**Portland General Electric**
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September 27, 2019

**Email**
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Public Utility Commission of Oregon
201 High Street, S.E., Suite 100
P.O. Box 1088
Salem, OR 97308-1088

**Attn: Commission Filing Center**

Re: UM 1514 Navigant Evaluation of PGE's Energy Partner Pilot for the Winter 2017/2018, Summer 2018, and Winter 2018/2019 Seasons

Enclosed is Navigant's evaluation of Portland General Electric Company's (PGE's) Energy Partner Pilot. PGE contracted with Navigant to provide an impact evaluation (quantification of demand reduction impacts to double-check the Demand Response Management System [DRMS]) and a process evaluation (performance feedback and recommendations) for the Non-Residential Direct Load Control (DLC) Pilot. This report describes the impact and process evaluation findings for PGE's Energy Partner program over the Winter 2017/2018, Summer 2018, and Winter 2018/2019 seasons.

Energy Partner is intended to test the effectiveness of Non-Residential DLC demand response (DR) and how well it provides capacity benefits and reduces load when implemented. The pilot is also testing processes, methodologies and incentives to optimize the program design and increase customer engagement and participation levels. To perform the evaluation, Navigant segmented the work into two main tasks: process and impact evaluations. These are both provided in the enclosed evaluation.

Process Evaluation

The process evaluation assesses how well Energy Partner is operating and identifies beneficial modifications in terms of program rules, implementation and administration. Navigant conducted seasonal interviews with PGE staff, the contracted program implementation team, existing participants, and non-participants to inform the process evaluation findings.

Impact Evaluation

The impact evaluation is to validate the estimates of load curtailment provided by the implementation vendor (CLEAResult) for the medium/large (M/L) customers. Navigant supported this evaluation by replicating and validating the impact calculations for settlement payment performed by CLEAResult. Navigant submitted formal data requests to PGE to obtain both AMI

interval data and Pelican data. Data were used to calculate customer-specific baseline loads (CBLs); these CBLs were then compared to each customer's actual average load during the event hours.

The Navigant evaluation reported that:

- PGE has achieved 11.8 MW of demand reduction as of the winter 2018-19 season, which is 44% of the 27 MW demand response goal for 2020.
- Achieving the 2020-megawatt target will be challenging and Navigant has made several marketing/acquisition suggestions that PGE and CLEAResult have incorporated into the selling process.
- Participants are generally very satisfied with the program as it is currently implemented. The new program design focuses on program flexibility and has given customers more options for participation.
- The program implementation team is working well together but there is room for improvement to complete integration work at a faster pace. Integration took longer than expected because of the complexity of the systems. This caused delays in the launch of the customer facing web portal, which was one of the key features of participation for customers. PGE, CLEAResult and Enbala (the DRMS provided) have established processes to improve communications and a problem ticketing platform to quickly address issues as they are found.
- The coordination of the PGE Key Customer Managers (KCM) and the CLEAResult sales team is working well. Early in the program PGE and CLEAResult set-up a process for the rules of engagement for managed customers. The two teams have worked well together and the KCM's have received positive feedback about the program from customers. Navigant identified the need for additional training and marketing materials for KCMs, which has been scheduled and incorporated.

Based on the Navigant findings and recommendations for increasing demand savings and customer satisfaction, PGE is evaluating additional enhancements to the program that will further support PGE's goal of at least 77 megawatts of DR by end-of-year 2020. The offerings will likely include the following:

- Coordinating PGE's Schedule 25 (a non-residential direct load control program that uses smart thermostats) with the Energy Trust of Oregon with a commercial thermostat energy-efficiency pilot. This will enable PGE to include information about thermostats in discussions with customers regarding energy efficiency.
- Exploring options that would allow PGE to front load incentive payments (Net Present Value) for an enrollment commitment of 5-10 years. This would help to offset a percentage of technology investment costs, benefitting both the customer and the program.
- Investigating new storage technologies that could make it easier for customers to participate in Energy Partner.

These learnings are helping to inform the Energy Partner operations as we plan the transition from pilot to program. PGE plans to discuss the pilot-to-program progression more fully with Staff by November 1, pursuant to Commission Order No. 19-151.

If you have any questions or require further information, please call Kalia Savage at (503) 464-7432. Please direct all formal correspondence and requests to the following e-mail address pge.opuc.filings@pgn.com.

