Appendix F. DSP and IRP interactions

This appendix provides answers to common participant questions around DSP and IRP interactions with respect to DER modeling.

1. How does PGE ensure the IRP process accurately accounts for the contribution of DERs to minimize supply side investment?

   - To understand the system- level and locational impacts of the DERs, PGE has created a new bottom-up forecasting model, named AdopDER. AdopDER calculates the technical and economic potential of DER programs, and the market adoption of electric vehicles (EVs), photovoltaics (PVs), building electrification measures, and storage at the site level. AdopDER is a true bottom-up forecasting model that simulates decision making at the site level accounting for economics and site constraints such as panel capacity, availability of a garage, and other building characteristics to determine the probability of DER adoption.

   - The AdopDER model leverages state of the art tools from the National Labs such as the National Renewable Energy Laboratory (NREL). PGE believes these state-of-the-art tools combined with the open-source nature of the AdopDER model provides the most flexibility in modeling different DER characteristics comprehensively in a collaborative manner with stakeholders and third-party experts. Additionally, PGE expects the tools to evolve to better support the IRP process by leveraging the in-built stochasticity to perform complex probabilistic simulations to determine the adoption probabilities under different scenarios providing new insights on the range of contributions from DERs under each scenario.

   - With this new model, we have improved our in-house capabilities enabling repeatability, scalability, and frequency of understanding DER adoption at the site level. In Part 2 of the DSP, expected to be filed in August 2022, PGE will elaborate on these results by highlighting the more granular impacts such as locational proliferation by each DER.

   - PGE notes that front-of-meter investments from DER developers cannot be captured within AdopDER and will likely be reflected through interconnection request data that is integrated into the planning processes.

   - A combination of the AdopDER's mathematical approach, and its open framework, ensuring a robust peer review process, enables PGE to accurately address the impacts of DERs in the IRP.

2. In modeling the DER programs, how is PGE ensuring DERs are valued accurately relative to supply side option?

   - As noted in **Section 8.2**, PGE is evolving its cost-effectiveness methodology, aligning it with the National Standard Practice Manual and regional approaches. With this update, PGE will create a transparent method of valuing DERs and accounting for their societal benefits. This methodology will be integrated with AdopDER enabling stakeholders to see a clear relationship between DER valuation and its adoption.

     Additionally, the AdopDER model also develops supply curves for non-cost-effective DERs that will be fed into the IRP's ROSE-E resource optimization engine. PGE believes this approach, addressing cost-effective and non-cost effective DERs, provide a platform that comprehensively accounts for DER value.

3. How does PGE ensure DERs are evaluated through robust scenarios accounting for variations in weather and cost curves?

   - PGE's approach to the AdopDER model was to align the load scenarios with the IRP process. Additionally, the model also runs three adoption scenarios based on different cost curves and policy futures. Combined, these provide nine outputs based on different load and adoption scenarios. Additionally, AdopDER has significant stochasticity impacting the analytics at the site and system level. Combined, we feel this provides a robust platform to ensure PGE is accounting for different futures. Over time, as we establish clear feedback loops of data, the model outputs will become more robust.

4. How does PGE account for the interactive effects of DERs within the IRP?

   - Determining the net impact of DERs at a site is a complex analytical process considering the interactive effects, which are accounted within AdopDER. PGE models programmatic measures with their expected interactive effects at the site level. Additionally, during the IRP process, DERs are considered part of the portfolio mix to determine the Effective Load Carrying Capability (ELCC) using the last-in method to determine the interactive effects of DERs with other supply-side resources accounting for portfolio interactive effects as well.

5. How does PGE holistically account for the impacts of transportation electrification on the grid, specifically focusing on impacts on the distribution and transmission system and resource adequacy?

   - The AdopDER tool provides a locational forecast of the market and programmatic adoption of EVs. These include customers that would opt for managed charging and other DER programs. This forecast is then integrated with the distribution planning process to determine the distribution system impact. Within the distribution planning process, transmission impacts are communicated to the transmission planning team ensuring transmission impacts of EVs are accounted for.

   - From an IRP perspective, the AdopDER tool provides market adoption and programmatic adoption of EVs, each with their respective load profile. The aggregated impact at the system level is calculated to determine peak impact and is integrated within the load forecast. The load forecast is the first step in determining resource adequacy needs. In cases where sites with EVs include other DERs, each DERs impact is individually calculated at the system level and provided to the IRP team.