	0	0	0	-							
2036	0	0	0	-							
2037	0	0	0	-							
2038	0	0	0	-							
2039	0	0	0	-							
2040	0	0	0	-							
2041	0	0	0	-							
2042	0	0	0	-							
2043	0	0	0	-							

Instructions

For each of the portfolios listed on the "Portfolios" tab, list the annual Customer Benefits Indicators (CBIs) over the study period under Reference Case assumptions

UM 2225 Order Summary/Rubric references: C.4(b)

12 Portfolio12

Year	CBRE Solar (pCBI)	CBRE Micro (pCBI)	CBRE Hydrc (pCBI)	rCBI (2023$)	CBI 5 (units)	CBI 6 (units)	CBI 7 (units)	CBI 8 (units)	CBI 9 (units)	CBI 10 (units)	...
2023	0	0	0	-							
2024	0	0	0	-							
2025	0	0	0	-							
2026	0	43	0	933,317							
2027	0	56	0	1,215,200							
2028	0	71	0	1,540,483							
2029	0	85	0	1,844,500							
2030	0	100	0	2,170,217							
2031	0	100	0	2,170,217							
2032	0	100	0	2,170,217							
2033	0	100	0	2,170,217							
2034	0	100	0	2,170,217							
2035	0	100	0	2,170,217							
2036	0	100	0	2,170,217							
2037	0	100	0	2,170,217							
2038	0	100	0	2,170,217							
2039	0	100	0	2,170,217							
2040	0	100	0	2,170,217							
2041	0	100	0	2,170,217							
2042	0	100	0	2,170,217							
2043	0	100	0	2,170,217							

13 Portfolio13

Year	CBRE Solar (pCBI)	CBRE Micro (pCBI)	CBRE Hydrc (pCBI)	rCBI (2023$)	CBI 5 (units)	CBI 6 (units)	CBI 7 (units)	CBI 8 (units)	CBI 9 (units)	CBI 10 (units)	...
2023	0	0	0	-							
2024	0	0	0	-							
2025	0	0	0	-							
2026	22	43	1	1,430,898							
2027	28	56	1	1,842,547							
2028	36	71	3	2,385,047							
2029	43	85	5	2,884,798							
2030	50	100	5	3,362,849							
2031	50	100	5	3,363,283							
2032	50	100	5	3,363,500							
2033	50	100	5	3,363,717							
2034	50	100	5	3,363,934							
2035	50	100	5	3,364,151							
2036	50	100	5	3,364,151							
2037	50	100	5	3,364,151							
2038	50	100	5	3,364,151							
2039	50	100	5	3,364,151							
2040	50	100	5	3,364,151							
2041	50	100	5	3,364,151							
2042	50	100	5	3,364,151							
2043	50	100	5	3,364,151							

Instructions

For each of the portfolios listed on the "Portfolios" tab, list the annual Customer Benefits Indicators (CBIs) over the study period under Reference Case assumptions

UM 2225 Order Summary/Rubric references: C.4(b)

14 Portfolio14

Year	CBRE Solar (pCBI)	CBRE Micro (pCBI)	CBRE Hydrc (pCBI)	rCBI (2023$)	CBI 5 (units)	CBI 6 (units)	CBI 7 (units)	CBI 8 (units)	CBI 9 (units)	CBI 10 (units)	…
2023	0	0	0	-							
2024	0	0	0	-							
2025	0	0	0	-							
2026	0	0	0	-							
2027	0	0	0	-							
2028	0	0	0	-							
2029	0	0	0	-							
2030	0	0	0	-							
2031	0	0	0	-							
2032	0	0	0	-							
2033	0	0	0	-							
2034	0	0	0	-							
2035	0	0	0	-							
2036	0	0	0	-							
2037	0	0	0	-							
2038	0	0	0	-							
2039	0	0	0	-							
2040	0	0	0	-							
2041	0	0	0	-							
2042	0	0	0	-							
2043	0	0	0	-							

15 Portfolio15

Year	CBRE Solar (pCBI)	CBRE Micro (pCBI)	CBRE Hydrc (pCBI)	rCBI (2023$)	CBI 5 (units)	CBI 6 (units)	CBI 7 (units)	CBI 8 (units)	CBI 9 (units)	CBI 10 (units)	…
2023	0	0	0	-							
2024	0	0	0	-							
2025	0	0	0	-							
2026	22	43	1	1,432,200							
2027	28	56	1	1,844,717							
2028	36	71	3	2,387,868							
2029	43	85	5	2,886,751							
2030	50	100	5	3,364,151							
2031	50	100	5	3,364,151							
2032	50	100	5	3,364,151							
2033	50	100	5	3,364,151							
2034	50	100	5	3,364,151							
2035	50	100	5	3,364,151							
2036	50	100	5	3,364,151							
2037	50	100	5	3,364,151							
2038	50	100	5	3,364,151							
2039	50	100	5	3,364,151							
2040	50	100	5	3,364,151							
2041	50	100	5	3,364,151							
2042	50	100	5	3,364,151							
2043	50	100	5	3,364,151							

Instructions

For each of the portfolios listed on the "Portfolios" tab, list the annual Customer Benefits Indicators (CBIs) over the study period under Reference Case assumptions

UM 2225 Order Summary/Rubric references: C.4(b)

16 Portfolio16

Year	CBRE Solar (pCBI)	CBRE Micro (pCBI)	CBRE Hydrc (pCBI)	rCBI (2023$)	CBI 5 (units)	CBI 6 (units)	CBI 7 (units)	CBI 8 (units)	CBI 9 (units)	CBI 10 (units)	…
2023	0	0	0	-							
2024	0	0	0	-							
2025	0	0	0	-							
2026	22	43	1	1,431,766							
2027	28	56	1	1,843,632							
2028	36	71	3	2,385,264							
2029	43	85	5	2,883,713							
2030	50	100	5	3,360,679							
2031	50	100	5	3,360,679							
2032	50	100	5	3,360,679							
2033	50	100	5	3,360,679							
2034	50	100	5	3,360,679							
2035	50	100	5	3,360,679							
2036	50	100	5	3,360,896							
2037	50	100	5	3,361,113							
2038	50	100	5	3,361,330							
2039	50	100	5	3,361,547							
2040	50	100	5	3,361,764							
2041	50	100	5	3,361,764							
2042	50	100	5	3,361,764							
2043	50	100	5	3,361,764							

17 Portfolio17

Year	CBRE Solar (pCBI)	CBRE Micro (pCBI)	CBRE Hydrc (pCBI)	rCBI (2023$)	CBI 5 (units)	CBI 6 (units)	CBI 7 (units)	CBI 8 (units)	CBI 9 (units)	CBI 10 (units)	…
2023	0	0	0	-							
2024	0	0	0	-							
2025	0	0	0	-							
2026	22	43	1	1,431,766							
2027	28	56	1	1,843,632							
2028	36	71	3	2,385,264							
2029	43	85	5	2,883,713							
2030	50	100	5	3,360,679							
2031	50	100	5	3,360,679							
2032	50	100	5	3,360,679							
2033	50	100	5	3,360,679							
2034	50	100	5	3,360,679							
2035	50	100	5	3,360,679							
2036	50	100	5	3,360,896							
2037	50	100	5	3,361,113							
2038	50	100	5	3,361,330							
2039	50	100	5	3,361,547							
2040	50	100	5	3,361,547							
2041	50	100	5	3,361,547							
2042	50	100	5	3,361,547							
2043	50	100	5	3,361,547							

Instructions

For each of the portfolios listed on the "Portfolios" tab, list the annual Customer Benefits Indicators (CBIs) over the study period under Reference Case assumptions

UM 2225 Order Summary/Rubric references: C.4(b)

18 Portfolio18

Year	CBRE Solar (pCBI)	CBRE Micro (pCBI)	CBRE Hydrc (pCBI)	rCBI (2023$)	CBI 5 (units)	CBI 6 (units)	CBI 7 (units)	CBI 8 (units)	CBI 9 (units)	CBI 10 (units)	...
2023	0	0	0	-							
2024	0	0	0	-							
2025	0	0	0	-							
2026	22	43	1	1,432,417							
2027	28	56	1	1,844,283							
2028	36	71	3	2,386,132							
2029	43	85	5	2,885,666							
2030	50	100	5	3,363,717							
2031	50	100	5	3,363,934							
2032	50	100	5	3,364,151							
2033	50	100	5	3,364,151							
2034	50	100	5	3,364,151							
2035	50	100	5	3,364,151							
2036	50	100	5	3,364,151							
2037	50	100	5	3,364,151							
2038	50	100	5	3,364,151							
2039	50	100	5	3,364,151							
2040	50	100	5	3,364,151							
2041	50	100	5	3,364,151							
2042	50	100	5	3,364,151							
2043	50	100	5	3,364,151							

19 Portfolio19

Year	CBRE Solar (pCBI)	CBRE Micro (pCBI)	CBRE Hydrc (pCBI)	rCBI (2023$)	CBI 5 (units)	CBI 6 (units)	CBI 7 (units)	CBI 8 (units)	CBI 9 (units)	CBI 10 (units)	...
2023	0	0	0	-							
2024	0	0	0	-							
2025	0	0	0	-							
2026	22	43	1	1,432,200							
2027	28	56	1	1,844,500							
2028	36	71	3	2,387,217							
2029	43	85	5	2,886,100							
2030	50	100	5	3,363,717							
2031	50	100	5	3,363,934							
2032	50	100	5	3,364,151							
2033	50	100	5	3,364,151							
2034	50	100	5	3,364,151							
2035	50	100	5	3,364,151							
2036	50	100	5	3,364,151							
2037	50	100	5	3,364,151							
2038	50	100	5	3,364,151							
2039	50	100	5	3,364,151							
2040	50	100	5	3,364,151							
2041	50	100	5	3,364,151							
2042	50	100	5	3,364,151							
2043	50	100	5	3,364,151							

Instructions

For each of the portfolios listed on the "Portfolios" tab, list the annual Customer Benefits Indicators (CBIs) over the study period under Reference Case assumptions

UM 2225 Order Summary/Rubric references: C.4(b)

20 Portfolio20

Year	CBRE Solar (pCBI)	CBRE Micro (pCBI)	CBRE Hydrc (pCBI)	rCBI (2023$)	CBI 5 (units)	CBI 6 (units)	CBI 7 (units)	CBI 8 (units)	CBI 9 (units)	CBI 10 (units)	...
2023	0	0	0	-							
2024	0	0	0	-							
2025	0	0	0	-							
2026	22	43	1	1,431,766							
2027	28	56	1	1,843,632							
2028	36	71	3	2,385,915							
2029	43	85	5	2,885,666							
2030	50	100	5	3,363,717							
2031	50	100	5	3,363,934							
2032	50	100	5	3,364,151							
2033	50	100	5	3,364,151							
2034	50	100	5	3,364,151							
2035	50	100	5	3,364,151							
2036	50	100	5	3,364,151							
2037	50	100	5	3,364,151							
2038	50	100	5	3,364,151							
2039	50	100	5	3,364,151							
2040	50	100	5	3,364,151							
2041	50	100	5	3,364,151							
2042	50	100	5	3,364,151							
2043	50	100	5	3,364,151							

21 Portfolio21

Year	CBRE Solar (pCBI)	CBRE Micro (pCBI)	CBRE Hydrc (pCBI)	rCBI (2023$)	CBI 5 (units)	CBI 6 (units)	CBI 7 (units)	CBI 8 (units)	CBI 9 (units)	CBI 10 (units)	...
2023	0	0	0	-							
2024	0	0	0	-							
2025	0	0	0	-							
2026	22	43	1	1,431,766							
2027	28	56	1	1,843,632							
2028	36	71	3	2,385,481							
2029	43	85	5	2,885,232							
2030	50	100	5	3,363,283							
2031	50	100	5	3,363,934							
2032	50	100	5	3,364,151							
2033	50	100	5	3,364,151							
2034	50	100	5	3,364,151							
2035	50	100	5	3,364,151							
2036	50	100	5	3,364,151							
2037	50	100	5	3,364,151							
2038	50	100	5	3,364,151							
2039	50	100	5	3,364,151							
2040	50	100	5	3,364,151							
2041	50	100	5	3,364,151							
2042	50	100	5	3,364,151							
2043	50	100	5	3,364,151							

Instructions

For each of the portfolios listed on the "Portfolios" tab, list the annual Customer Benefits Indicators (CBIs) over the study period under Reference Case assumptions

UM 2225 Order Summary/Rubric references: C.4(b)

22 Portfolio22

Year	CBRE Solar (pCBI)	CBRE Micro (pCBI)	CBRE Hydrc (pCBI)	rCBI (2023$)	CBI 5 (units)	CBI 6 (units)	CBI 7 (units)	CBI 8 (units)	CBI 9 (units)	CBI 10 (units)	...
2023	0	0	0	-							
2024	0	0	0	-							
2025	0	0	0	-							
2026	22	43	1	1,432,200							
2027	28	56	1	1,844,500							
2028	36	71	3	2,386,349							
2029	43	85	5	2,885,666							
2030	50	100	5	3,363,717							
2031	50	100	5	3,363,934							
2032	50	100	5	3,364,151							
2033	50	100	5	3,364,151							
2034	50	100	5	3,364,151							
2035	50	100	5	3,364,151							
2036	50	100	5	3,364,151							
2037	50	100	5	3,364,151							
2038	50	100	5	3,364,151							
2039	50	100	5	3,364,151							
2040	50	100	5	3,364,151							
2041	50	100	5	3,364,151							
2042	50	100	5	3,364,151							
2043	50	100	5	3,364,151							

23 Portfolio23

Year	CBRE Solar (pCBI)	CBRE Micro (pCBI)	CBRE Hydrc (pCBI)	rCBI (2023$)	CBI 5 (units)	CBI 6 (units)	CBI 7 (units)	CBI 8 (units)	CBI 9 (units)	CBI 10 (units)	...
2023	0	0	0	-							
2024	0	0	0	-							
2025	0	0	0	-							
2026	22	43	1	1,432,417							
2027	28	56	1	1,844,717							
2028	36	71	3	2,386,349							
2029	43	85	5	2,885,666							
2030	50	100	5	3,363,500							
2031	50	100	5	3,363,934							
2032	50	100	5	3,364,151							
2033	50	100	5	3,364,151							
2034	50	100	5	3,364,151							
2035	50	100	5	3,364,151							
2036	50	100	5	3,364,151							
2037	50	100	5	3,364,151							
2038	50	100	5	3,364,151							
2039	50	100	5	3,364,151							
2040	50	100	5	3,364,151							
2041	50	100	5	3,364,151							
2042	50	100	5	3,364,151							
2043	50	100	5	3,364,151							

Instructions

For each of the portfolios listed on the "Portfolios" tab, list the annual Customer Benefits Indicators (CBIs) over the study period under Reference Case assumptions

UM 2225 Order Summary/Rubric references: C.4(b)

24 Portfolio24

Year	CBRE Solar (pCBI)	CBRE Micro (pCBI)	CBRE Hydrc (pCBI)	rCBI (2023$)	CBI 5 (units)	CBI 6 (units)	CBI 7 (units)	CBI 8 (units)	CBI 9 (units)	CBI 10 (units)	...
2023	0	0	0	-							
2024	0	0	0	-							
2025	0	0	0	-							
2026	22	43	1	1,431,766							
2027	28	56	1	1,843,632							
2028	36	71	3	2,385,915							
2029	43	85	5	2,885,666							
2030	50	100	5	3,363,717							
2031	50	100	5	3,363,934							
2032	50	100	5	3,364,151							
2033	50	100	5	3,364,151							
2034	50	100	5	3,364,151							
2035	50	100	5	3,364,151							
2036	50	100	5	3,364,151							
2037	50	100	5	3,364,151							
2038	50	100	5	3,364,151							
2039	50	100	5	3,364,151							
2040	50	100	5	3,364,151							
2041	50	100	5	3,364,151							
2042	50	100	5	3,364,151							
2043	50	100	5	3,364,151							