Sincerely,

Robert Macfarlane
Manager, Pricing and Tariffs

*Encls*

cc: UM 1514 Service List

# NAVIGANT

# Energy Partner Demand Response Performance Report

## 2018-2019 Report to the Public Utility Commission of Oregon

**Prepared for:**

**PGE**

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PGE ................................................................................. Portland General Electric Company

SPID ..................................................................................................Service Point ID

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# EXECUTIVE SUMMARY

Portland General Electric Company's (PGE's) Energy Partner demand response (DR) program offers non-residential customers the opportunity to participate in PGE's efforts to maintain the grid and lower the cost of supplying power. The primary goal of the program is to achieve 27 MW of DR capacity by year-end 2020 as part of PGE's 77-MW-by-2021 DR commitment to the Public Utility Commission of Oregon (OPUC).

This report describes the process and impact evaluation findings for PGE's Energy Partner program over the Winter 2017-18, Summer 2018, and Winter 2018-19 seasons. Navigant serves as the independent evaluator for both the process and impact evaluations. This report to the OPUC is part of the deliverables provided by Navigant and covers evaluation activities conducted since Q2 2018.

## Methodology

As part of the initial stages of the program's implementation and evaluation, Navigant and PGE developed an Energy Partner program logic model to document relationships between facets of the program and document how program activities are expected to affect short, medium, and longer-term outcomes. This logic model has served as an integral part of the program development to date, including informing the process evaluation activities. PGE will continue to periodically revisit and adapt the model as an ongoing guide for the developing Energy Partner program.

The process evaluation assesses how well the Energy Partner program is operating and is to identify beneficial modifications in terms of program rules, implementation, and administration. Navigant conducted seasonal interviews with PGE staff, the contracted program implementation team, existing participants, and non-participants to inform the process evaluation findings.

The impact evaluation is to validate the estimates of load curtailment provided by the implementation vendor, CLEAResult, for the medium/large (M/L) customers. Navigant supported this evaluation by replicating and validating the impact calculations for settlement payment performed by CLEAResult. Navigant submitted formal data requests to PGE to obtain both AMI interval data and Pelican data. Data were used to calculate customer-specific baseline loads (CBLs); these CBLs were then compared to each customer's actual average load during the event hours.

## Findings

The process and impact evaluations have resulted in findings and recommendations that Navigant has shared with PGE following each season of the evaluation period. The key takeaways from the evaluation to date are summarized below.

### Process Evaluation Findings

The process evaluation interviews conducted in this evaluation period have helped orient PGE and Navigant to stakeholder views and set a foundation for subsequent interviews. This report summarizes the main findings from both the customer and PGE staff/implementer interviews by group.

Key customer interview takeaways include:

- Existing participants are generally very satisfied with the program.

- This satisfaction stems from new participation options and CLEAResult's positive implementation performance.

- The greatest area for improvement includes enhancements to customer data availability, allowing customers to review their performance following events and over time.

Key PGE staff/implementer interview takeaways include:

- The program is on track to meet its 2019 goal; however, stakeholders acknowledge that it will be challenging to reach its 2020 goal without creative and strategic approaches to marketing and enrolling harder-to-reach customer segments.

- The program implementation team is working well together despite initial software and coordination hurdles.

- The greatest opportunities for implementation improvement surround technical integration issues, such as the integration of Enbala's platform version 2 and the Ecobee thermostats.

- PGE's Key Customer Managers (KCMs) are very satisfied with CLEAResult's outreach efforts and have had good interactions with customers regarding the program.

## *Impact Evaluation Findings*

As shown in Table 1-1, Navigant calculated that PGE's Energy Partner program achieved up to 11.8 MW of demand reduction per event, representing nearly 44% of the 27 MW of the DR capacity target by year-end 2020. As of the Winter 2018-2019 season, 38 customers were enrolled in the program. Findings reported in this document include event level summaries, customers not delivering DR, and data analysis issues for each of the evaluated seasons.

### Table 1-1. Impact Evaluation Result by Event[1]

| No. | Season | Event Date | Navigant Calculated Reduction (MW) | Total Nomination (MW) | Realization Rate |
|-----|--------|-----------|-----------------------------------|----------------------|------------------|
| 1 | Winter 2017-18 | February 22, 2018 | 2.7 | 4.0 | 66% |
| 2 | | July 12, 2018 | 10.5 | 7.6 | 138% |
| 3 | | July 16, 2018 | 11.8 | 7.4 | 159% |
| 4 | Summer 2018 | July 23, 2018 | 9.2 | 8.0 | 115% |
| 5 | | July 26, 2018 | 8.3 | 7.6 | 110% |
| 6 | | August 8, 2018 | 11.8 | 8.8 | 134% |
| 7 | | August 14, 2018 | 11.3 | 8.6 | 132% |
| 8 | Winter 2018-19 | February 5, 2019 | 6.6 | 9.8 | 68% |

[1] The Navigant Calculated Reduction and the Total Nomination represent the demand reduction across all hours of the curtailment window for all participants. The Navigant Calculated Reduction is based only on customers whose event loads were below the baseline; customers whose event loads were above the baseline are considered as not having delivered DR and are assigned a zero reduction value for the purposes of the Navigant Calculated Reduction.

## *Process Evaluation Recommendations*

Below are summaries of Navigant's recommendations for process improvements and future research areas for PGE staff's consideration as the program moves forward; some of the listed recommendations are already in the process of being implemented, but they are documented here nonetheless.

- Highlight the following themes in program marketing and messaging, particularly in outreach to potential new participants:
  - The financial benefits of participation and how participation helps the community;
  - The availability of data about energy consumption, curtailment, and the functionality of the web portal (as these capabilities mature); and
  - The ways in which the program supports automation—both financially and through the expertise of the implementation team.
- Tailor these program marketing messaging to various customer segments to address the different drivers and needs of different customers.
- Continue developing further functionality in the web portal for both Schedule 26 and Schedule 25 customers, including the ability for customers to view their electricity usage, understand their incentive calculations, and change nominations. PGE has been implementing many of these features over the course of this evaluation, with ongoing development still in progress.
- Continue to explore ways for BTM storage to contribute to Energy Partner program goals. Lay out a long-term plan, while finding short-term opportunities with specific customers.
- Continue to explore synergies with Energy Trust's Strategic Energy Management (SEM) program and opportunities for cross-selling SEM with Energy Partner.
- Continuously reevaluate the value proposition and "hassle factor" associated with Energy Partner participation for large customers, including:
  - Investigating whether there is a cost-effective way to increase customer incentives to help increase enrollment rates of large customers who might have declined previously.
  - Exploring whether there are additional ways to minimize the "hassle factor" for customer enrollment and enablement.
- Have targeted discussions with Enbala about ways to mitigate risks and bottlenecks associated with systems integration and development lead times, which continue to affect customer experience and be one of the most challenging parts of the program. Enbala has mentioned outsourcing some integration work to help support new development and this seems prudent to consider further, given the feature development PGE anticipates in the next 12 months.
- CLEAResult can continue working on clearly communicating needs, expectations, and deadlines, as well as providing sales tips and lessons learned more regularly to deepen engagement with the KCMs.
- Explore further opportunities for streamlining PGE's marketing approval process, which may be slowing CLEAResult's outreach efforts.
- To further increase customer satisfaction and improvement, new case studies and materials may help KCMs persuade additional customers to enroll. As CLEAResult develops case studies for existing participants from different industry segments, ensure that these are shared with the KCMs to help educate and assure prospects that the program can make sense for them without jeopardizing operations.

## *Impact Evaluation Recommendations*

- CLEAResult should provide documentation on any deviation from PGE's CBL methodology, to provide clarity on the procedure followed for handling gaps in the interval data.

- Continue to enhance quality assurance for the data collection processes, including but not limited to troubleshooting errors in the scalar factors used in the Pelican system to match AMI readings, mismatch in customer SPID and meter code / serial number, and meter pulse sync issues.

- Similarly, continue to enhance quality assurance for the data transfer processes, including but not limited to ensuring the same AMI data is provided to CLEAResult and Navigant. In cases where CLEAResult makes a request to PGE for meter data extraction to supplement their settlement data, Navigant recommends establishing a clear procedure for developing the final interval data to be used for settlement to ensure consistency between Navigant's validation dataset and the settlement dataset. Moreover, PGE or CLEAResult should provide the final settlement dataset to Navigant, if multiple interval data sources were used.

- Navigant recommended that PGE provide the customer affected by the discrepancy identified in the Winter 2018-19 season with their incentive payment, which PGE subsequently addressed.

# 1. BACKGROUND

PGE's Energy Partner DR program offers interested non-residential customers an opportunity to participate in PGE's efforts to reduce the cost of supplying power and to manage the grid. Starting the Winter 2017-18 season, PGE performed a program "reboot" for the Energy Partner DR program.[2] The primary goal of this new program is to achieve 27 MW of DR capacity by year-end 2020. This is a key component of PGE's 77-MW-by-2021 DR commitment to the OPUC.