25 Portfolio25

Year	CBRE Solar (pCBI)	CBRE Micro (pCBI)	CBRE Hydrc (pCBI)	rCBI (2023$)	CBI 5 (units)	CBI 6 (units)	CBI 7 (units)	CBI 8 (units)	CBI 9 (units)	CBI 10 (units)	...
2023	0	0	0	-							
2024	0	0	0	-							
2025	0	0	0	-							
2026	22	43	1	1,432,200							
2027	28	56	1	1,844,066							
2028	36	71	3	2,385,915							
2029	43	85	5	2,885,666							
2030	50	100	5	3,363,717							
2031	50	100	5	3,363,934							
2032	50	100	5	3,364,151							
2033	50	100	5	3,364,151							
2034	50	100	5	3,364,151							
2035	50	100	5	3,364,151							
2036	50	100	5	3,364,151							
2037	50	100	5	3,364,151							
2038	50	100	5	3,364,151							
2039	50	100	5	3,364,151							
2040	50	100	5	3,364,151							
2041	50	100	5	3,364,151							
2042	50	100	5	3,364,151							
2043	50	100	5	3,364,151							

Instructions

For each of the portfolios listed on the "Portfolios" tab, list the annual Customer Benefits Indicators (CBIs) over the study period under Reference Case assumptions

UM 2225 Order Summary/Rubric references: C.4(b)

26 Portfolio26

Year	CBRE Solar (pCBI)	CBRE Micro (pCBI)	CBRE Hydrc (pCBI)	rCBI (2023$)	CBI 5 (units)	CBI 6 (units)	CBI 7 (units)	CBI 8 (units)	CBI 9 (units)	CBI 10 (units)	...
2023	0	0	0	-							
2024	0	0	0	-							
2025	0	0	0	-							
2026	22	43	1	1,432,200							
2027	28	56	1	1,844,066							
2028	36	71	3	2,385,698							
2029	43	85	5	2,885,449							
2030	50	100	5	3,363,500							
2031	50	100	5	3,363,934							
2032	50	100	5	3,364,151							
2033	50	100	5	3,364,151							
2034	50	100	5	3,364,151							
2035	50	100	5	3,364,151							
2036	50	100	5	3,364,151							
2037	50	100	5	3,364,151							
2038	50	100	5	3,364,151							
2039	50	100	5	3,364,151							
2040	50	100	5	3,364,151							
2041	50	100	5	3,364,151							
2042	50	100	5	3,364,151							
2043	50	100	5	3,364,151							

27 Portfolio27

Year	CBRE Solar (pCBI)	CBRE Micro (pCBI)	CBRE Hydrc (pCBI)	rCBI (2023$)	CBI 5 (units)	CBI 6 (units)	CBI 7 (units)	CBI 8 (units)	CBI 9 (units)	CBI 10 (units)	...
2023	0	0	0	-							
2024	0	0	0	-							
2025	0	0	0	-							
2026	22	43	1	1,432,200							
2027	28	56	1	1,844,066							
2028	36	71	3	2,385,915							
2029	43	85	5	2,885,666							
2030	50	100	5	3,363,717							
2031	50	100	5	3,363,934							
2032	50	100	5	3,364,151							
2033	50	100	5	3,364,151							
2034	50	100	5	3,364,151							
2035	50	100	5	3,364,151							
2036	50	100	5	3,364,151							
2037	50	100	5	3,364,151							
2038	50	100	5	3,364,151							
2039	50	100	5	3,364,151							
2040	50	100	5	3,364,151							
2041	50	100	5	3,364,151							
2042	50	100	5	3,364,151							
2043	50	100	5	3,364,151							

Instructions

For each of the portfolios listed on the "Portfolios" tab, list the annual Customer Benefits Indicators (CBIs) over the study period under Reference Case assumptions

UM 2225 Order Summary/Rubric references: C.4(b)

28 Portfolio28

Year	CBRE Solar (pCBI)	CBRE Micro (pCBI)	CBRE Hydrc (pCBI)	rCBI (2023$)	CBI 5 (units)	CBI 6 (units)	CBI 7 (units)	CBI 8 (units)	CBI 9 (units)	CBI 10 (units)	...
2023	0	0	0	-							
2024	0	0	0	-							
2025	0	0	0	-							
2026	22	43	1	1,432,200							
2027	28	56	1	1,844,066							
2028	36	71	3	2,386,132							
2029	43	85	5	2,885,883							
2030	50	100	5	3,363,934							
2031	50	100	5	3,364,151							
2032	50	100	5	3,364,151							
2033	50	100	5	3,364,151							
2034	50	100	5	3,364,151							
2035	50	100	5	3,364,151							
2036	50	100	5	3,364,151							
2037	50	100	5	3,364,151							
2038	50	100	5	3,364,151							
2039	50	100	5	3,364,151							
2040	50	100	5	3,364,151							
2041	50	100	5	3,364,151							
2042	50	100	5	3,364,151							
2043	50	100	5	3,364,151							

29 Portfolio29

Year	CBRE Solar (pCBI)	CBRE Micro (pCBI)	CBRE Hydrc (pCBI)	rCBI (2023$)	CBI 5 (units)	CBI 6 (units)	CBI 7 (units)	CBI 8 (units)	CBI 9 (units)	CBI 10 (units)	...
2023	0	0	0	-							
2024	0	0	0	-							
2025	0	0	0	-							
2026	22	43	1	1,432,200							
2027	28	56	1	1,844,066							
2028	36	71	3	2,385,915							
2029	43	85	5	2,885,666							
2030	50	100	5	3,363,717							
2031	50	100	5	3,363,934							
2032	50	100	5	3,364,151							
2033	50	100	5	3,364,151							
2034	50	100	5	3,364,151							
2035	50	100	5	3,364,151							
2036	50	100	5	3,364,151							
2037	50	100	5	3,364,151							
2038	50	100	5	3,364,151							
2039	50	100	5	3,364,151							
2040	50	100	5	3,364,151							
2041	50	100	5	3,364,151							
2042	50	100	5	3,364,151							
2043	50	100	5	3,364,151							

Instructions

For each of the portfolios listed on the "Portfolios" tab, list the annual Customer Benefits Indicators (CBIs) over the study period under Reference Case assumptions

UM 2225 Order Summary/Rubric references: C.4(b)

30 Portfolio30

Year	CBRE Solar (pCBI)	CBRE Micro (pCBI)	CBRE Hydrc (pCBI)	rCBI (2023$)	CBI 5 (units)	CBI 6 (units)	CBI 7 (units)	CBI 8 (units)	CBI 9 (units)	CBI 10 (units)	...
2023	0	0	0	-							
2024	0	0	0	-							
2025	0	0	0	-							
2026	22	43	1	1,432,200							
2027	28	56	1	1,844,066							
2028	36	71	3	2,385,698							
2029	43	85	5	2,885,449							
2030	50	100	5	3,363,500							
2031	50	100	5	3,363,934							
2032	50	100	5	3,364,151							
2033	50	100	5	3,364,151							
2034	50	100	5	3,364,151							
2035	50	100	5	3,364,151							
2036	50	100	5	3,364,151							
2037	50	100	5	3,364,151							
2038	50	100	5	3,364,151							
2039	50	100	5	3,364,151							
2040	50	100	5	3,364,151							
2041	50	100	5	3,364,151							
2042	50	100	5	3,364,151							
2043	50	100	5	3,364,151							

31 Portfolio31

Year	CBRE Solar (pCBI)	CBRE Micro (pCBI)	CBRE Hydrc (pCBI)	rCBI (2023$)	CBI 5 (units)	CBI 6 (units)	CBI 7 (units)	CBI 8 (units)	CBI 9 (units)	CBI 10 (units)	...
2023	0	0	0	-							
2024	0	0	0	-							
2025	0	0	0	-							
2026	22	43	1	1,432,200							
2027	28	56	1	1,844,066							
2028	36	71	3	2,385,915							
2029	43	85	5	2,885,666							
2030	50	100	5	3,363,717							
2031	50	100	5	3,363,934							
2032	50	100	5	3,364,151							
2033	50	100	5	3,364,151							
2034	50	100	5	3,364,151							
2035	50	100	5	3,364,151							
2036	50	100	5	3,364,151							
2037	50	100	5	3,364,151							
2038	50	100	5	3,364,151							
2039	50	100	5	3,364,151							
2040	50	100	5	3,364,151							
2041	50	100	5	3,364,151							
2042	50	100	5	3,364,151							
2043	50	100	5	3,364,151							

Instructions

For each of the portfolios listed on the "Portfolios" tab, list the annual Customer Benefits Indicators (CBIs) over the study period under Reference Case assumptions

UM 2225 Order Summary/Rubric references: C.4(b)

32 Portfolio32

Year	CBRE Solar (pCBI)	CBRE Micro (pCBI)	CBRE Hydrc (pCBI)	rCBI (2023$)	CBI 5 (units)	CBI 6 (units)	CBI 7 (units)	CBI 8 (units)	CBI 9 (units)	CBI 10 (units)	...
2023	0	0	0	-							
2024	0	0	0	-							
2025	0	0	0	-							
2026	22	43	1	1,432,200							
2027	28	56	1	1,844,066							
2028	36	71	3	2,385,915							
2029	43	85	5	2,885,666							
2030	50	100	5	3,363,717							
2031	50	100	5	3,363,934							
2032	50	100	5	3,364,151							
2033	50	100	5	3,364,151							
2034	50	100	5	3,364,151							
2035	50	100	5	3,364,151							
2036	50	100	5	3,364,151							
2037	50	100	5	3,364,151							
2038	50	100	5	3,364,151							
2039	50	100	5	3,364,151							
2040	50	100	5	3,364,151							
2041	50	100	5	3,364,151							
2042	50	100	5	3,364,151							
2043	50	100	5	3,364,151							

33 Portfolio33

Year	CBRE Solar (pCBI)	CBRE Micro (pCBI)	CBRE Hydrc (pCBI)	rCBI (2023$)	CBI 5 (units)	CBI 6 (units)	CBI 7 (units)	CBI 8 (units)	CBI 9 (units)	CBI 10 (units)	...
2023	0	0	0	-							
2024	0	0	0	-							
2025	0	0	0	-							
2026	22	43	1	1,431,766							
2027	28	56	1	1,843,632							
2028	36	71	3	2,385,915							
2029	43	85	5	2,885,666							
2030	50	100	5	3,363,717							
2031	50	100	5	3,363,717							
2032	50	100	5	3,363,717							
2033	50	100	5	3,363,717							
2034	50	100	5	3,363,717							
2035	50	100	5	3,363,717							
2036	50	100	5	3,363,717							
2037	50	100	5	3,363,717							
2038	50	100	5	3,363,717							
2039	50	100	5	3,363,717							
2040	50	100	5	3,363,717							
2041	50	100	5	3,363,934							
2042	50	100	5	3,363,934							
2043	50	100	5	3,364,151							

Instructions

For each of the portfolios listed on the "Portfolios" tab, list the annual Customer Benefits Indicators (CBIs) over the study period under Reference Case assumptions

UM 2225 Order Summary/Rubric references: C.4(b)

34 Portfolio34

Year	CBRE Solar (pCBI)	CBRE Micro (pCBI)	CBRE Hydrc (pCBI)	rCBI (2023$)	CBI 5 (units)	CBI 6 (units)	CBI 7 (units)	CBI 8 (units)	CBI 9 (units)	CBI 10 (units)	...
2023	0	0	0	-							
2024	0	0	0	-							
2025	0	0	0	-							
2026	22	43	1	1,431,766							
2027	28	56	1	1,843,632							
2028	36	71	3	2,385,915							
2029	43	85	5	2,885,666							
2030	50	100	5	3,363,717							
2031	50	100	5	3,363,717							
2032	50	100	5	3,363,717							
2033	50	100	5	3,363,717							
2034	50	100	5	3,363,717							
2035	50	100	5	3,363,717							
2036	50	100	5	3,363,717							
2037	50	100	5	3,363,934							
2038	50	100	5	3,363,934							
2039	50	100	5	3,363,934							
2040	50	100	5	3,363,934							
2041	50	100	5	3,363,934							
2042	50	100	5	3,363,934							
2043	50	100	5	3,364,151							

35 Portfolio35

Year	CBRE Solar (pCBI)	CBRE Micro (pCBI)	CBRE Hydrc (pCBI)	rCBI (2023$)	CBI 5 (units)	CBI 6 (units)	CBI 7 (units)	CBI 8 (units)	CBI 9 (units)	CBI 10 (units)	...
2023	0	0	0	-							
2024	0	0	0	-							
2025	0	0	0	-							
2026	22	43	1	1,432,417							
2027	28	56	1	1,844,283							
2028	36	71	3	2,385,915							
2029	43	85	5	2,885,015							
2030	50	100	5	3,363,066							
2031	50	100	5	3,363,500							
2032	50	100	5	3,363,934							
2033	50	100	5	3,364,151							
2034	50	100	5	3,364,151							
2035	50	100	5	3,364,151							
2036	50	100	5	3,364,151							
2037	50	100	5	3,364,151							
2038	50	100	5	3,364,151							
2039	50	100	5	3,364,151							
2040	50	100	5	3,364,151							
2041	50	100	5	3,364,151							
2042	50	100	5	3,364,151							
2043	50	100	5	3,364,151							

Instructions

For each of the portfolios listed on the "Portfolios" tab, list the annual Customer Benefits Indicators (CBIs) over the study period under Reference Case assumptions

UM 2225 Order Summary/Rubric references: C.4(b)

36 Portfolio36

Year	CBRE Solar (pCBI)	CBRE Micro (pCBI)	CBRE Hydrc (pCBI)	rCBI (2023$)	CBI 5 (units)	CBI 6 (units)	CBI 7 (units)	CBI 8 (units)	CBI 9 (units)	CBI 10 (units)	...
2023	0	0	0	-							
2024	0	0	0	-							
2025	0	0	0	-							
2026	22	43	1	1,432,417							
2027	28	56	1	1,844,283							
2028	36	71	3	2,385,915							
2029	43	85	5	2,885,232							
2030	50	100	5	3,363,283							
2031	50	100	5	3,363,934							
2032	50	100	5	3,364,151							
2033	50	100	5	3,364,151							
2034	50	100	5	3,364,151							
2035	50	100	5	3,364,151							
2036	50	100	5	3,364,151							
2037	50	100	5	3,364,151							
2038	50	100	5	3,364,151							
2039	50	100	5	3,364,151							
2040	50	100	5	3,364,151							
2041	50	100	5	3,364,151							
2042	50	100	5	3,364,151							
2043	50	100	5	3,364,151							

37 Portfolio37

Year	CBRE Solar (pCBI)	CBRE Micro (pCBI)	CBRE Hydrc (pCBI)	rCBI (2023$)	CBI 5 (units)	CBI 6 (units)	CBI 7 (units)	CBI 8 (units)	CBI 9 (units)	CBI 10 (units)	...
2023	0	0	0	-							
2024	0	0	0	-							
2025	0	0	0	-							
2026	22	43	1	1,432,417							
2027	28	56	1	1,844,283							
2028	36	71	3	2,386,132							
2029	43	85	5	2,885,666							
2030	50	100	5	3,363,717							
2031	50	100	5	3,363,934							
2032	50	100	5	3,364,151							
2033	50	100	5	3,364,151							
2034	50	100	5	3,364,151							
2035	50	100	5	3,364,151							
2036	50	100	5	3,364,151							
2037	50	100	5	3,364,151							
2038	50	100	5	3,364,151							
2039	50	100	5	3,364,151							
2040	50	100	5	3,364,151							
2041	50	100	5	3,364,151							
2042	50	100	5	3,364,151							
2043	50	100	5	3,364,151							

Instructions

For each of the portfolios listed on the "Portfolios" tab, list the annual Customer Benefits Indicators (CBIs) over the study period under Reference Case assumptions

UM 2225 Order Summary/Rubric references: C.4(b)

38 Portfolio38

Year	CBRE Solar (pCBI)	CBRE Micro (pCBI)	CBRE Hydrc (pCBI)	rCBI (2023$)	CBI 5 (units)	CBI 6 (units)	CBI 7 (units)	CBI 8 (units)	CBI 9 (units)	CBI 10 (units)	…
2023	0	0	0	-							
2024	0	0	0	-							
2025	0	0	0	-							
2026	22	43	1	1,432,417							
2027	28	56	1	1,844,283							
2028	36	71	3	2,385,915							
2029	43	85	5	2,885,232							
2030	50	100	5	3,363,283							
2031	50	100	5	3,363,934							
2032	50	100	5	3,364,151							
2033	50	100	5	3,364,151							
2034	50	100	5	3,364,151							
2035	50	100	5	3,364,151							
2036	50	100	5	3,364,151							
2037	50	100	5	3,364,151							
2038	50	100	5	3,364,151							
2039	50	100	5	3,364,151							
2040	50	100	5	3,364,151							
2041	50	100	5	3,364,151							
2042	50	100	5	3,364,151							
2043	50	100	5	3,364,151							