This report describes the impact and process evaluation results for PGE's Energy Partner program through the Winter 2017-18, Summer 2018, and Winter 2018-19 seasons. The drivers for this evaluation include providing unbiased information to the OPUC about the Energy Partner program's performance, providing PGE with timely feedback on whether the program is on track, and providing PGE with recommendations for ways to improve and help PGE achieve its goals.

This evaluation includes the PGE Energy Partner logic model, evaluation methodologies, impact evaluation findings, and process evaluation findings for the Winter 2017-18, Summer 2018, and Winter 2018-19 seasons. Impact evaluation consists of quantification of demand reduction impacts to validate the DR management system for M/L customers. Process evaluation includes performance feedback and recommendations provided by program stakeholders including PGE program staff, PGE program contractors, industry partners, program participants, and those who declined participation.

As the independent evaluator of the program, Navigant is conducting both the impact and process evaluations. For impacts, Navigant has validated the demand reductions that the program implementer/technology provider calculates for M/L participants.[3] For the process evaluation, Navigant interviewed PGE program staff, implementers, participants, and other program stakeholders to identify how well the program is operating and how it can be improved in future seasons.

The objectives for this evaluation include:

- Clarifying the program logic by creating a logic model;
- Providing seasonal impact evaluation results of customer demand reduction;
- Providing process evaluation results from PGE staff, implementer, and customer surveys and interviews at the end of each season to inform program changes; and
- Summarizing the program impact and process evaluations in two final reports.

This report to the Commission is part of the deliverables provided by Navigant and covers the evaluation activities conducted to date since Q2 2018, as identified in **Error! Reference source not found.** below.

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[2] Key program design changes resulting from the Energy Partner "reboot" include the ability to choose notification times, added flexibility in the event hour windows, the ability to opt out of events and the ability to choose the maximum hours of participation in a season.

[3] Navigant will conduct impact evaluation for small commercial smart thermostat customers in the program starting Summer 2019.

**Figure 1-1. 2018/2019 Energy Partner Evaluation Activities**
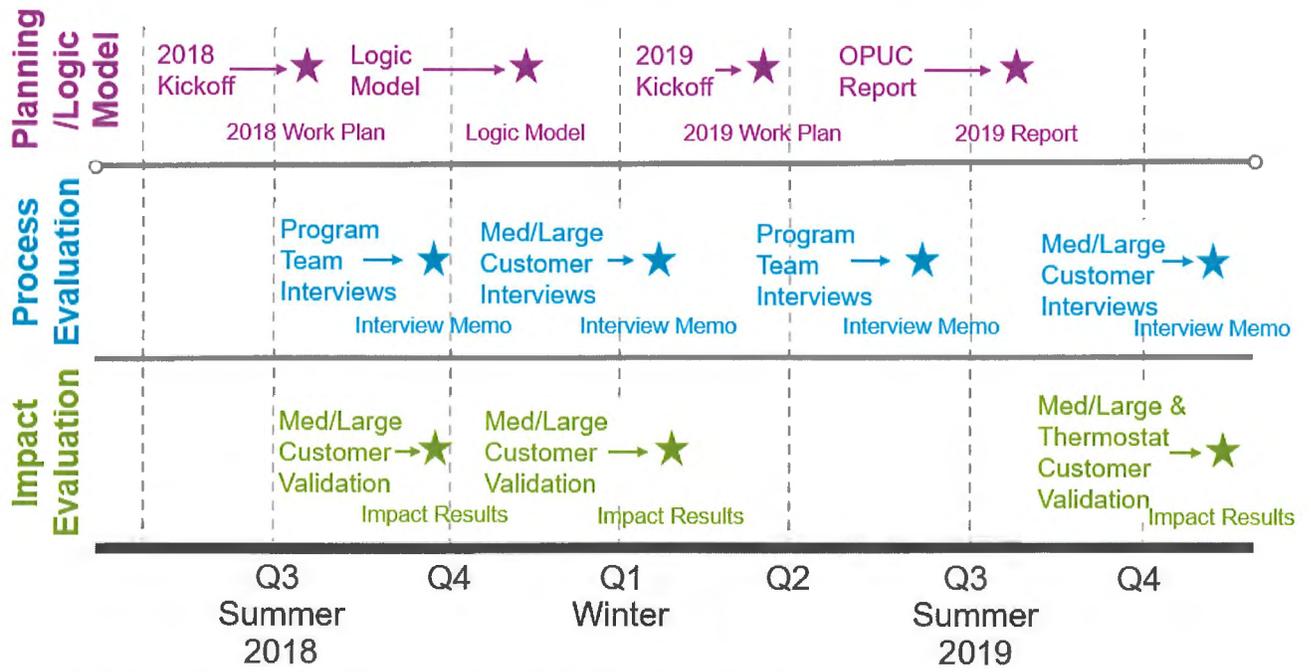


* Customer Validation is the validation of CLEAResult's settlement calculations

# 2. PROGRAM LOGIC MODEL

As part of the initial stages of the program's implementation and evaluation, Navigant and PGE developed an Energy Partner program logic model to document relationships between facets of the program and document how program activities are expected to affect short, medium and longer-term outcomes. This logic model has served as an integral part of the program development to date, including informing the process evaluation activities. PGE will continue to periodically revisit and adapt the model as an ongoing guide for the developing Energy Partner program.

To develop the logic model. Navigant conducted the following activities:

- Document review (regulatory filings, implementation plans, training documents, website, marketing collateral, etc.)
- Interviews with PGE staff, implementer CLEAResult, and DRMS provider Enbala (these interviews served dual purposes, also informing the process evaluation in Task 4)
- Logic model training for PGE staff
    - In-person working session (including PGE staff and implementers) to discuss and document program's intent and actual implementation
    - Facilitation of logic model development with PGE staff and implementers

Appendix A summarizes the program logic in terms of barriers, inputs, activities and outputs, outcomes, and the resulting logic model visual diagram.

# 3. EVALUATION METHODOLOGY

The following chapter overviews the methodologies employed for both the process evaluation and the impact evaluation.

## 3.1 Process Evaluation Methodology

The objectives of the process evaluation are to assess how well the Energy Partner DR program is operating and to identify beneficial modifications in terms of program rules (e.g., eligibility, incentive levels, notification requirements, baseline calculations) and processes (e.g., marketing, communication with participants, payment of incentives, program-related customer service) in a timely manner that facilitates effective program change.

To support the process evaluation Navigant conducted seasonal interviews (summer and winter) with the groups identified in

Table 3-1, which includes further detail on the timing of conversations held to date.

**Table 3-1. Interview Groups and Schedule**

| Interview Topic | PGE Staff | Implementer/ DRMS Provider | Existing Participants | Non-parts (Decline) |
|---|---|---|---|---|
| Winter 2017-18 | ■ | ■ | | |
| Summer 2018 | | | M/L | M/L |
| Winter 2018-19 | ■ | ■ | | |

\* M/L = Medium/Large customer interviews

Navigant conducted seasonal interviews with program stakeholders using the implementation framework presented in Figure 3-1, which emphasizes interviewer preparation and training on the operation of the program and the interviewees' respective roles.

**Figure 3-1. In-Depth Interview Implementation Framework**

Pre-Fielding Preparation
- Analysis plan to ensure data collected aligns with research needs
- Confirmation of best interview channel (phone, online)
- Refinement and prioritization of target sample
- Interview guide development based on best practice templates
- Recruitment scripts and email templates
- Interviewer preparation and training

Fielding
- Recruiting and scheduling
- Pre-interview preparation (e.g., guide review, background research)
- Coding and note-taking
- Post-interview follow up, as needed

Post-Fielding Analysis
- Note preparation for analysis
- Analysis based on analysis plan
- Results summary based on research objectives (i.e., specific areas of concentration and evaluation goals)

Table 3-2 shows the range of topics addressed in the interviews, with each interview objective shown by interviewee group.

**Table 3-2. Interview Topics by Interviewee Group**

| Interview Topic | PGE Staff | Implementer/ DRMS Provider | Existing Participants | Non-parts (Decline) |
|---|---|---|---|---|
| Program Rules | ■ | ◖ | ■ | ◖ |
| Participation Drivers and Barriers | ◖ | ◖ | ■ | ◖ |
| Marketing/ Awareness | ■ | ■ | ■ | ◖ |
| Customer-Facing Website | ◖ | ◖ | ■ | |
| Enrollment Process | ■ | ■ | ■ | |
| Incentive Levels | ■ | ◖ | ■ | ◖ |
| Ongoing Communications | ■ | ■ | ■ | |
| DR event experience | ◖ | ◖ | ■ | |
| Customer Satisfaction | ◖ | ◖ | ■ | |
| Reasons for Dropout | ◖ | ◖ | | |
| Data and Systems Integration | ■ | ■ | ◖ | |

■ = Principal interviews
◖ = Contributing Interviews

Table 3-3 highlights the objectives for the customer interviews and the number of completes for the interviews conducted within this evaluation cycle.