39 Portfolio39

Year	CBRE Solar (pCBI)	CBRE Micro (pCBI)	CBRE Hydrc (pCBI)	rCBI (2023$)	CBI 5 (units)	CBI 6 (units)	CBI 7 (units)	CBI 8 (units)	CBI 9 (units)	CBI 10 (units)	…
2023	0	0	0	-							
2024	0	0	0	-							
2025	0	0	0	-							
2026	22	43	1	1,430,247							
2027	28	56	1	1,841,462							
2028	36	71	3	2,383,311							
2029	43	85	5	2,883,062							
2030	50	100	5	3,361,113							
2031	50	100	5	3,361,764							
2032	50	100	5	3,362,415							
2033	50	100	5	3,362,849							
2034	50	100	5	3,363,283							
2035	50	100	5	3,363,500							
2036	50	100	5	3,363,717							
2037	50	100	5	3,363,934							
2038	50	100	5	3,364,151							
2039	50	100	5	3,364,151							
2040	50	100	5	3,364,151							
2041	50	100	5	3,364,151							
2042	50	100	5	3,364,151							
2043	50	100	5	3,364,151							

Instructions

For each of the portfolios listed on the "Portfolios" tab, list the scoring metrics for cost, risk, GHG emissions reductions, and community benefits and impacts used to select the Preferred Portfolio and design the Action Plan

UM 2225 Order Summary/Rubric references: B.1

	Portfolio	Cost - NPVRR (million 2023$)	Risk metric - Variability (million 2023$)	Risk metric - Severity (million 2023$)	GHG Reductions Metric(s) (metric ton)	Community Impacts Metric(s) (CBRE MW)	… (units)
1	Portfolio1	$ 42,041.68	$ 12,087.37	$ 58,511.15	38,494,254	155	
2	Portfolio2	$ 42,772.21	$ 12,227.34	$ 59,418.70	34,511,484	155	
3	Portfolio3	$ 41,611.73	$ 11,995.71	$ 57,976.33	42,477,023	155	
4	Portfolio4	$ 43,138.75	$ 11,843.40	$ 59,302.57	34,444,254	155	
5	Portfolio5	$ 43,777.14	$ 12,065.78	$ 60,222.24	31,824,647	155	
6	Portfolio6	$ 41,480.76	$ 12,251.42	$ 58,298.25	38,494,254	155	
7	Portfolio7	$ 42,041.68	$ 12,325.77	$ 58,686.47	38,494,254	155	
8	Portfolio8	$ 41,657.14	$ 12,257.60	$ 58,665.65	38,494,254	155	
9	Portfolio9	$ 42,041.68	$ 12,325.77	$ 58,686.47	38,494,254	155	
10	Portfolio10	$ 42,142.68	$ 12,321.95	$ 58,746.24	38,494,254	117	
11	Portfolio11	$ 42,457.33	$ 12,075.20	$ 58,762.76	38,494,254	0	
12	Portfolio12	$ 42,160.67	$ 12,335.17	$ 58,789.13	38,494,254	100	
13	Portfolio13	$ 42,041.67	$ 12,325.33	$ 58,685.80	38,494,254	155	
14	Portfolio14	$ 20,268.65	$ 4,827.33	$ 28,407.09	38,494,254	0	
15	Portfolio15	$ 45,594.59	$ 12,679.45	$ 62,539.33	38,494,254	155	
16	Portfolio16	$ 20,741.09	$ 5,107.50	$ 29,397.03	38,494,254	155	
17	Portfolio17	$ 20,190.84	$ 5,097.96	$ 28,950.73	38,494,254	155	
18	Portfolio18	$ 42,044.77	$ 12,322.36	$ 58,685.12	38,494,254	155	
19	Portfolio19	$ 42,302.47	$ 12,547.93	$ 59,211.49	38,494,254	155	
20	Portfolio20	$ 42,999.14	$ 12,199.48	$ 59,853.74	38,494,254	155	
21	Portfolio21	$ 43,734.37	$ 12,194.65	$ 60,615.46	38,494,254	155	
22	Portfolio22	$ 42,830.95	$ 12,395.13	$ 59,930.02	38,494,254	155	
23	Portfolio23	$ 43,491.53	$ 12,377.91	$ 60,668.57	38,494,254	155	
24	Portfolio24	$ 42,257.73	$ 12,382.60	$ 58,974.99	38,494,254	155	
25	Portfolio25	$ 42,041.68	$ 12,325.77	$ 58,686.47	38,494,254	155	
26	Portfolio26	$ 41,065.06	$ 12,638.89	$ 58,207.24	38,494,254	155	
27	Portfolio27	$ 41,730.82	$ 12,207.37	$ 58,386.48	38,494,254	155	
28	Portfolio28	$ 38,996.37	$ 12,209.95	$ 55,830.12	38,494,254	155	
29	Portfolio29	$ 42,055.95	$ 12,262.64	$ 58,965.39	38,494,254	155	
30	Portfolio30	$ 41,792.65	$ 12,155.78	$ 58,344.29	38,494,254	155	
31	Portfolio31	$ 41,128.05	$ 12,324.63	$ 57,771.69	38,494,254	155	
32	Portfolio32	$ 42,041.68	$ 12,325.77	$ 58,686.47	38,494,254	155	
33	Portfolio33				38,494,254	155	
34	Portfolio34				38,494,254	155	
35	Portfolio35	$ 37,699.67	$ 11,560.71	$ 54,186.10	38,494,254	155	
36	Portfolio36	$ 41,503.09	$ 12,043.61	$ 58,155.46	38,494,254	155	
37	Portfolio37	$ 41,702.62	$ 12,059.20	$ 58,228.60	38,494,254	155	
38	Portfolio38	$ 42,199.03	$ 12,044.97	$ 59,374.25	38,494,254	155	
39	Portfolio39	$ 37,225.82	$ 11,523.72	$ 53,865.79	38,494,254	155	
40	Portfolio40	$ 36,955.54	$ 11,875.92	$ 53,918.29	38,494,254	155	
	sources:	Preferred portfolio summary: NPVRR	Preferred portfolio summary: semi-deviation	Preferred portfolio summary: tail VAR90	Sum of retail carbon from 2023-2043	Max of CBRE capacity between 2023-2043	

Note: the cost and risk metrics for near-term optimization portfolios are not comparable to other portfolios and accordingly have been omitted

GHG Emissions Assumptions

Provide the GHG emissions assumptions for each existing and proxy resource modeled in the IRP, developed in partnership with DEQ

UM 2225 Order Summary/Rubric references: J.3(a)

For market purchases the DEQ specifies a 2% line loss adjustment (not included below)

	Beaver	Carty	Coyote	PW1	PW2	Colstrip (20% PGE s	Market gas	Market waste	Market ACS	Market_unspec	Fossil fuel resource	Fossil fuel reso	Fossil fuel reso	Fossil fuel reso	Fossil fuel reso	Fossil fuel reso	Fossil fuel reso	Fossil fuel reso	Fossil fuel reso	Fossil fuel reso	Fossil fuel reso	...
GHG Emissions Rate (	0.54	0.39	0.38	0.38	0.51	1.00	0.41	1.32	0.01	0.43												
sources:	DEQ; 12 20.22 (GHG model_linear decline, unit intensity and run ratios)	DEQ; 12.20.22 (GHG model_linear decline, unit intensity and run ratios)	DEQ; 12.20 22 (GHG model_linear decline, unit intensity and run ratios)	DEQ; 12.20.22 (GHG model_linear decline, unit intensity and run ratios)	DEQ; 12.20.22 (GHG model_linear decline, unit intensity and run ratios)	DEQ; 12.20.22 (GHG model_linear decline, unit intensity and run ratios)	DEQ; 12.20 22 (GHG model_linear decline, unit intensity and run ratios)	DEQ; 12 20.22 (GHG model_linear decline, unit intensity and run ratios)	DEQ; 12.20.22 (GHG model_linear decline, unit intensity and run ratios)	DEQ; 12.20 22 (GHG model_linear decline, unit intensity and run ratios)												

GHG emissions by resource

Provide the cumulative forecasted GHG emissions from each existing and proxy resource in the Preferred Portfolio under the Reference Case over the entire analysis horizon (at least 20 years) and the location of each emitting resource

UM 2225 Order Summary/Rubric references: J.3(b)

Portfolio40 Retail emissions

	Beaver	Carty	Coyote	PW1	PW2	Colstrip (20% PGE s	Market gas	Market waste	Market ACS	Market_unspec	Fossil fuel resource	Fossil fuel reso	Fossil fuel reso	Fossil fuel reso	Fossil fuel reso	Fossil fuel reso	Fossil fuel reso	Fossil fuel reso	Fossil fuel reso	Fossil fuel reso	Fossil fuel reso	...
Cumulative GHG Emi	3,009,358	6,261,804	3,438,524	4,881,624	1,782,328	6,442,582	35,462	41,846	74,363	12,526,364												
Location (lat, long)	46.17', -123.17'	45.69', -119.81'	45.84', -119.67;	46.17',-123.17'	46.17',-123.17'	45.88',-106.61'	NA	NA	NA	NA												
sources:	GHG model_linear decline: sum of GHG emissions forecast 2023-43	GHG model_linear decline: sum of GHG emissions forecast 2023-43	GHG model_linear decline: sum of GHG emissions forecast 2023-43	GHG model_linear decline: sum of GHG emissions forecast 2023-43	GHG model_linear decline: sum of GHG emissions forecast 2023-43	GHG model_linear decline: sum of GHG emissions forecast 2023-43	GHG model_linear decline: sum of GHG emissions forecast 2023-43	GHG model_linear decline: sum of GHG emissions forecast 2023-43	GHG model_linear decline: sum of GHG emissions forecast 2023-43	GHG model_linear decline: sum of GHG emissions forecast 2023-43												

Portfolio GHG emissions

For each of the portfolios listed on the "Portfolios" tab, list the annual GHG emissions based on the DEQ methodology over the study period under Reference Case assumptions

Provide at least three years of historical GHG emissions based on the DEQ methodology in column B

UM 2225 Order Summary/Rubric references: J.3(c)

PGE Note: Historical GHG values may differ slightly than official DEQ values. This is due to HB 2021 excluding GHG emissions associated with PURPA resources.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Year	Portfolio1	Portfolio2	Portfolio3	Portfolio4	Portfolio5	Portfolio6	Portfolio7	Portfolio8	Portfolio9	Portfolio10	Portfolio11	Portfolio12	Portfolio13	Portfolio14	Portfolio15	Portfolio16	Portfolio17	Portfolio18	Portfolio19	Portfolio20	Portfolio21	Portfolio22	Portfolio23	Portfolio24	Portfolio25	Portfolio26	Portfolio27	Portfolio28	Portfolio29	Portfolio30	Portfolio31	Portfolio32	Portfolio33	Portfolio34	Portfolio35	Portfolio36	Portfolio37	Portfolio38	Portfolio39	Portfolio40
2020	6,631,604	6,631,604	6,631,604	6,631,604	6,631,604	6,631,604	6,631,604	6,631,604	6,631,604	6,631,604	6,631,604	6,631,604	6,631,604	6,631,604	6,631,604	6,631,604	6,631,604	6,631,604	6,631,604	6,631,604	6,631,604	6,631,604	6,631,604	6,631,604	6,631,604	6,631,604	6,631,604	6,631,604	6,631,604	6,631,604	6,631,604	6,631,604	6,631,604	6,631,604	6,631,604	6,631,604	6,631,604	6,631,604	6,631,604
2021	6,115,986	6,115,986	6,115,986	6,115,986	6,115,986	6,115,986	6,115,986	6,115,986	6,115,986	6,115,986	6,115,986	6,115,986	6,115,986	6,115,986	6,115,986	6,115,986	6,115,986	6,115,986	6,115,986	6,115,986	6,115,986	6,115,986	6,115,986	6,115,986	6,115,986	6,115,986	6,115,986	6,115,986	6,115,986	6,115,986	6,115,986	6,115,986	6,115,986	6,115,986	6,115,986	6,115,986	6,115,986	6,115,986	6,115,986
2022 (initial values)	6,061,280	6,061,280	6,061,280	6,061,280	6,061,280	6,061,280	6,061,280	6,061,280	6,061,280	6,061,280	6,061,280	6,061,280	6,061,280	6,061,280	6,061,280	6,061,280	6,061,280	6,061,280	6,061,280	6,061,280	6,061,280	6,061,280	6,061,280	6,061,280	6,061,280	6,061,280	6,061,280	6,061,280	6,061,280	6,061,280	6,061,280	6,061,280	6,061,280	6,061,280	6,061,280	6,061,280	6,061,280	6,061,280	6,061,280
2023	5,887,117	5,887,117	5,887,117	5,887,117	5,887,117	5,887,117	5,887,117	5,887,117	5,887,117	5,887,117	5,887,117	5,887,117	5,887,117	5,887,117	5,887,117	5,887,117	5,887,117	5,887,117	5,887,117	5,887,117	5,887,117	5,887,117	5,887,117	5,887,117	5,887,117	5,887,117	5,887,117	5,887,117	5,887,117	5,887,117	5,887,117	5,887,117	5,887,117	5,887,117	5,887,117	5,887,117	5,887,117	5,887,117	5,887,117
2024	5,308,316	5,308,316	5,308,316	5,308,316	5,308,316	5,308,316	5,308,316	5,308,316	5,308,316	5,308,316	5,308,316	5,308,316	5,308,316	5,308,316	5,308,316	5,308,316	5,308,316	5,308,316	5,308,316	5,308,316	5,308,316	5,308,316	5,308,316	5,308,316	5,308,316	5,308,316	5,308,316	5,308,316	5,308,316	5,308,316	5,308,316	5,308,316	5,308,316	5,308,316	5,308,316	5,308,316	5,308,316	5,308,316	5,308,316	5,308,316
2025	5,049,607	5,049,607	5,049,607	5,049,607	5,049,607	5,049,607	5,049,607	5,049,607	5,049,607	5,049,607	5,049,607	5,049,607	5,049,607	5,049,607	5,049,607	5,049,607	5,049,607	5,049,607	5,049,607	5,049,607	5,049,607	5,049,607	5,049,607	5,049,607	5,049,607	5,049,607	5,049,607	5,049,607	5,049,607	5,049,607	5,049,607	5,049,607	5,049,607	5,049,607	5,049,607	5,049,607	5,049,607	5,049,607	5,049,607
2026	4,363,686	3,279,487	4,938,974	4,363,686	3,906,405	4,363,686	4,363,686	4,363,686	4,363,686	4,363,686	4,363,686	4,363,686	4,363,686	4,363,686	4,363,686	4,363,686	4,363,686	4,363,686	4,363,686	4,363,686	4,363,686	4,363,686	4,363,686	4,363,686	4,363,686	4,363,686	4,363,686	4,363,686	4,363,686	4,363,686	4,363,686	4,363,686	4,363,686	4,363,686	4,363,686	4,363,686	4,363,686	4,363,686	4,363,686
2027	3,677,764	2,394,427	4,717,710	3,677,764	2,763,202	3,677,764	3,677,764	3,677,764	3,677,764	3,677,764	3,677,764	3,677,764	3,677,764	3,677,764	3,677,764	3,677,764	3,677,764	3,677,764	3,677,764	3,677,764	3,677,764	3,677,764	3,677,764	3,677,764	3,677,764	3,677,764	3,677,764	3,677,764	3,677,764	3,677,764	3,677,764	3,677,764	3,677,764	3,677,764	3,677,764	3,677,764	3,677,764	3,677,764	3,677,764
2028	2,991,843	1,951,897	4,275,180	2,991,843	1,620,000	2,991,843	2,991,843	2,991,843	2,991,843	2,991,843	2,991,843	2,991,843	2,991,843	2,991,843	2,991,843	2,991,843	2,991,843	2,991,843	2,991,843	2,991,843	2,991,843	2,991,843	2,991,843	2,991,843	2,991,843	2,991,843	2,991,843	2,991,843	2,991,843	2,991,843	2,991,843	2,991,843	2,991,843	2,991,843	2,991,843	2,991,843	2,991,843	2,991,843	2,991,843
2029	2,305,921	1,730,632	3,390,120	2,305,921	1,458,000	2,305,921	2,305,921	2,305,921	2,305,921	2,305,921	2,305,921	2,305,921	2,305,921	2,305,921	2,305,921	2,305,921	2,305,921	2,305,921	2,305,921	2,305,921	2,305,921	2,305,921	2,305,921	2,305,921	2,305,921	2,305,921	2,305,921	2,305,921	2,305,921	2,305,921	2,305,921	2,305,921	2,305,921	2,305,921	2,305,921	2,305,921	2,305,921	2,305,921	2,305,921
2030	1,620,000	1,620,000	1,620,000	1,620,000	1,296,000	1,620,000	1,620,000	1,620,000	1,620,000	1,620,000	1,620,000	1,620,000	1,620,000	1,620,000	1,620,000	1,620,000	1,620,000	1,620,000	1,620,000	1,620,000	1,620,000	1,620,000	1,620,000	1,620,000	1,620,000	1,620,000	1,620,000	1,620,000	1,620,000	1,620,000	1,620,000	1,620,000	1,620,000	1,620,000	1,620,000	1,620,000	1,620,000	1,620,000	1,620,000
2031	1,458,000	1,458,000	1,458,000	1,296,000	1,134,000	1,458,000	1,458,000	1,458,000	1,458,000	1,458,000	1,458,000	1,458,000	1,458,000	1,458,000	1,458,000	1,458,000	1,458,000	1,458,000	1,458,000	1,458,000	1,458,000	1,458,000	1,458,000	1,458,000	1,458,000	1,458,000	1,458,000	1,458,000	1,458,000	1,458,000	1,458,000	1,458,000	1,458,000	1,458,000	1,458,000	1,458,000	1,458,000	1,458,000	1,458,000
2032	1,296,000	1,296,000	1,296,000	972,000	972,000	1,296,000	1,296,000	1,296,000	1,296,000	1,296,000	1,296,000	1,296,000	1,296,000	1,296,000	1,296,000	1,296,000	1,296,000	1,296,000	1,296,000	1,296,000	1,296,000	1,296,000	1,296,000	1,296,000	1,296,000	1,296,000	1,296,000	1,296,000	1,296,000	1,296,000	1,296,000	1,296,000	1,296,000	1,296,000	1,296,000	1,296,000	1,296,000	1,296,000	1,296,000
2033	1,134,000	1,134,000	1,134,000	648,000	810,000	1,134,000	1,134,000	1,134,000	1,134,000	1,134,000	1,134,000	1,134,000	1,134,000	1,134,000	1,134,000	1,134,000	1,134,000	1,134,000	1,134,000	1,134,000	1,134,000	1,134,000	1,134,000	1,134,000	1,134,000	1,134,000	1,134,000	1,134,000	1,134,000	1,134,000	1,134,000	1,134,000	1,134,000	1,134,000	1,134,000	1,134,000	1,134,000	1,134,000	1,134,000
2034	972,000	972,000	972,000	324,000	648,000	972,000	972,000	972,000	972,000	972,000	972,000	972,000	972,000	972,000	972,000	972,000	972,000	972,000	972,000	972,000	972,000	972,000	972,000	972,000	972,000	972,000	972,000	972,000	972,000	972,000	972,000	972,000	972,000	972,000	972,000	972,000	972,000	972,000
2035	810,000	810,000	810,000	-	486,000	810,000	810,000	810,000	810,000	810,000	810,000	810,000	810,000	810,000	810,000	810,000	810,000	810,000	810,000	810,000	810,000	810,000	810,000	810,000	810,000	810,000	810,000	810,000	810,000	810,000	810,000	810,000	810,000	810,000	810,000	810,000	810,000	810,000
2036	648,000	648,000	648,000	-	324,000	648,000	648,000	648,000	648,000	648,000	648,000	648,000	648,000	648,000	648,000	648,000	648,000	648,000	648,000	648,000	648,000	648,000	648,000	648,000	648,000	648,000	648,000	648,000	648,000	648,000	648,000	648,000	648,000	648,000	648,000	648,000	648,000	648,000
2037	486,000	486,000	486,000	-	162,000	486,000	486,000	486,000	486,000	486,000	486,000	486,000	486,000	486,000	486,000	486,000	486,000	486,000	486,000	486,000	486,000	486,000	486,000	486,000	486,000	486,000	486,000	486,000	486,000	486,000	486,000	486,000	486,000	486,000	486,000	486,000	486,000	486,000
2038	324,000	324,000	324,000	-	-	324,000	324,000	324,000	324,000	324,000	324,000	324,000	324,000	324,000	324,000	324,000	324,000	324,000	324,000	324,000	324,000	324,000	324,000	324,000	324,000	324,000	324,000	324,000	324,000	324,000	324,000	324,000	324,000	324,000	324,000	324,000	324,000	324,000
2039	162,000	162,000	162,000	-	-	162,000	162,000	162,000	162,000	162,000	162,000	162,000	162,000	162,000	162,000	162,000	162,000	162,000	162,000	162,000	162,000	162,000	162,000	162,000	162,000	162,000	162,000	162,000	162,000	162,000	162,000	162,000	162,000	162,000	162,000	162,000	162,000	162,000
2040	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2041	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2042	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2043	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
sources:																																							GHG model_linear decline: retail carbon (thermals, market gas, market landfill, market waste, market wood, market acs, market unspecified)