**Table 3-3. Customer Interview Objectives**

| Customer Group | # of Completes / Targeted | Objectives |
|---|---|---|
| **Existing participants** (i.e., customers that participated in the program prior to the Winter 2017-2018 season and continue to participate) | 10 / 10 | • Better understand the level of customer acceptance and satisfaction with all aspects of the updated program, including recruitment, customer service, etc. <br> • Identify the value proposition to the customer to help PGE maintain and enhance that value proposition <br> • Identify participation challenges and opportunities for improved program design |
| **Declined non-participants** (i.e., customers who were contacted about the program after Winter 2017-2018 and declined to participate) | 3 partial / 5* | • Assess barriers to participation and opportunities for improved program design <br> • Identify the value proposition to the customer and how that value proposition can be enhanced. |

*Of the five customer contacts that PGE KCMs provided to Navigant, Navigant was able to reach three customers; however, no customers fully completed the interview.

## 3.2 Impact Evaluation Methodology

This section of the report provides an outline of the technical approach and data that Navigant has used to estimate impacts for each individual M/L customer that participate in PGE's Energy Partner program.

The overarching objective of the impact evaluation for the Winter 2017-18, Summer 2018, and Winter 2018-19 seasons is to validate the estimates of load curtailment provided by the vendors for M/L customers.[4] To support this, Navigant sought to replicate and validate the impact calculations for settlement payments performed by CLEAResult, PGE's implementation contractor, using the data and methods described below.

### 3.2.1 Impact Evaluation Data

This section presents the data available to support the impact evaluation. Navigant submitted a formal data request to PGE to obtain participant interval data, participant cross-sectional data, event schedules, and performance summary data for each evaluation cycle. Data were provided via Navigant's secure file sharing portal.

Table 3-4 describes the categories and examples of data fields provided by PGE.

#### Table 3-4. Impact Evaluation Data Categories

| Category | Description | Fields |
|---|---|---|
| Participant Interval Data | Five-minute interval consumption data for Energy Partners participants for whom AMI data are available for all months of each evaluation cycle. For customers where AMI data was not available, Navigant used interval data from CLEAResult's Pelican devices.[5] | • Consumption (kWh)<br>• Date<br>• Time stamp (hour ending in which the demand in that interval was observed)<br>• Customer service point ID (SPID) |
| Participant Cross-Sectional Data | Program tracking data | • Customer SPIDs<br>• Customer aggregated IDs<br>• Nominated curtailment<br>• Total number of participants by event<br>• Flag indicating a requirement for an 18-hour advanced notification<br>• Flag indicating if a customer is a firm service level customer |
| Event Schedule | DR event schedule | • Dates of the events<br>• Event start time and end time<br>• Time zone (e.g. PST, PDT etc.)<br>• Customer SPIDs<br>• Customer aggregated IDs<br>• Event date<br>• Event hour |
| Performance Summary Data | Data are required to validate CLEAResult's results against Navigant's calculations for customer baseline load and impact from AMI data | • Average hourly demand<br>• Unadjusted baseline demand<br>• Additive adjustment<br>• Adjusted baseline demand<br>• Customer system Impact<br>• Documentation on the baseline procedure followed, if different from PGE's standard CBL methodology |

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[4] Navigant will conduct impact evaluation for small commercial smart thermostat customers in the program starting Summer 2019.

[5] This is further discussed in Section 5.

For the Winter 2017-18 and Summer 2018 evaluation cycles, Navigant and CLEAResult used identical data sources, which were mainly AMI interval data supplemented by Pelican data, while CLEAResult was still in the process of implementing Pelican devices at customer sites.

For Winter 2018-19, CLEAResult's impact evaluation primarily used Pelican data, where it was available. If Pelican data was not available or complete, CLEAResult used AMI data from their daily feed. In contrast, Navigant used primarily AMI data provided by PGE. If AMI data were not available or complete, Navigant supplemented the gaps with Pelican data provided by CLEAResult. The number of participants vary by event as seen in Table 3-5.

**Table 3-5.  Energy Partners Event List and Participant Count**

| Evaluation Cycle | Event Date | Event Hours | Program Participants[6] |
|---|---|---|---|
| Winter 2017-18 | February 22, 2018 | 16:00 – 19:00 | 32 |
| Summer 2018 | July 12, 2018 | 16:00 – 19:00 | 38 |
| | July 16, 2018 | 16:00 – 19:00 | 38 |
| | July 23, 2018 | 15:00 – 18:00 | 43 |
| | July 26, 2018 | 16:00 – 19:00 | 38 |
| | August 8, 2018 | 16:00 – 19:00 | 38 |
| | August 14, 2018 | 17:00 – 19:00 | 38 |
| Winter 2018-19 | February 5, 2019 | 18:00 – 20:00 | 45 |

### 3.2.2 Customer Baseline Load Methodology

Navigant calculated the impacts for M/L Energy Partner program participants by subtracting actual customer event loads from "customer baseline load" (CBL) that is specific to each customer. This section describes the methodology for calculating the CBLs.

The key steps for calculating the M/L customer CBL baseline are as follows:

1. **Assess the look-back period.** Select the 10 non-holiday[7] business days immediately preceding the event being evaluated.

2. **Select the baseline days.** The CBL is calculated using five of the 10 days included in the look-back period. The five days with the highest average hourly load during the same hours of the day as the event are selected as the baseline days.

3. **Calculate the Unadjusted Baseline.** The Unadjusted Baseline is calculated as the average load of the given customer during the same hours of the day as the event, across the five selected baseline days.

4. **Calculate the Adjusted Baseline:**

   a. **Calculate the day-of load adjustment.** Calculate the average load of the given customer during the adjustment period on the event day (a two-hour period that begins six hours before the start of the event). From this, subtract the average customer load during the same hours of the day on the selected baseline days. The result of this calculation is a scalar adjustment value.

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[6] Numbers reflect CBL customers only and do not include Firm Service Load customers.

[7] Holidays are defined as New Year's Day (Observed), Memorial Day (Observed), Independence Day (Observed), Labor Day (Observed), Thanksgiving Day, Friday following Thanksgiving, Christmas Day, New Year's Eve.

b. **Apply the day-of load adjustment.** If the customer in question is provided with an 18-hour advance notification period, or if the event occurs between midnight and 11am in the months of November through January, no adjustment is applied, and the customer's Unadjusted Baseline becomes the final estimated CBL baseline. In all other cases the adjustment value is added to the Unadjusted Baseline value for the given customer. This becomes the given customer's final estimated CBL baseline.

5. **Calculate impacts.** The average event impact for a given customer is simply the difference between the final estimated CBL baseline, and actual average load during the event hours.

The DR impacts are set to have a minimum value of zero (i.e., if the CBL is less than average actual event demand, the impact is assumed to be zero). This adjustment is made for the purposes of calculating incentives. Customers are provided an incentive payment

PGE is currently reviewing the methodology for choosing the appropriate CBL (Adjusted CBL, Unadjusted CBL, or Firm Service Level) depending on the customer's usage profiles. The customer's CBL type will ultimately determine their calculated impacts; thus, review of this methodology will allow PGE to ensure that customer participation and the corresponding impact to PGE's grid is accurately measured.

# 4. PROCESS EVALUATION FINDINGS

The initial Energy Partner process evaluation interviews aimed to orient the PGE and Navigant evaluation teams to stakeholder views and set a baseline for subsequent interviews to delve more deeply into lessons learned and recommendations for improvement. From these interviews, Navigant has identified key themes and recommendations for consideration by the program implementation team and for further exploration in future process evaluation activities, as described below.

## 4.1 Summary of Process Evaluation Results

The following chapter summarizes the main findings from the customer and PGE staff/implementer process evaluation interviews by group, with additional detailed interview results provided in Appendix B.

### 4.1.1 Customer Interviews

This section summarizes the main findings from interviews with **existing participants** and **declined non-participants** for the Winter 2017-18 and Summer 2018 seasons. Based on the interview responses, Navigant identified the following <u>key takeaways</u> for consideration by the program implementation team and for further exploration in future process evaluation activities:

- Existing participants are generally very satisfied with the current program. Interviewees responded with an average score of 9 to the question: "Based on your experience over the past year, how satisfied are you with the Energy Partner program using a 0 to 10 scale, where a 0 means you are extremely dissatisfied and a 10 means you are extremely satisfied?" One customer asked: "Could the program work every month of the year, not just summer and winter?"