Instructions
Provide the following information for the Preferred Portfolio under the Reference Case over the study period and for at least three historical years
- Total annual GHG emissions by fuel type
- Annual GHG emissions to serve Oregon customers by fuel type
- Total annual generation by fuel type
- Annual generation serving Oregon customers by fuel type
- Annual weighted average heat rate by fuel type (total annual fuel burn, divided by total annual generation)
UM 2225 Order Summary/Rubric references: J.4(a)-(e)

PGE note 1: Fuel type may include market purchases that are DEQ tagged to the specific fuel type.

PGE note 2: Forecasts of generation from existing thermal output are based on economic dispatch using prices forecasted in this CEP/IRP. Forecasts of unspecified and other emitting market purchases are a function of historical purchases and a linear decline emission reduction glidepath. Neither reflect operational

Portfolio40 (preferred portfolio)

Fuel	Natural Gas	Natural Gas	Natural Gas	Natural Gas	Natural Gas	Coal	Coal	Coal	Coal	Coal	Coal	ACS	ACS	ACS	ACS	ACS	Market waste & oil	Market waste & oil	Market waste & oil	Market waste & oil	Market waste & oil	Market unspec.	Market unspec.	Market unspec.	Market unspec.	Market unspec.	Market unspec.
	Total GHG emissions	GHG emissions to serve Oregon c	Total generation	Generation serving Oregon customers	Weighted average heat rate	Total GHG emissions	GHG emissions to serve Oregon customers	Total generation	Generation serving Oregon customers	Weighted average heat rate	Total GHG emissions	GHG emissions to serve Oregon customers	Total generation	Generation serving Oregon customers	Weighted average heat rate	Total GHG emissions	GHG emissions to serve Oregon customers	Total generation	Generation serving Oregon customers	Weighted average heat rate	Total GHG emissions	GHG emissions to serve Oregon custo	Total generation	Generation serving Oregon customer	Weighted average heat rate		
Year	(metric tons)	(metric tons)	(GWh)	(GWh)	(MMBTu/MWh)	(metric tons)	(metric tons)	(GWh)	(GWh)	(MMBTu/MWh)	(metric tons)	(metric tons)	(GWh)	(GWh)	(MMBTu/MWh)	(metric tons)	(metric tons)	(GWh)	(GWh)	(MMBTu/MWh)	(metric tons)	(metric tons)	(GWh)	(GWh)	(MMBTu/MWh)		
2020	**3,164,708**	**2,615,241**	**8,062**	**6,662**	**7,419**	**3,329,087**	**2,218,519**	**3,232**	**2,172**	10,718	16,404	11,801	1402	1009	NA	111,148	93,185	91	76	NA	2,276,401	1,692,857	5319	3955	NA		
2021	3,811,894	3,150,850	9,368	7,740	7,690	2,173,398	1,450,930	2,068	1,381	10,936	22,602	16,905	1130	845	NA	68,384	58,442	69	59	NA	1,860,335	1,438,859	4347	3362	NA		
2022 (initia	3,391,937	2,850,293	8,276	6,953	7,746	2,301,034	1,300,967	2,189	1,238	10,937	43,697	34,365	2185	1718	NA	71,221	61,362	70	60	NA	2,366,604	1,814,294	5529	4239	NA		
2023	2,722,915	2,260,226	6,974	5,789	7,378	2,154,050	1,292,430	2,149	1,289	10,431	16,824	12,281	1269	926	NA	48,840	41,026	36	31	NA	3,041,538	2,281,154	6967	5225	NA		
2024	2,813,061	2,335,048	7,089	5,885	7,498	1,979,582	1,187,749	1,975	1,185	10,431	16,824	12,281	1269	926	NA		0	0	0	NA	2,364,317	1,773,238	5416	4062	NA		
2025	2,630,552	2,183,358	6,608	5,485	7,523	1,935,090	1,161,054	1,930	1,158	10,431	16,824	12,281	1269	926	NA		0	0	0	NA	2,257,218	1,692,914	5170	3878	NA		
2026	2,772,322	1,958,668	6,925	4,893	7,566	2,032,783	1,038,201	2,028	1,036	10,431	11,218	6,971	846	526	NA		0	0	0	NA	1,813,127	1,359,845	4153	3115	NA		
2027	3,131,168	1,766,970	7,701	4,346	7,684	2,007,806	819,064	2,003	817	10,431	11,218	5,568	846	420	NA		0	0	0	NA	1,448,217	1,086,163	3317	2488	NA		
2028	3,837,128	1,609,125	9,101	3,817	7,968	1,884,972	571,428	1,880	570	10,431	11,218	4,138	846	312	NA		0	0	0	NA	1,076,203	807,153	2465	1849	NA		
2029	3,818,234	1,243,091	9,060	2,950	7,965	1,839,753	432,985	1,835	432	10,431	11,218	3,212	846	242	NA		0	0	0	NA	835,510	626,632	1914	1435	NA		
2030	3,761,685	1,069,806	8,948	2,545	7,945	-	-	-	-	-	11,218	2,806	846	212	NA		0	0	0	NA	729,850	547,388	1672	1254	NA		
2031	3,745,028	961,374	8,895	2,283	7,957	-	-	-	-	-	11,218	2,533	846	191	NA		0	0	0	NA	658,792	494,094	1509	1132	NA		
2032	3,495,410	834,261	8,296	1,980	7,963	-	-	-	-	-	11,218	2,355	846	178	NA		0	0	0	NA	612,512	459,384	1403	1052	NA		
2033	3,406,727	723,270	8,093	1,718	7,955	-	-	-	-	-	11,218	2,095	846	158	NA		0	0	0	NA	544,847	408,635	1248	936	NA		
2034	3,261,723	610,122	7,738	1,448	7,966	-	-	-	-	-	11,218	1,846	846	139	NA		0	0	0	NA	480,043	360,033	1100	825	NA		
2035	3,221,129	506,061	7,660	1,203	7,948	-	-	-	-	-	11,218	1,550	846	117	NA		0	0	0	NA	403,186	302,389	924	693	NA		
2036	2,994,410	393,664	7,167	942	7,897	-	-	-	-	-	11,218	1,297	846	98	NA		0	0	0	NA	337,385	253,039	773	580	NA		
2037	2,951,594	293,577	6,997	696	7,973	-	-	-	-	-	11,218	981	846	74	NA		0	0	0	NA	255,256	191,442	585	439	NA		
2038	2,752,941	190,281	6,562	454	7,929	-	-	-	-	-	11,218	682	846	51	NA		0	0	0	NA	177,382	133,037	406	305	NA		
2039	2,654,609	93,708	6,359	224	7,890	-	-	-	-	-	11,218	348	846	26	NA		0	0	0	NA	90,592	67,944	208	156	NA		
2040	2,475,750	-	5,911	-	7,916	-	-	-	-	-	-	-	0	0	NA		0	0	0	NA	-	-	0	0	NA		
2041	2,459,879	-	5,833	-	7,970	-	-	-	-	-	-	-	0	0	NA		0	0	0	NA	-	-	0	0	NA		
2042	2,209,453	-	5,280	-	7,908	-	-	-	-	-	-	-	0	0	NA		0	0	0	NA	-	-	0	0	NA		
2043	2,300,472	-	5,490	-	7,919	-	-	-	-	-	-	-	0	0	NA		0	0	0	NA	-	-	0	0	NA		
sources	GHG model_linear decline	GHG model_linear decline	GHG model_linear decline	GHG model_linear decline	GHG model_linear decline	GHG model_linear decline	GHG model_linear decline	GHG model_linear decline	GHG model_linear decline	GHG model_linear decline	GHG model_linear decline	GHG model_linear decline	GHG model_linear decline	GHG model_linear decline	NA	GHG model_linear decline	GHG model_linear decline	GHG model_linear decline	GHG model_linear decline	NA	GHG model_linear decline	GHG model_linear decline	GHG model_linear decline	GHG model_linear decline	NA		

Instructions

For each of the portfolios listed in the "Portfolios" tab, provide the following information under the Reference Case over the study period and for at least three historical years
- Total forecasted annual revenue requirement to serve Oregon customers
- Total forecasted annual revenue requirement to serve Oregon customers, divided by the total forecasted retail sales in Oregon

UM 2225 Order Summary/Rubric references: J.5(a)-(b)

40 Portfolio40

Year	Total revenue requirement to serve Oregon customers **(energy supply costs only)** (million nominal $)	Total Oregon retail sales (MWh)	Total revenue requirement to serve Oregon customers, divided by the total retail sales in Oregon **(not projections of actual prices or rates)** (nominal $/MWh)
2019			
2020			
2021			
2022			
2023			
2024	1,658	19,683,694	$ 84
2025	1,829	20,345,758	$ 90
2026	1,772	21,049,381	$ 84
2027	1,864	21,729,469	$ 86
2028	1,853	22,549,039	$ 82
2029	2,273	22,929,458	$ 99
2030	2,585	23,384,384	$ 111
2031	3,084	23,882,221	$ 129
2032	3,656	24,479,610	$ 149
2033	4,078	25,008,275	$ 163
2034	4,532	25,688,499	$ 176
2035	5,219	26,420,813	$ 198
2036	6,040	27,260,994	$ 222
2037	7,022	27,944,115	$ 251
2038	8,351	28,693,478	$ 291
2039	9,958	29,506,392	$ 337
2040	10,807	30,422,407	$ 355
2041	13,788	31,097,455	$ 443
2042	14,344	31,814,924	$ 451
2043	14,667	32,532,336	$ 451
sources:	ART results - 100% tax incentive, 50% ownership.xlsx: Total Cost $k/1000	ART results - 100% tax incentive, 50% ownership.xlsx : Total Load MWh	ART results - 100% tax incentive, 50% ownership.xlsx : Total Cost/MWh

PGE note:

All cost figures do not include costs from the rest of the company such as grid modernization, A&G, wildfire mitigation, or T&D costs. Yearly cost impacts do not reflect actual customer prices because they do include proxy resource generation costs and do not incorporate cost changes across PGE.

Yearly costs are highly sensitive to assumptions of generic resources costs, especially after 2030. All 2030-2040 costs are modeling outputs only and should not be interpreted as projections of actual costs to serve customers due to uncertainty about actual technology availability and costs in that timeframe.

	1	Portfolio1		
Year		Total revenue requirement to serve Oregon customers (million nominal $)	Total Oregon retail sales (MWh)	Total revenue requirement to serve Oregon customers, divided by the total retail sales in Oregon (nominal $/MWh)
2019				
2020				
2021				
2022				
2023				
2024		1,658	19,683,694	$ 84
2025		1,829	20,345,758	$ 90
2026		1,772	21,049,381	$ 84
2027		1,857	21,729,469	$ 85
2028		1,848	22,549,039	$ 82
2029		2,236	22,929,458	$ 98
2030		2,874	23,384,384	$ 123
2031		3,756	23,882,221	$ 157
2032		4,614	24,479,610	$ 188
2033		5,186	25,008,275	$ 207
2034		5,785	25,688,499	$ 225
2035		6,574	26,420,813	$ 249
2036		7,655	27,260,994	$ 281
2037		9,056	27,944,115	$ 324
2038		10,562	28,693,478	$ 368
2039		12,087	29,506,392	$ 410
2040		13,595	30,422,407	$ 447
2041		14,736	31,097,455	$ 474
2042		15,290	31,814,924	$ 481
2043		15,608	32,532,336	$ 480

PGE note:

All cost figures do not include costs from the rest of the company such as grid modernization, A&G, wildfire mitigation, or T&D costs. Yearly cost impacts do not reflect actual customer prices because they do include proxy resource generation costs and do not incorporate cost changes across PGE.

Yearly costs are highly sensitive to assumptions of generic resources costs, especially after 2030. All 2030-2040 costs are modeling outputs only and should not be interpreted as projections of actual costs to serve customers due to uncertainty about actual technology availability and costs in that timeframe.

2 Portfolio2

Year	Total revenue requirement to serve Oregon customers (million nominal $)	Total Oregon retail sales (MWh)	Total revenue requirement to serve Oregon customers, divided by the total retail sales in Oregon (nominal $/MWh)
2019			
2020			
2021			
2022			
2023			
2024	1,658	19,683,694	$ 84
2025	1,829	20,345,758	$ 90
2026	1,784	21,049,381	$ 85
2027	1,883	21,729,469	$ 87
2028	2,198	22,549,039	$ 97
2029	2,810	22,929,458	$ 123
2030	3,089	23,384,384	$ 132
2031	3,723	23,882,221	$ 156
2032	4,586	24,479,610	$ 187
2033	5,155	25,008,275	$ 206
2034	5,754	25,688,499	$ 224
2035	6,549	26,420,813	$ 248
2036	7,653	27,260,994	$ 281
2037	9,108	27,944,115	$ 326
2038	10,590	28,693,478	$ 369
2039	12,092	29,506,392	$ 410
2040	13,571	30,422,407	$ 446
2041	14,713	31,097,455	$ 473
2042	15,266	31,814,924	$ 480
2043	15,584	32,532,336	$ 479

PGE note:

All cost figures do not include costs from the rest of the company such as grid modernization, A&G, wildfire mitigation, or T&D costs. Yearly cost impacts do not reflect actual customer prices because they do include proxy resource generation costs and do not incorporate cost changes across PGE.

Yearly costs are highly sensitive to assumptions of generic resources costs, especially after 2030. All 2030-2040 costs are modeling outputs only and should not be interpreted as projections of actual costs to serve customers due to uncertainty about actual technology availability and costs in that timeframe.

3 Portfolio3

Year	Total revenue requirement to serve Oregon customers (million nominal $)	Total Oregon retail sales (MWh)	Total revenue requirement to serve Oregon customers, divided by the total retail sales in Oregon (nominal $/MWh)
2019			
2020			
2021			
2022			
2023			
2024	1,658	19,683,694	$ 84
2025	1,829	20,345,758	$ 90
2026	1,748	21,049,381	$ 83
2027	1,863	21,729,469	$ 86
2028	1,846	22,549,039	$ 82
2029	1,910	22,929,458	$ 83
2030	2,501	23,384,384	$ 107
2031	3,784	23,882,221	$ 158
2032	4,637	24,479,610	$ 189
2033	5,206	25,008,275	$ 208
2034	5,808	25,688,499	$ 226
2035	6,594	26,420,813	$ 250
2036	7,664	27,260,994	$ 281
2037	9,062	27,944,115	$ 324
2038	10,538	28,693,478	$ 367
2039	12,049	29,506,392	$ 408
2040	13,612	30,422,407	$ 447
2041	14,754	31,097,455	$ 474
2042	15,308	31,814,924	$ 481
2043	15,626	32,532,336	$ 480

PGE note:

All cost figures do not include costs from the rest of the company such as grid modernization, A&G, wildfire mitigation, or T&D costs. Yearly cost impacts do not reflect actual customer prices because they do include proxy resource generation costs and do not incorporate cost changes across PGE.

Yearly costs are highly sensitive to assumptions of generic resources costs, especially after 2030. All 2030-2040 costs are modeling outputs only and should not be interpreted as projections of actual costs to serve customers due to uncertainty about actual technology availability and costs in that timeframe.

4 Portfolio4

Year	Total revenue requirement to serve Oregon customers (million nominal $)	Total Oregon retail sales (MWh)	Total revenue requirement to serve Oregon customers, divided by the total retail sales in Oregon (nominal $/MWh)
2019			
2020			
2021			
2022			
2023			
2024	1,658	19,683,694	$ 84
2025	1,829	20,345,758	$ 90
2026	1,772	21,049,381	$ 84
2027	1,857	21,729,469	$ 85
2028	1,848	22,549,039	$ 82
2029	2,236	22,929,458	$ 98
2030	2,874	23,384,384	$ 123
2031	3,822	23,882,221	$ 160
2032	4,818	24,479,610	$ 197
2033	5,537	25,008,275	$ 221
2034	6,290	25,688,499	$ 245
2035	7,219	26,420,813	$ 273
2036	8,288	27,260,994	$ 304
2037	9,511	27,944,115	$ 340
2038	10,893	28,693,478	$ 380
2039	12,230	29,506,392	$ 414
2040	13,543	30,422,407	$ 445
2041	14,578	31,097,455	$ 469
2042	15,145	31,814,924	$ 476
2043	15,475	32,532,336	$ 476

PGE note:

All cost figures do not include costs from the rest of the company such as grid modernization, A&G, wildfire mitigation, or T&D costs. Yearly cost impacts do not reflect actual customer prices because they do include proxy resource generation costs and do not incorporate cost changes across PGE.

Yearly costs are highly sensitive to assumptions of generic resources costs, especially after 2030. All 2030-2040 costs are modeling outputs only and should not be interpreted as projections of actual costs to serve customers due to uncertainty about actual technology availability and costs in that timeframe.

5 Portfolio5

Year	Total revenue requirement to serve Oregon customers (million nominal $)	Total Oregon retail sales (MWh)	Total revenue requirement to serve Oregon customers, divided by the total retail sales in Oregon (nominal $/MWh)
2019			
2020			
2021			
2022			
2023			
2024	1,658	19,683,694	$ 84
2025	1,829	20,345,758	$ 90
2026	1,772	21,049,381	$ 84
2027	1,874	21,729,469	$ 86
2028	2,243	22,549,039	$ 99
2029	3,044	22,929,458	$ 133
2030	3,329	23,384,384	$ 142
2031	3,972	23,882,221	$ 166
2032	4,838	24,479,610	$ 198
2033	5,406	25,008,275	$ 216
2034	6,001	25,688,499	$ 234
2035	6,784	26,420,813	$ 257
2036	7,865	27,260,994	$ 288
2037	9,303	27,944,115	$ 333
2038	10,846	28,693,478	$ 378
2039	12,268	29,506,392	$ 416
2040	13,556	30,422,407	$ 446
2041	14,582	31,097,455	$ 469
2042	15,140	31,814,924	$ 476
2043	15,459	32,532,336	$ 475

PGE note:

All cost figures do not include costs from the rest of the company such as grid modernization, A&G, wildfire mitigation, or T&D costs. Yearly cost impacts do not reflect actual customer prices because they do include proxy resource generation costs and do not incorporate cost changes across PGE.

Yearly costs are highly sensitive to assumptions of generic resources costs, especially after 2030. All 2030-2040 costs are modeling outputs only and should not be interpreted as projections of actual costs to serve customers due to uncertainty about actual technology availability and costs in that timeframe.

6 Portfolio6

Year	Total revenue requirement to serve Oregon customers (million nominal $)	Total Oregon retail sales (MWh)	Total revenue requirement to serve Oregon customers, divided by the total retail sales in Oregon (nominal $/MWh)
2019			
2020			
2021			
2022			
2023			
2024	1,658	19,683,694	$ 84
2025	1,829	20,345,758	$ 90
2026	1,897	21,049,381	$ 90
2027	1,962	21,729,469	$ 90
2028	1,953	22,549,039	$ 87
2029	2,291	22,929,458	$ 100
2030	2,858	23,384,384	$ 122
2031	3,534	23,882,221	$ 148
2032	4,357	24,479,610	$ 178
2033	4,934	25,008,275	$ 197
2034	5,540	25,688,499	$ 216
2035	6,325	26,420,813	$ 239
2036	7,404	27,260,994	$ 272
2037	8,801	27,944,115	$ 315
2038	10,318	28,693,478	$ 360
2039	11,844	29,506,392	$ 401
2040	13,351	30,422,407	$ 439
2041	14,494	31,097,455	$ 466
2042	15,048	31,814,924	$ 473
2043	15,367	32,532,336	$ 472

PGE note:

All cost figures do not include costs from the rest of the company such as grid modernization, A&G, wildfire mitigation, or T&D costs. Yearly cost impacts do not reflect actual customer prices because they do include proxy resource generation costs and do not incorporate cost changes across PGE.

Yearly costs are highly sensitive to assumptions of generic resources costs, especially after 2030. All 2030-2040 costs are modeling outputs only and should not be interpreted as projections of actual costs to serve customers due to uncertainty about actual technology availability and costs in that timeframe.

7 Portfolio7

Year	Total revenue requirement to serve Oregon customers (million nominal $)	Total Oregon retail sales (MWh)	Total revenue requirement to serve Oregon customers, divided by the total retail sales in Oregon (nominal $/MWh)
2019			
2020			
2021			
2022			
2023			
2024	1,658	19,683,694	$ 84
2025	1,829	20,345,758	$ 90
2026	1,772	21,049,381	$ 84
2027	1,857	21,729,469	$ 85
2028	1,848	22,549,039	$ 82
2029	2,236	22,929,458	$ 98
2030	2,874	23,384,384	$ 123
2031	3,756	23,882,221	$ 157
2032	4,614	24,479,610	$ 188
2033	5,186	25,008,275	$ 207
2034	5,785	25,688,499	$ 225
2035	6,574	26,420,813	$ 249
2036	7,655	27,260,994	$ 281
2037	9,056	27,944,115	$ 324
2038	10,562	28,693,478	$ 368
2039	12,087	29,506,392	$ 410
2040	13,595	30,422,407	$ 447
2041	14,736	31,097,455	$ 474
2042	15,290	31,814,924	$ 481
2043	15,608	32,532,336	$ 480

PGE note:

All cost figures do not include costs from the rest of the company such as grid modernization, A&G, wildfire mitigation, or T&D costs. Yearly cost impacts do not reflect actual customer prices because they do include proxy resource generation costs and do not incorporate cost changes across PGE.

Yearly costs are highly sensitive to assumptions of generic resources costs, especially after 2030. All 2030-2040 costs are modeling outputs only and should not be interpreted as projections of actual costs to serve customers due to uncertainty about actual technology availability and costs in that timeframe.

8 Portfolio8

Year	Total revenue requirement to serve Oregon customers (million nominal $)	Total Oregon retail sales (MWh)	Total revenue requirement to serve Oregon customers, divided by the total retail sales in Oregon (nominal $/MWh)
2019			
2020			
2021			
2022			
2023			
2024	1,658	19,683,694	$ 84
2025	1,829	20,345,758	$ 90
2026	1,840	21,049,381	$ 87
2027	1,966	21,729,469	$ 90
2028	1,984	22,549,039	$ 88
2029	2,413	22,929,458	$ 105
2030	3,252	23,384,384	$ 139
2031	3,505	23,882,221	$ 147
2032	4,326	24,479,610	$ 177
2033	4,899	25,008,275	$ 196
2034	5,507	25,688,499	$ 214
2035	6,294	26,420,813	$ 238
2036	7,373	27,260,994	$ 270
2037	8,770	27,944,115	$ 314
2038	10,287	28,693,478	$ 358
2039	11,813	29,506,392	$ 400
2040	13,319	30,422,407	$ 438
2041	14,461	31,097,455	$ 465
2042	15,015	31,814,924	$ 472
2043	15,335	32,532,336	$ 471

PGE note:

All cost figures do not include costs from the rest of the company such as grid modernization, A&G, wildfire mitigation, or T&D costs. Yearly cost impacts do not reflect actual customer prices because they do include proxy resource generation costs and do not incorporate cost changes across PGE.

Yearly costs are highly sensitive to assumptions of generic resources costs, especially after 2030. All 2030-2040 costs are modeling outputs only and should not be interpreted as projections of actual costs to serve customers due to uncertainty about actual technology availability and costs in that timeframe.

9 Portfolio9

Year	Total revenue requirement to serve Oregon customers (million nominal $)	Total Oregon retail sales (MWh)	Total revenue requirement to serve Oregon customers, divided by the total retail sales in Oregon (nominal $/MWh)
2019			
2020			
2021			
2022			
2023			
2024	1,658	19,683,694	$ 84
2025	1,829	20,345,758	$ 90
2026	1,772	21,049,381	$ 84
2027	1,857	21,729,469	$ 85
2028	1,848	22,549,039	$ 82
2029	2,236	22,929,458	$ 98
2030	2,874	23,384,384	$ 123
2031	3,756	23,882,221	$ 157
2032	4,614	24,479,610	$ 188
2033	5,186	25,008,275	$ 207
2034	5,785	25,688,499	$ 225
2035	6,574	26,420,813	$ 249
2036	7,655	27,260,994	$ 281
2037	9,056	27,944,115	$ 324
2038	10,562	28,693,478	$ 368
2039	12,087	29,506,392	$ 410
2040	13,595	30,422,407	$ 447
2041	14,736	31,097,455	$ 474
2042	15,290	31,814,924	$ 481
2043	15,608	32,532,336	$ 480

PGE note:

All cost figures do not include costs from the rest of the company such as grid modernization, A&G, wildfire mitigation, or T&D costs. Yearly cost impacts do not reflect actual customer prices because they do include proxy resource generation costs and do not incorporate cost changes across PGE.

Yearly costs are highly sensitive to assumptions of generic resources costs, especially after 2030. All 2030-2040 costs are modeling outputs only and should not be interpreted as projections of actual costs to serve customers due to uncertainty about actual technology availability and costs in that timeframe.

10 Portfolio10

Year	Total revenue requirement to serve Oregon customers (million nominal $)	Total Oregon retail sales (MWh)	Total revenue requirement to serve Oregon customers, divided by the total retail sales in Oregon (nominal $/MWh)
2019			
2020			
2021			
2022			
2023			
2024	1,658	19,683,694	$ 84
2025	1,829	20,345,758	$ 90
2026	1,769	21,049,381	$ 84
2027	1,855	21,729,469	$ 85
2028	1,844	22,549,039	$ 82
2029	2,241	22,929,458	$ 98
2030	2,884	23,384,384	$ 123
2031	3,780	23,882,221	$ 158
2032	4,638	24,479,610	$ 189
2033	5,209	25,008,275	$ 208
2034	5,809	25,688,499	$ 226
2035	6,601	26,420,813	$ 250
2036	7,687	27,260,994	$ 282
2037	9,093	27,944,115	$ 325
2038	10,587	28,693,478	$ 369
2039	12,111	29,506,392	$ 410
2040	13,619	30,422,407	$ 448
2041	14,761	31,097,455	$ 475
2042	15,314	31,814,924	$ 481
2043	15,631	32,532,336	$ 480

PGE note:

All cost figures do not include costs from the rest of the company such as grid modernization, A&G, wildfire mitigation, or T&D costs. Yearly cost impacts do not reflect actual customer prices because they do include proxy resource generation costs and do not incorporate cost changes across PGE.

Yearly costs are highly sensitive to assumptions of generic resources costs, especially after 2030. All 2030-2040 costs are modeling outputs only and should not be interpreted as projections of actual costs to serve customers due to uncertainty about actual technology availability and costs in that timeframe.

11 Portfolio11

Year	Total revenue requirement to serve Oregon customers (million nominal $)	Total Oregon retail sales (MWh)	Total revenue requirement to serve Oregon customers, divided by the total retail sales in Oregon (nominal $/MWh)
2019			
2020			
2021			
2022			
2023			
2024	1,658	19,683,694	$ 84
2025	1,829	20,345,758	$ 90
2026	1,760	21,049,381	$ 84
2027	1,847	21,729,469	$ 85
2028	1,832	22,549,039	$ 81
2029	2,255	22,929,458	$ 98
2030	2,918	23,384,384	$ 125
2031	3,871	23,882,221	$ 162
2032	4,714	24,479,610	$ 193
2033	5,285	25,008,275	$ 211
2034	5,885	25,688,499	$ 229
2035	6,676	26,420,813	$ 253
2036	7,763	27,260,994	$ 285
2037	9,169	27,944,115	$ 328
2038	10,659	28,693,478	$ 371
2039	12,183	29,506,392	$ 413
2040	13,691	30,422,407	$ 450
2041	14,832	31,097,455	$ 477
2042	15,385	31,814,924	$ 484
2043	15,701	32,532,336	$ 483

PGE note:

All cost figures do not include costs from the rest of the company such as grid modernization, A&G, wildfire mitigation, or T&D costs. Yearly cost impacts do not reflect actual customer prices because they do include proxy resource generation costs and do not incorporate cost changes across PGE.

Yearly costs are highly sensitive to assumptions of generic resources costs, especially after 2030. All 2030-2040 costs are modeling outputs only and should not be interpreted as projections of actual costs to serve customers due to uncertainty about actual technology availability and costs in that timeframe.

12 Portfolio12

Year	Total revenue requirement to serve Oregon customers (million nominal $)	Total Oregon retail sales (MWh)	Total revenue requirement to serve Oregon customers, divided by the total retail sales in Oregon (nominal $/MWh)
2019			
2020			
2021			
2022			
2023			
2024	1,658	19,683,694	$ 84
2025	1,829	20,345,758	$ 90
2026	1,768	21,049,381	$ 84
2027	1,853	21,729,469	$ 85
2028	1,841	22,549,039	$ 82
2029	2,245	22,929,458	$ 98
2030	2,896	23,384,384	$ 124
2031	3,787	23,882,221	$ 159
2032	4,645	24,479,610	$ 190
2033	5,216	25,008,275	$ 209
2034	5,815	25,688,499	$ 226
2035	6,605	26,420,813	$ 250
2036	7,688	27,260,994	$ 282
2037	9,091	27,944,115	$ 325
2038	10,591	28,693,478	$ 369
2039	12,116	29,506,392	$ 411
2040	13,624	30,422,407	$ 448
2041	14,765	31,097,455	$ 475
2042	15,318	31,814,924	$ 481
2043	15,636	32,532,336	$ 481

PGE note:

All cost figures do not include costs from the rest of the company such as grid modernization, A&G, wildfire mitigation, or T&D costs. Yearly cost impacts do not reflect actual customer prices because they do include proxy resource generation costs and do not incorporate cost changes across PGE.

Yearly costs are highly sensitive to assumptions of generic resources costs, especially after 2030. All 2030-2040 costs are modeling outputs only and should not be interpreted as projections of actual costs to serve customers due to uncertainty about actual technology availability and costs in that timeframe.

13 Portfolio13

Year	Total revenue requirement to serve Oregon customers (million nominal $)	Total Oregon retail sales (MWh)	Total revenue requirement to serve Oregon customers, divided by the total retail sales in Oregon (nominal $/MWh)
2019			
2020			
2021			
2022			
2023			
2024	1,658	19,683,694	$ 84
2025	1,829	20,345,758	$ 90
2026	1,772	21,049,381	$ 84
2027	1,857	21,729,469	$ 85
2028	1,848	22,549,039	$ 82
2029	2,236	22,929,458	$ 98
2030	2,874	23,384,384	$ 123
2031	3,756	23,882,221	$ 157
2032	4,614	24,479,610	$ 188
2033	5,186	25,008,275	$ 207
2034	5,785	25,688,499	$ 225
2035	6,574	26,420,813	$ 249
2036	7,655	27,260,994	$ 281
2037	9,056	27,944,115	$ 324
2038	10,562	28,693,478	$ 368
2039	12,087	29,506,392	$ 410
2040	13,595	30,422,407	$ 447
2041	14,736	31,097,455	$ 474
2042	15,290	31,814,924	$ 481
2043	15,608	32,532,336	$ 480

PGE note:

All cost figures do not include costs from the rest of the company such as grid modernization, A&G, wildfire mitigation, or T&D costs. Yearly cost impacts do not reflect actual customer prices because they do include proxy resource generation costs and do not incorporate cost changes across PGE.

Yearly costs are highly sensitive to assumptions of generic resources costs, especially after 2030. All 2030-2040 costs are modeling outputs only and should not be interpreted as projections of actual costs to serve customers due to uncertainty about actual technology availability and costs in that timeframe.

14 Portfolio14

Year	Total revenue requirement to serve Oregon customers (million nominal $)	Total Oregon retail sales (MWh)	Total revenue requirement to serve Oregon customers, divided by the total retail sales in Oregon (nominal $/MWh)
2019			
2020			
2021			
2022			
2023			
2024	1,658	19,683,694	$ 84
2025	1,829	20,345,758	$ 90
2026	1,737	21,049,381	$ 83
2027	1,810	21,729,469	$ 83
2028	1,836	22,549,039	$ 81
2029	1,888	22,929,458	$ 82
2030	1,933	23,384,384	$ 83
2031	2,059	23,882,221	$ 86
2032	2,174	24,479,610	$ 89
2033	2,207	25,008,275	$ 88
2034	2,243	25,688,499	$ 87
2035	2,341	26,420,813	$ 89
2036	2,425	27,260,994	$ 89
2037	2,603	27,944,115	$ 93
2038	3,274	28,693,478	$ 114
2039	4,242	29,506,392	$ 144
2040	5,226	30,422,407	$ 172
2041	5,943	31,097,455	$ 191
2042	5,933	31,814,924	$ 186
2043	5,927	32,532,336	$ 182

PGE note:

All cost figures do not include costs from the rest of the company such as grid modernization, A&G, wildfire mitigation, or T&D costs. Yearly cost impacts do not reflect actual customer prices because they do include proxy resource generation costs and do not incorporate cost changes across PGE.

Yearly costs are highly sensitive to assumptions of generic resources costs, especially after 2030. All 2030-2040 costs are modeling outputs only and should not be interpreted as projections of actual costs to serve customers due to uncertainty about actual technology availability and costs in that timeframe.

15 Portfolio15

Year	Total revenue requirement to serve Oregon customers (million nominal $)	Total Oregon retail sales (MWh)	Total revenue requirement to serve Oregon customers, divided by the total retail sales in Oregon (nominal $/MWh)
2019			
2020			
2021			
2022			
2023			
2024	1,658	19,683,694	$ 84
2025	1,829	20,345,758	$ 90
2026	1,772	21,049,381	$ 84
2027	1,856	21,729,469	$ 85
2028	2,022	22,549,039	$ 90
2029	2,693	22,929,458	$ 117
2030	3,435	23,384,384	$ 147
2031	4,471	23,882,221	$ 187
2032	5,315	24,479,610	$ 217
2033	5,884	25,008,275	$ 235
2034	6,479	25,688,499	$ 252
2035	7,264	26,420,813	$ 275
2036	8,343	27,260,994	$ 306
2037	9,736	27,944,115	$ 348
2038	11,226	28,693,478	$ 391
2039	12,745	29,506,392	$ 432
2040	14,258	30,422,407	$ 469
2041	15,395	31,097,455	$ 495
2042	15,944	31,814,924	$ 501
2043	16,258	32,532,336	$ 500

PGE note:

All cost figures do not include costs from the rest of the company such as grid modernization, A&G, wildfire mitigation, or T&D costs. Yearly cost impacts do not reflect actual customer prices because they do include proxy resource generation costs and do not incorporate cost changes across PGE.

Yearly costs are highly sensitive to assumptions of generic resources costs, especially after 2030. All 2030-2040 costs are modeling outputs only and should not be interpreted as projections of actual costs to serve customers due to uncertainty about actual technology availability and costs in that timeframe.

16 Portfolio16

Year	Total revenue requirement to serve Oregon customers (million nominal $)	Total Oregon retail sales (MWh)	Total revenue requirement to serve Oregon customers, divided by the total retail sales in Oregon (nominal $/MWh)
2019			
2020			
2021			
2022			
2023			
2024	1,658	19,683,694	$ 84
2025	1,829	20,345,758	$ 90
2026	1,748	21,049,381	$ 83
2027	1,863	21,729,469	$ 86
2028	1,859	22,549,039	$ 82
2029	1,939	22,929,458	$ 85
2030	1,962	23,384,384	$ 84
2031	2,093	23,882,221	$ 88
2032	2,229	24,479,610	$ 91
2033	2,265	25,008,275	$ 91
2034	2,320	25,688,499	$ 90
2035	2,400	26,420,813	$ 91
2036	2,452	27,260,994	$ 90
2037	2,715	27,944,115	$ 97
2038	3,432	28,693,478	$ 120
2039	4,430	29,506,392	$ 150
2040	5,427	30,422,407	$ 178
2041	6,117	31,097,455	$ 197
2042	6,102	31,814,924	$ 192
2043	6,106	32,532,336	$ 188

PGE note:

All cost figures do not include costs from the rest of the company such as grid modernization, A&G, wildfire mitigation, or T&D costs. Yearly cost impacts do not reflect actual customer prices because they do include proxy resource generation costs and do not incorporate cost changes across PGE.

Yearly costs are highly sensitive to assumptions of generic resources costs, especially after 2030. All 2030-2040 costs are modeling outputs only and should not be interpreted as projections of actual costs to serve customers due to uncertainty about actual technology availability and costs in that timeframe.

17 Portfolio17

Year	Total revenue requirement to serve Oregon customers (million nominal $)	Total Oregon retail sales (MWh)	Total revenue requirement to serve Oregon customers, divided by the total retail sales in Oregon (nominal $/MWh)
2019			
2020			
2021			
2022			
2023			
2024	1,658	19,683,694	$ 84
2025	1,829	20,345,758	$ 90
2026	1,748	21,049,381	$ 83
2027	1,863	21,729,469	$ 86
2028	1,858	22,549,039	$ 82
2029	1,939	22,929,458	$ 85
2030	1,963	23,384,384	$ 84
2031	2,094	23,882,221	$ 88
2032	2,229	24,479,610	$ 91
2033	2,273	25,008,275	$ 91
2034	2,316	25,688,499	$ 90
2035	2,403	26,420,813	$ 91
2036	2,429	27,260,994	$ 89
2037	2,508	27,944,115	$ 90
2038	2,889	28,693,478	$ 101
2039	3,726	29,506,392	$ 126
2040	5,201	30,422,407	$ 171
2041	5,713	31,097,455	$ 184
2042	5,702	31,814,924	$ 179
2043	5,720	32,532,336	$ 176

PGE note:

All cost figures do not include costs from the rest of the company such as grid modernization, A&G, wildfire mitigation, or T&D costs. Yearly cost impacts do not reflect actual customer prices because they do include proxy resource generation costs and do not incorporate cost changes across PGE.

Yearly costs are highly sensitive to assumptions of generic resources costs, especially after 2030. All 2030-2040 costs are modeling outputs only and should not be interpreted as projections of actual costs to serve customers due to uncertainty about actual technology availability and costs in that timeframe.

18 Portfolio18

Year	Total revenue requirement to serve Oregon customers (million nominal $)	Total Oregon retail sales (MWh)	Total revenue requirement to serve Oregon customers, divided by the total retail sales in Oregon (nominal $/MWh)
2019			
2020			
2021			
2022			
2023			
2024	1,658	19,683,694	$ 84
2025	1,829	20,345,758	$ 90
2026	1,772	21,049,381	$ 84
2027	1,864	21,729,469	$ 86
2028	1,848	22,549,039	$ 82
2029	2,234	22,929,458	$ 97
2030	2,873	23,384,384	$ 123
2031	3,755	23,882,221	$ 157
2032	4,613	24,479,610	$ 188
2033	5,185	25,008,275	$ 207
2034	5,785	25,688,499	$ 225
2035	6,573	26,420,813	$ 249
2036	7,654	27,260,994	$ 281
2037	9,072	27,944,115	$ 325
2038	10,561	28,693,478	$ 368
2039	12,087	29,506,392	$ 410
2040	13,594	30,422,407	$ 447
2041	14,736	31,097,455	$ 474
2042	15,289	31,814,924	$ 481
2043	15,607	32,532,336	$ 480

PGE note:

All cost figures do not include costs from the rest of the company such as grid modernization, A&G, wildfire mitigation, or T&D costs. Yearly cost impacts do not reflect actual customer prices because they do include proxy resource generation costs and do not incorporate cost changes across PGE.

Yearly costs are highly sensitive to assumptions of generic resources costs, especially after 2030. All 2030-2040 costs are modeling outputs only and should not be interpreted as projections of actual costs to serve customers due to uncertainty about actual technology availability and costs in that timeframe.

19 Portfolio19

Year	Total revenue requirement to serve Oregon customers (million nominal $)	Total Oregon retail sales (MWh)	Total revenue requirement to serve Oregon customers, divided by the total retail sales in Oregon (nominal $/MWh)
2019			
2020			
2021			
2022			
2023			
2024	1,658	19,683,694	$ 84
2025	1,829	20,345,758	$ 90
2026	1,772	21,049,381	$ 84
2027	1,856	21,729,469	$ 85
2028	2,022	22,549,039	$ 90
2029	2,499	22,929,458	$ 109
2030	2,864	23,384,384	$ 122
2031	3,750	23,882,221	$ 157
2032	4,608	24,479,610	$ 188
2033	5,176	25,008,275	$ 207
2034	5,775	25,688,499	$ 225
2035	6,564	26,420,813	$ 248
2036	7,646	27,260,994	$ 280
2037	9,039	27,944,115	$ 323
2038	10,550	28,693,478	$ 368
2039	12,079	29,506,392	$ 409
2040	13,587	30,422,407	$ 447
2041	14,728	31,097,455	$ 474
2042	15,282	31,814,924	$ 480
2043	15,600	32,532,336	$ 480

PGE note:

All cost figures do not include costs from the rest of the company such as grid modernization, A&G, wildfire mitigation, or T&D costs. Yearly cost impacts do not reflect actual customer prices because they do include proxy resource generation costs and do not incorporate cost changes across PGE.

Yearly costs are highly sensitive to assumptions of generic resources costs, especially after 2030. All 2030-2040 costs are modeling outputs only and should not be interpreted as projections of actual costs to serve customers due to uncertainty about actual technology availability and costs in that timeframe.

20 Portfolio20

Year	Total revenue requirement to serve Oregon customers (million nominal $)	Total Oregon retail sales (MWh)	Total revenue requirement to serve Oregon customers, divided by the total retail sales in Oregon (nominal $/MWh)
2019			
2020			
2021			
2022			
2023			
2024	1,658	19,683,694	$ 84
2025	1,829	20,345,758	$ 90
2026	1,986	21,049,381	$ 94
2027	2,015	21,729,469	$ 93
2028	1,998	22,549,039	$ 89
2029	2,430	22,929,458	$ 106
2030	3,081	23,384,384	$ 132
2031	3,846	23,882,221	$ 161
2032	4,608	24,479,610	$ 188
2033	5,182	25,008,275	$ 207
2034	5,790	25,688,499	$ 225
2035	6,575	26,420,813	$ 249
2036	7,675	27,260,994	$ 282
2037	9,053	27,944,115	$ 324
2038	10,574	28,693,478	$ 369
2039	12,101	29,506,392	$ 410
2040	13,610	30,422,407	$ 447
2041	14,746	31,097,455	$ 474
2042	15,299	31,814,924	$ 481
2043	15,618	32,532,336	$ 480

PGE note:

All cost figures do not include costs from the rest of the company such as grid modernization, A&G, wildfire mitigation, or T&D costs. Yearly cost impacts do not reflect actual customer prices because they do include proxy resource generation costs and do not incorporate cost changes across PGE.

Yearly costs are highly sensitive to assumptions of generic resources costs, especially after 2030. All 2030-2040 costs are modeling outputs only and should not be interpreted as projections of actual costs to serve customers due to uncertainty about actual technology availability and costs in that timeframe.

21 Portfolio21

Year	Total revenue requirement to serve Oregon customers (million nominal $)	Total Oregon retail sales (MWh)	Total revenue requirement to serve Oregon customers, divided by the total retail sales in Oregon (nominal $/MWh)
2019			
2020			
2021			
2022			
2023			
2024	1,658	19,683,694	$ 84
2025	1,829	20,345,758	$ 90
2026	2,018	21,049,381	$ 96
2027	2,044	21,729,469	$ 94
2028	2,043	22,549,039	$ 91
2029	2,566	22,929,458	$ 112
2030	3,266	23,384,384	$ 140
2031	3,994	23,882,221	$ 167
2032	4,709	24,479,610	$ 192
2033	5,285	25,008,275	$ 211
2034	5,892	25,688,499	$ 229
2035	6,676	26,420,813	$ 253
2036	7,764	27,260,994	$ 285
2037	9,145	27,944,115	$ 327
2038	10,674	28,693,478	$ 372
2039	12,199	29,506,392	$ 413
2040	13,708	30,422,407	$ 451
2041	14,838	31,097,455	$ 477
2042	15,390	31,814,924	$ 484
2043	15,710	32,532,336	$ 483

PGE note:

All cost figures do not include costs from the rest of the company such as grid modernization, A&G, wildfire mitigation, or T&D costs. Yearly cost impacts do not reflect actual customer prices because they do include proxy resource generation costs and do not incorporate cost changes across PGE.

Yearly costs are highly sensitive to assumptions of generic resources costs, especially after 2030. All 2030-2040 costs are modeling outputs only and should not be interpreted as projections of actual costs to serve customers due to uncertainty about actual technology availability and costs in that timeframe.

22 Portfolio22

Year	Total revenue requirement to serve Oregon customers (million nominal $)	Total Oregon retail sales (MWh)	Total revenue requirement to serve Oregon customers, divided by the total retail sales in Oregon (nominal $/MWh)
2019			
2020			
2021			
2022			
2023			
2024	1,658	19,683,694	$ 84
2025	1,829	20,345,758	$ 90
2026	1,772	21,049,381	$ 84
2027	1,856	21,729,469	$ 85
2028	2,090	22,549,039	$ 93
2029	2,446	22,929,458	$ 107
2030	3,097	23,384,384	$ 132
2031	3,858	23,882,221	$ 162
2032	4,619	24,479,610	$ 189
2033	5,194	25,008,275	$ 208
2034	5,802	25,688,499	$ 226
2035	6,587	26,420,813	$ 249
2036	7,666	27,260,994	$ 281
2037	9,058	27,944,115	$ 324
2038	10,585	28,693,478	$ 369
2039	12,112	29,506,392	$ 410
2040	13,621	30,422,407	$ 448
2041	14,757	31,097,455	$ 475
2042	15,309	31,814,924	$ 481
2043	15,627	32,532,336	$ 480

PGE note:

All cost figures do not include costs from the rest of the company such as grid modernization, A&G, wildfire mitigation, or T&D costs. Yearly cost impacts do not reflect actual customer prices because they do include proxy resource generation costs and do not incorporate cost changes across PGE.

Yearly costs are highly sensitive to assumptions of generic resources costs, especially after 2030. All 2030-2040 costs are modeling outputs only and should not be interpreted as projections of actual costs to serve customers due to uncertainty about actual technology availability and costs in that timeframe.

23 Portfolio23

Year	Total revenue requirement to serve Oregon customers (million nominal $)	Total Oregon retail sales (MWh)	Total revenue requirement to serve Oregon customers, divided by the total retail sales in Oregon (nominal $/MWh)
2019			
2020			
2021			
2022			
2023			
2024	1,658	19,683,694	$ 84
2025	1,829	20,345,758	$ 90
2026	1,772	21,049,381	$ 84
2027	1,856	21,729,469	$ 85
2028	2,125	22,549,039	$ 94
2029	2,569	22,929,458	$ 112
2030	3,271	23,384,384	$ 140
2031	3,999	23,882,221	$ 167
2032	4,714	24,479,610	$ 193
2033	5,290	25,008,275	$ 212
2034	5,898	25,688,499	$ 230
2035	6,682	26,420,813	$ 253
2036	7,760	27,260,994	$ 285
2037	9,152	27,944,115	$ 327
2038	10,679	28,693,478	$ 372
2039	12,205	29,506,392	$ 414
2040	13,713	30,422,407	$ 451
2041	14,843	31,097,455	$ 477
2042	15,395	31,814,924	$ 484
2043	15,714	32,532,336	$ 483

PGE note:

All cost figures do not include costs from the rest of the company such as grid modernization, A&G, wildfire mitigation, or T&D costs. Yearly cost impacts do not reflect actual customer prices because they do include proxy resource generation costs and do not incorporate cost changes across PGE.

Yearly costs are highly sensitive to assumptions of generic resources costs, especially after 2030. All 2030-2040 costs are modeling outputs only and should not be interpreted as projections of actual costs to serve customers due to uncertainty about actual technology availability and costs in that timeframe.

24 Portfolio24

Year	Total revenue requirement to serve Oregon customers (million nominal $)	Total Oregon retail sales (MWh)	Total revenue requirement to serve Oregon customers, divided by the total retail sales in Oregon (nominal $/MWh)
2019			
2020			
2021			
2022			
2023			
2024	1,658	19,683,694	$ 84
2025	1,829	20,345,758	$ 90
2026	1,772	21,049,381	$ 84
2027	1,858	21,729,469	$ 85
2028	1,846	22,549,039	$ 82
2029	2,235	22,929,458	$ 97
2030	2,869	23,384,384	$ 123
2031	3,822	23,882,221	$ 160
2032	4,665	24,479,610	$ 191
2033	5,235	25,008,275	$ 209
2034	5,837	25,688,499	$ 227
2035	6,630	26,420,813	$ 251
2036	7,717	27,260,994	$ 283
2037	9,126	27,944,115	$ 327
2038	10,613	28,693,478	$ 370
2039	12,138	29,506,392	$ 411
2040	13,647	30,422,407	$ 449
2041	14,789	31,097,455	$ 476
2042	15,342	31,814,924	$ 482
2043	15,659	32,532,336	$ 481

PGE note:

All cost figures do not include costs from the rest of the company such as grid modernization, A&G, wildfire mitigation, or T&D costs. Yearly cost impacts do not reflect actual customer prices because they do include proxy resource generation costs and do not incorporate cost changes across PGE.

Yearly costs are highly sensitive to assumptions of generic resources costs, especially after 2030. All 2030-2040 costs are modeling outputs only and should not be interpreted as projections of actual costs to serve customers due to uncertainty about actual technology availability and costs in that timeframe.

25 Portfolio25

Year	Total revenue requirement to serve Oregon customers (million nominal $)	Total Oregon retail sales (MWh)	Total revenue requirement to serve Oregon customers, divided by the total retail sales in Oregon (nominal $/MWh)
2019			
2020			
2021			
2022			
2023			
2024	1,658	19,683,694	$ 84
2025	1,829	20,345,758	$ 90
2026	1,772	21,049,381	$ 84
2027	1,857	21,729,469	$ 85
2028	1,848	22,549,039	$ 82
2029	2,236	22,929,458	$ 98
2030	2,874	23,384,384	$ 123
2031	3,756	23,882,221	$ 157
2032	4,614	24,479,610	$ 188
2033	5,186	25,008,275	$ 207
2034	5,785	25,688,499	$ 225
2035	6,574	26,420,813	$ 249
2036	7,655	27,260,994	$ 281
2037	9,056	27,944,115	$ 324
2038	10,562	28,693,478	$ 368
2039	12,087	29,506,392	$ 410
2040	13,595	30,422,407	$ 447
2041	14,736	31,097,455	$ 474
2042	15,290	31,814,924	$ 481
2043	15,608	32,532,336	$ 480

PGE note:

All cost figures do not include costs from the rest of the company such as grid modernization, A&G, wildfire mitigation, or T&D costs. Yearly cost impacts do not reflect actual customer prices because they do include proxy resource generation costs and do not incorporate cost changes across PGE.

Yearly costs are highly sensitive to assumptions of generic resources costs, especially after 2030. All 2030-2040 costs are modeling outputs only and should not be interpreted as projections of actual costs to serve customers due to uncertainty about actual technology availability and costs in that timeframe.

26 Portfolio26

Year	Total revenue requirement to serve Oregon customers (million nominal $)	Total Oregon retail sales (MWh)	Total revenue requirement to serve Oregon customers, divided by the total retail sales in Oregon (nominal $/MWh)
2019			
2020			
2021			
2022			
2023			
2024	1,658	19,683,694	$ 84
2025	1,829	20,345,758	$ 90
2026	1,772	21,049,381	$ 84
2027	1,857	21,729,469	$ 85
2028	1,848	22,549,039	$ 82
2029	2,101	22,929,458	$ 92
2030	2,528	23,384,384	$ 108
2031	3,453	23,882,221	$ 145
2032	4,311	24,479,610	$ 176
2033	4,898	25,008,275	$ 196
2034	5,512	25,688,499	$ 215
2035	6,364	26,420,813	$ 241
2036	7,522	27,260,994	$ 276
2037	8,931	27,944,115	$ 320
2038	10,441	28,693,478	$ 364
2039	11,990	29,506,392	$ 406
2040	13,595	30,422,407	$ 447
2041	14,836	31,097,455	$ 477
2042	15,388	31,814,924	$ 484
	15,705	32,532,336	$ 483

PGE note:

All cost figures do not include costs from the rest of the company such as grid modernization, A&G, wildfire mitigation, or T&D costs. Yearly cost impacts do not reflect actual customer prices because they do include proxy resource generation costs and do not incorporate cost changes across PGE.

Yearly costs are highly sensitive to assumptions of generic resources costs, especially after 2030. All 2030-2040 costs are modeling outputs only and should not be interpreted as projections of actual costs to serve customers due to uncertainty about actual technology availability and costs in that timeframe.

27 Portfolio27

Year	Total revenue requirement to serve Oregon customers (million nominal $)	Total Oregon retail sales (MWh)	Total revenue requirement to serve Oregon customers, divided by the total retail sales in Oregon (nominal $/MWh)
2019			
2020			
2021			
2022			
2023			
2024	1,658	19,683,694	$ 84
2025	1,829	20,345,758	$ 90
2026	1,772	21,049,381	$ 84
2027	1,857	21,729,469	$ 85
2028	1,848	22,549,039	$ 82
2029	2,218	22,929,458	$ 97
2030	2,905	23,384,384	$ 124
2031	3,700	23,882,221	$ 155
2032	4,504	24,479,610	$ 184
2033	5,081	25,008,275	$ 203
2034	5,685	25,688,499	$ 221
2035	6,463	26,420,813	$ 245
2036	7,539	27,260,994	$ 277
2037	8,938	27,944,115	$ 320
2038	10,457	28,693,478	$ 364
2039	12,018	29,506,392	$ 407
2040	13,525	30,422,407	$ 445
2041	14,664	31,097,455	$ 472
2042	15,220	31,814,924	$ 478
	15,541	32,532,336	$ 478

PGE note:

All cost figures do not include costs from the rest of the company such as grid modernization, A&G, wildfire mitigation, or T&D costs. Yearly cost impacts do not reflect actual customer prices because they do include proxy resource generation costs and do not incorporate cost changes across PGE.

Yearly costs are highly sensitive to assumptions of generic resources costs, especially after 2030. All 2030-2040 costs are modeling outputs only and should not be interpreted as projections of actual costs to serve customers due to uncertainty about actual technology availability and costs in that timeframe.

28 Portfolio28

Year	Total revenue requirement to serve Oregon customers (million nominal $)	Total Oregon retail sales (MWh)	Total revenue requirement to serve Oregon customers, divided by the total retail sales in Oregon (nominal $/MWh)
2019			
2020			
2021			
2022			
2023			
2024	1,658	19,683,694	$ 84
2025	1,829	20,345,758	$ 90
2026	1,772	21,049,381	$ 84
2027	1,857	21,729,469	$ 85
2028	1,848	22,549,039	$ 82
2029	2,236	22,929,458	$ 98
2030	2,874	23,384,384	$ 123
2031	3,704	23,882,221	$ 155
2032	4,361	24,479,610	$ 178
2033	4,423	25,008,275	$ 177
2034	4,753	25,688,499	$ 185
2035	5,556	26,420,813	$ 210
2036	6,652	27,260,994	$ 244
2037	8,065	27,944,115	$ 289
2038	9,568	28,693,478	$ 333
2039	11,093	29,506,392	$ 376
2040	12,611	30,422,407	$ 415
2041	13,750	31,097,455	$ 442
2042	14,341	31,814,924	$ 451
2043	14,637	32,532,336	$ 450

PGE note:

All cost figures do not include costs from the rest of the company such as grid modernization, A&G, wildfire mitigation, or T&D costs. Yearly cost impacts do not reflect actual customer prices because they do include proxy resource generation costs and do not incorporate cost changes across PGE.

Yearly costs are highly sensitive to assumptions of generic resources costs, especially after 2030. All 2030-2040 costs are modeling outputs only and should not be interpreted as projections of actual costs to serve customers due to uncertainty about actual technology availability and costs in that timeframe.

29 Portfolio29

Year	Total revenue requirement to serve Oregon customers (million nominal $)	Total Oregon retail sales (MWh)	Total revenue requirement to serve Oregon customers, divided by the total retail sales in Oregon (nominal $/MWh)
2019			
2020			
2021			
2022			
2023			
2024	1,658	19,683,694	$ 84
2025	1,829	20,345,758	$ 90
2026	1,772	21,049,381	$ 84
2027	1,857	21,729,469	$ 85
2028	1,798	22,549,039	$ 80
2029	2,350	22,929,458	$ 102
2030	3,009	23,384,384	$ 129
2031	3,779	23,882,221	$ 158
2032	4,552	24,479,610	$ 186
2033	5,126	25,008,275	$ 205
2034	5,732	25,688,499	$ 223
2035	6,514	26,420,813	$ 247
2036	7,589	27,260,994	$ 278
2037	8,988	27,944,115	$ 322
2038	10,506	28,693,478	$ 366
2039	12,031	29,506,392	$ 408
2040	13,540	30,422,407	$ 445
2041	14,675	31,097,455	$ 472
2042	15,228	31,814,924	$ 479
2043	15,546	32,532,336	$ 478

PGE note:

All cost figures do not include costs from the rest of the company such as grid modernization, A&G, wildfire mitigation, or T&D costs. Yearly cost impacts do not reflect actual customer prices because they do include proxy resource generation costs and do not incorporate cost changes across PGE.

Yearly costs are highly sensitive to assumptions of generic resources costs, especially after 2030. All 2030-2040 costs are modeling outputs only and should not be interpreted as projections of actual costs to serve customers due to uncertainty about actual technology availability and costs in that timeframe.

30 Portfolio30

Year	Total revenue requirement to serve Oregon customers (million nominal $)	Total Oregon retail sales (MWh)	Total revenue requirement to serve Oregon customers, divided by the total retail sales in Oregon (nominal $/MWh)
2019			
2020			
2021			
2022			
2023			
2024	1,658	19,683,694	$ 84
2025	1,829	20,345,758	$ 90
2026	1,772	21,049,381	$ 84
2027	1,857	21,729,469	$ 85
2028	1,729	22,549,039	$ 77
2029	2,401	22,929,458	$ 105
2030	3,067	23,384,384	$ 131
2031	3,783	23,882,221	$ 158
2032	4,485	24,479,610	$ 183
2033	5,063	25,008,275	$ 202
2034	5,672	25,688,499	$ 221
2035	6,452	26,420,813	$ 244
2036	7,525	27,260,994	$ 276
2037	8,925	27,944,115	$ 319
2038	10,446	28,693,478	$ 364
2039	11,973	29,506,392	$ 406
2040	13,484	30,422,407	$ 443
2041	14,615	31,097,455	$ 470
2042	15,171	31,814,924	$ 477
2043	15,492	32,532,336	$ 476

PGE note:

All cost figures do not include costs from the rest of the company such as grid modernization, A&G, wildfire mitigation, or T&D costs. Yearly cost impacts do not reflect actual customer prices because they do include proxy resource generation costs and do not incorporate cost changes across PGE.

Yearly costs are highly sensitive to assumptions of generic resources costs, especially after 2030. All 2030-2040 costs are modeling outputs only and should not be interpreted as projections of actual costs to serve customers due to uncertainty about actual technology availability and costs in that timeframe.

31 Portfolio31

Year	Total revenue requirement to serve Oregon customers (million nominal $)	Total Oregon retail sales (MWh)	Total revenue requirement to serve Oregon customers, divided by the total retail sales in Oregon (nominal $/MWh)
2019			
2020			
2021			
2022			
2023			
2024	1,658	19,683,694	$ 84
2025	1,829	20,345,758	$ 90
2026	1,772	21,049,381	$ 84
2027	1,857	21,729,469	$ 85
2028	1,848	22,549,039	$ 82
2029	2,236	22,929,458	$ 98
2030	2,874	23,384,384	$ 123
2031	3,640	23,882,221	$ 152
2032	4,351	24,479,610	$ 178
2033	4,928	25,008,275	$ 197
2034	5,530	25,688,499	$ 215
2035	6,320	26,420,813	$ 239
2036	7,404	27,260,994	$ 272
2037	8,809	27,944,115	$ 315
2038	10,318	28,693,478	$ 360
2039	11,846	29,506,392	$ 401
2040	13,355	30,422,407	$ 439
2041	14,483	31,097,455	$ 466
2042	15,038	31,814,924	$ 473
2043	15,358	32,532,336	$ 472

PGE note:

All cost figures do not include costs from the rest of the company such as grid modernization, A&G, wildfire mitigation, or T&D costs. Yearly cost impacts do not reflect actual customer prices because they do include proxy resource generation costs and do not incorporate cost changes across PGE.

Yearly costs are highly sensitive to assumptions of generic resources costs, especially after 2030. All 2030-2040 costs are modeling outputs only and should not be interpreted as projections of actual costs to serve customers due to uncertainty about actual technology availability and costs in that timeframe.

32 Portfolio32

Year	Total revenue requirement to serve Oregon customers (million nominal $)	Total Oregon retail sales (MWh)	Total revenue requirement to serve Oregon customers, divided by the total retail sales in Oregon (nominal $/MWh)
2019			
2020			
2021			
2022			
2023			
2024	1,658	19,683,694	$ 84
2025	1,829	20,345,758	$ 90
2026	1,772	21,049,381	$ 84
2027	1,857	21,729,469	$ 85
2028	1,848	22,549,039	$ 82
2029	2,236	22,929,458	$ 98
2030	2,874	23,384,384	$ 123
2031	3,756	23,882,221	$ 157
2032	4,614	24,479,610	$ 188
2033	5,186	25,008,275	$ 207
2034	5,785	25,688,499	$ 225
2035	6,574	26,420,813	$ 249
2036	7,655	27,260,994	$ 281
2037	9,056	27,944,115	$ 324
2038	10,562	28,693,478	$ 368
2039	12,087	29,506,392	$ 410
2040	13,595	30,422,407	$ 447
2041	14,736	31,097,455	$ 474
2042	15,290	31,814,924	$ 481
2043	15,608	32,532,336	$ 480

PGE note:

All cost figures do not include costs from the rest of the company such as grid modernization, A&G, wildfire mitigation, or T&D costs. Yearly cost impacts do not reflect actual customer prices because they do include proxy resource generation costs and do not incorporate cost changes across PGE.

Yearly costs are highly sensitive to assumptions of generic resources costs, especially after 2030. All 2030-2040 costs are modeling outputs only and should not be interpreted as projections of actual costs to serve customers due to uncertainty about actual technology availability and costs in that timeframe.

33 Portfolio33

Year	Total revenue requirement to serve Oregon customers (million nominal $)	Total Oregon retail sales (MWh)	Total revenue requirement to serve Oregon customers, divided by the total retail sales in Oregon (nominal $/MWh)
2019			
2020			
2021			
2022			
2023			
2024	1,639	19,683,694	$ 83
2025	1,794	20,345,758	$ 88
2026	1,752	21,049,381	$ 83
2027	1,823	21,729,469	$ 84
2028	1,808	22,549,039	$ 80
2029	1,868	22,929,458	$ 81
2030	1,938	23,384,384	$ 83
2031	2,493	23,882,221	$ 104
2032	3,589	24,479,610	$ 147
2033	4,332	25,008,275	$ 173
2034	4,859	25,688,499	$ 189
2035	5,584	26,420,813	$ 211
2036	6,159	27,260,994	$ 226
2037	6,950	27,944,115	$ 249
2038	7,941	28,693,478	$ 277
2039	9,297	29,506,392	$ 315
2040	10,805	30,422,407	$ 355
2041	12,278	31,097,455	$ 395
2042	13,464	31,814,924	$ 423
2043	14,050	32,532,336	$ 432

PGE note:

All cost figures do not include costs from the rest of the company such as grid modernization, A&G, wildfire mitigation, or T&D costs. Yearly cost impacts do not reflect actual customer prices because they do include proxy resource generation costs and do not incorporate cost changes across PGE.

Yearly costs are highly sensitive to assumptions of generic resources costs, especially after 2030. All 2030-2040 costs are modeling outputs only and should not be interpreted as projections of actual costs to serve customers due to uncertainty about actual technology availability and costs in that timeframe.

34 Portfolio34

Year	Total revenue requirement to serve Oregon customers (million nominal $)	Total Oregon retail sales (MWh)	Total revenue requirement to serve Oregon customers, divided by the total retail sales in Oregon (nominal $/MWh)
2019			
2020			
2021			
2022			
2023			
2024	1,658	19,683,694	$ 84
2025	1,829	20,345,758	$ 90
2026	1,781	21,049,381	$ 85
2027	1,857	21,729,469	$ 85
2028	1,850	22,549,039	$ 82
2029	2,198	22,929,458	$ 96
2030	2,800	23,384,384	$ 120
2031	4,460	23,882,221	$ 187
2032	6,060	24,479,610	$ 248
2033	6,364	25,008,275	$ 254
2034	7,168	25,688,499	$ 279
2035	8,225	26,420,813	$ 311
2036	8,792	27,260,994	$ 323
2037	9,761	27,944,115	$ 349
2038	11,273	28,693,478	$ 393
2039	12,637	29,506,392	$ 428
2040	13,889	30,422,407	$ 457
2041	15,493	31,097,455	$ 498
2042	16,518	31,814,924	$ 519
2043	16,806	32,532,336	$ 517

PGE note:

All cost figures do not include costs from the rest of the company such as grid modernization, A&G, wildfire mitigation, or T&D costs. Yearly cost impacts do not reflect actual customer prices because they do include proxy resource generation costs and do not incorporate cost changes across PGE.

Yearly costs are highly sensitive to assumptions of generic resources costs, especially after 2030. All 2030-2040 costs are modeling outputs only and should not be interpreted as projections of actual costs to serve customers due to uncertainty about actual technology availability and costs in that timeframe.

35 Portfolio35

Year	Total revenue requirement to serve Oregon customers (million nominal $)	Total Oregon retail sales (MWh)	Total revenue requirement to serve Oregon customers, divided by the total retail sales in Oregon (nominal $/MWh)
2019			
2020			
2021			
2022			
2023			
2024	1,658	19,683,694	$ 84
2025	1,829	20,345,758	$ 90
2026	1,772	21,049,381	$ 84
2027	1,864	21,729,469	$ 86
2028	1,853	22,549,039	$ 82
2029	2,273	22,929,458	$ 99
2030	2,585	23,384,384	$ 111
2031	3,084	23,882,221	$ 129
2032	3,656	24,479,610	$ 149
2033	4,078	25,008,275	$ 163
2034	4,532	25,688,499	$ 176
2035	5,244	26,420,813	$ 198
2036	6,323	27,260,994	$ 232
2037	7,780	27,944,115	$ 278
2038	9,300	28,693,478	$ 324
2039	10,848	29,506,392	$ 368
2040	12,374	30,422,407	$ 407
2041	13,509	31,097,455	$ 434
2042	14,066	31,814,924	$ 442
2043	14,386	32,532,336	$ 442

PGE note:

All cost figures do not include costs from the rest of the company such as grid modernization, A&G, wildfire mitigation, or T&D costs. Yearly cost impacts do not reflect actual customer prices because they do include proxy resource generation costs and do not incorporate cost changes across PGE.

Yearly costs are highly sensitive to assumptions of generic resources costs, especially after 2030. All 2030-2040 costs are modeling outputs only and should not be interpreted as projections of actual costs to serve customers due to uncertainty about actual technology availability and costs in that timeframe.

36 Portfolio36

Year	Total revenue requirement to serve Oregon customers (million nominal $)	Total Oregon retail sales (MWh)	Total revenue requirement to serve Oregon customers, divided by the total retail sales in Oregon (nominal $/MWh)
2019			
2020			
2021			
2022			
2023			
2024	1,658	19,683,694	$ 84
2025	1,829	20,345,758	$ 90
2026	1,828	21,049,381	$ 87
2027	1,931	21,729,469	$ 89
2028	1,960	22,549,039	$ 87
2029	2,280	22,929,458	$ 99
2030	2,984	23,384,384	$ 128
2031	3,546	23,882,221	$ 148
2032	4,371	24,479,610	$ 179
2033	4,948	25,008,275	$ 198
2034	5,553	25,688,499	$ 216
2035	6,340	26,420,813	$ 240
2036	7,419	27,260,994	$ 272
2037	8,816	27,944,115	$ 315
2038	10,332	28,693,478	$ 360
2039	11,858	29,506,392	$ 402
2040	13,366	30,422,407	$ 439
2041	14,508	31,097,455	$ 467
2042	15,061	31,814,924	$ 473
2043	15,381	32,532,336	$ 473

PGE note:

All cost figures do not include costs from the rest of the company such as grid modernization, A&G, wildfire mitigation, or T&D costs. Yearly cost impacts do not reflect actual customer prices because they do include proxy resource generation costs and do not incorporate cost changes across PGE.

Yearly costs are highly sensitive to assumptions of generic resources costs, especially after 2030. All 2030-2040 costs are modeling outputs only and should not be interpreted as projections of actual costs to serve customers due to uncertainty about actual technology availability and costs in that timeframe.

37 Portfolio37

Year	Total revenue requirement to serve Oregon customers (million nominal $)	Total Oregon retail sales (MWh)	Total revenue requirement to serve Oregon customers, divided by the total retail sales in Oregon (nominal $/MWh)
2019			
2020			
2021			
2022			
2023			
2024	1,658	19,683,694	$ 84
2025	1,829	20,345,758	$ 90
2026	1,800	21,049,381	$ 86
2027	1,885	21,729,469	$ 87
2028	1,879	22,549,039	$ 83
2029	2,239	22,929,458	$ 98
2030	2,869	23,384,384	$ 123
2031	3,649	23,882,221	$ 153
2032	4,489	24,479,610	$ 183
2033	5,072	25,008,275	$ 203
2034	5,670	25,688,499	$ 221
2035	6,456	26,420,813	$ 244
2036	7,534	27,260,994	$ 276
2037	8,931	27,944,115	$ 320
2038	10,447	28,693,478	$ 364
2039	11,973	29,506,392	$ 406
2040	13,479	30,422,407	$ 443
2041	14,622	31,097,455	$ 470
2042	15,176	31,814,924	$ 477
2043	15,495	32,532,336	$ 476

PGE note:

All cost figures do not include costs from the rest of the company such as grid modernization, A&G, wildfire mitigation, or T&D costs. Yearly cost impacts do not reflect actual customer prices because they do include proxy resource generation costs and do not incorporate cost changes across PGE.

Yearly costs are highly sensitive to assumptions of generic resources costs, especially after 2030. All 2030-2040 costs are modeling outputs only and should not be interpreted as projections of actual costs to serve customers due to uncertainty about actual technology availability and costs in that timeframe.

38 Portfolio38

Year	Total revenue requirement to serve Oregon customers (million nominal $)	Total Oregon retail sales (MWh)	Total revenue requirement to serve Oregon customers, divided by the total retail sales in Oregon (nominal $/MWh)
2019			
2020			
2021			
2022			
2023			
2024	1,658	19,683,694	$ 84
2025	1,829	20,345,758	$ 90
2026	2,177	21,049,381	$ 103
2027	2,150	21,729,469	$ 99
2028	2,141	22,549,039	$ 95
2029	2,561	22,929,458	$ 112
2030	3,008	23,384,384	$ 129
2031	3,467	23,882,221	$ 145
2032	4,281	24,479,610	$ 175
2033	4,852	25,008,275	$ 194
2034	5,461	25,688,499	$ 213
2035	6,248	26,420,813	$ 236
2036	7,327	27,260,994	$ 269
2037	8,724	27,944,115	$ 312
2038	10,241	28,693,478	$ 357
2039	11,767	29,506,392	$ 399
2040	13,273	30,422,407	$ 436
2041	14,415	31,097,455	$ 464
2042	14,969	31,814,924	$ 471
2043	15,289	32,532,336	$ 470

PGE note:

All cost figures do not include costs from the rest of the company such as grid modernization, A&G, wildfire mitigation, or T&D costs. Yearly cost impacts do not reflect actual customer prices because they do include proxy resource generation costs and do not incorporate cost changes across PGE.

Yearly costs are highly sensitive to assumptions of generic resources costs, especially after 2030. All 2030-2040 costs are modeling outputs only and should not be interpreted as projections of actual costs to serve customers due to uncertainty about actual technology availability and costs in that timeframe.

39 Portfolio39

Year	Total revenue requirement to serve Oregon customers (million nominal $)	Total Oregon retail sales (MWh)	Total revenue requirement to serve Oregon customers, divided by the total retail sales in Oregon (nominal $/MWh)
2019			
2020			
2021			
2022			
2023			
2024	1,658	19,683,694	$ 84
2025	1,829	20,345,758	$ 90
2026	1,897	21,049,381	$ 90
2027	1,962	21,729,469	$ 90
2028	1,957	22,549,039	$ 87
2029	2,298	22,929,458	$ 100
2030	2,625	23,384,384	$ 112
2031	2,916	23,882,221	$ 122
2032	3,493	24,479,610	$ 143
2033	3,908	25,008,275	$ 156
2034	4,352	25,688,499	$ 169
2035	5,007	26,420,813	$ 190
2036	6,044	27,260,994	$ 222
2037	7,505	27,944,115	$ 269
2038	9,038	28,693,478	$ 315
2039	10,587	29,506,392	$ 359
2040	12,114	30,422,407	$ 398
2041	13,251	31,097,455	$ 426
2042	13,810	31,814,924	$ 434
2043	14,133	32,532,336	$ 434

PGE note:

All cost figures do not include costs from the rest of the company such as grid modernization, A&G, wildfire mitigation, or T&D costs. Yearly cost impacts do not reflect actual customer prices because they do include proxy resource generation costs and do not incorporate cost changes across PGE.

Yearly costs are highly sensitive to assumptions of generic resources costs, especially after 2030. All 2030-2040 costs are modeling outputs only and should not be interpreted as projections of actual costs to serve customers due to uncertainty about actual technology availability and costs in that timeframe.

Instructions

Provide, for renewable energy generated by or contracted to the utility in the Preferred Portfolio under the Reference Case over the entire analysis horizon (at least 20 years), the following information:.

- RECs that are expected to be retired on behalf of Oregon customer load for RPS compliance in Oregon
- RECs that are expected to be retired on behalf of Oregon customer load for voluntary sales
- RECs that are expected to be retired on behalf of customer load in a different state where the utility serves customers (for either compliance or voluntary sales)
- RECs that are expected to be banked for future Oregon compliance
- RECs that are expected to be banked for compliance in a different state
- The approximate number of MWhs not associated with RECs reported above that are generated from renewable energy technologies

UM 2225 Order Summary/Rubric references: J.6(a)-(b)

Year	Portfolio40 Renewable Energy Credits (MWh) Retired for Oregon RPS compliance	Renewable Energy Credits (MWh) Retired for Oregon customer voluntary sales	Renewable Energy Credits (MWh) Retired in another state	Renewable Energy Credits (MWh) Banked for future Oregon RPS compliance	Renewable Energy Credits (MWh) Banked for future compliance in another state	Additional renewable generation (MWh)
2023	3,045,309	748,892	n/a	n/a	n/a	n/a
2024	3,159,254	2,030,532	n/a	787,939	n/a	n/a
2025	4,412,366	2,031,486	n/a	987,384	n/a	n/a
2026	4,564,405	2,042,553	n/a	4,361,737	n/a	n/a
2027	4,711,361	2,053,642	n/a	5,761,390	n/a	n/a
2028	4,888,474	2,069,373	n/a	7,237,299	n/a	n/a
2029	4,970,672	2,075,891	n/a	9,438,290	n/a	n/a
2030	6,593,765	2,087,049	n/a	9,343,955	n/a	n/a
2031	6,733,282	2,082,554	n/a	10,943,413	n/a	n/a
2032	6,900,748	2,082,757	n/a	11,844,167	n/a	n/a
2033	7,048,822	2,073,631	n/a	12,728,771	n/a	n/a
2034	7,239,407	2,069,203	n/a	13,703,051	n/a	n/a
2035	9,571,600	2,064,798	n/a	12,846,068	n/a	n/a
2036	9,874,322	2,065,061	n/a	13,927,231	n/a	n/a
2037	10,120,304	1,633,236	n/a	15,482,105	n/a	n/a
2038	10,390,233	1,403,058	n/a	16,720,965	n/a	n/a
2039	10,683,039	1,188,049	n/a	18,023,043	n/a	n/a
2040	12,236,736	1,191,304	n/a	18,200,878	n/a	n/a
2041	12,506,819	1,188,049	n/a	19,468,319	n/a	n/a
2042	12,778,443	1,188,049	n/a	20,045,803	n/a	n/a
2043	13,056,505	1,188,049	n/a	20,503,055	n/a	n/a
sources: ɔligations by year from Portfolio Summary*hours in year		RECs of Community Solar PPA, GFI, GFI Phase II (Voluntary RECs)	n/a	RECs 5yrgenerated + Infinite RECs - retired RECs for Oregon RPS compliance - GFIs	n/a	n/a