- Specifically, the existing participants expressed a high degree of satisfaction with the new options for participation (e.g., choices of event hour windows) and CLEAResult's performance, including CLEAResult's responsiveness, willingness to troubleshoot, and frequency of touchpoints.

- All participants identified financial benefits (i.e., incentives and/or reduced energy costs) as one of the primary reasons for participating in the program, with many of these customers citing financial benefits as the most important driver for participation. A significant number of participants also identified "doing good for the community" as another primary reason for participating.

- The program options that customers noted as the most beneficial or important include the ability to change nominations each month, more flexibility in the event hour windows, the ability to optout of events, and weekly notifications of possible events from CLEAResult.

- The greatest area for program improvement includes enhancements to customer data availability and the web portal, as well as some minor improvements to incentives processing. Some participants would like the ability to view their electricity usage, understand their incentive calculations, and change nominations in the portal or a phone app.

### 4.1.2 PGE Staff/Implementer Interviews

To discuss the Winter 2017-18 and Summer 2018 season activities, Navigant conducted interviews with several program stakeholders including PGE program management staff, CLEAResult program implementation staff, an Enbala project manager, PGE KCM, and the PGE Business Market manager. Given the early stages of the Energy Partner program, the objective of these initial interviews was to orient the PGE and Navigant evaluation teams to stakeholder views and set a baseline for subsequent interviews to delve more deeply into lessons learned and recommendations for improvement.

Navigant again conducted interviews with these same program stakeholders to discuss the Winter 2018-19 season activities. The objective of these interviews was to understand the status of the program and delve more deeply into lessons learned and recommendations for improvement, including those identified during the initial set of staff interviews referenced above.

From these interviews, Navigant identified the following key themes for consideration by the program implementation team and for further exploration in future process evaluation activities:

- The program is on track to meet its 2019 MW goal. However, PGE and CLEAResult alike expressed that it will still be challenging to meet the 2020 MW goal and require creative and strategic approaches to marketing and enrolling harder-to-reach customer segments. Marketing will need to be increased to medium-sized unmanaged accounts and Schedule 25 customers for the thermostat program offering, with uptake from these customers still uncertain. Consideration will also need to be given to how the program can increase committed capacity through behind-the-meter (BTM) storage.

- The program implementation team (i.e., PGE, CLEAResult, Enbala, EDM, and Pelican) is working well together after having overcome some initial software and coordination hurdles. Communication and collaboration between CLEAResult and Enbala have generally improved since the start of the program, and the two teams are more proactive in discussing issues and developing proposed solutions together before discussing with PGE. That said, there are still several technical integration challenges ahead that will require ongoing communication, coordination, and planning to successfully address.

- The greatest opportunities for program implementation improvement are related to technical integration issues, including integrating Enbala's platform version 2, integrating the Ecobee thermostats, and turning around new platform feature developments more quickly.

- The KCMs are happy with CLEAResult and have had good interactions with customers regarding the program. While the KCM accounts have been educated about the program, new case studies and materials may help KCMs persuade additional customers to enroll (see recommendations below for more details).

- Regarding Schedule 25 customers, the program is still in its infancy as CLEAResult is still working to get the enrollment portal done this summer and has not started significant general marketing.

## 4.2 Navigant Process Recommendations

This section summarizes Navigant's recommendations for process improvements and future research areas for PGE staff's consideration as the program moves forward. As the program team has demonstrated a collaborative, problem-solving ethos throughout this evaluation process, some of those recommendations are already in the process of being implemented, but they are documented here nonetheless.

Based on the findings from the **customer** interviews presented above, Navigant recommends consideration of the following:

- The two primary reasons that existing participants cited for participating in the program include the financial benefits and helping the community, with customers identifying the financial benefits as the more important driver for participation. As the program team moves forward with marketing the program more broadly, these two themes will be important to highlight to potential new participants.

- The greatest opportunities for enhancing customer satisfaction have related to the availability of data about energy consumption/curtailment and the functionality of the web portal. While some participants are less interested in these program aspects, other participants are very interested—suggesting that this might also be an important theme to highlight in program marketing and messaging for certain customers. As the program team continues developing functionality in the web portal and expands usage to the Schedule 25 customers, they might consider some of the recommendations from existing participants documented in the "Data and Web Portal" section of Appendix B.1, including the ability to view their electricity usage, understand their incentive calculations, and change nominations.

- One of the non-participants and a handful of existing participants highlighted the program's auto-DR option as another compelling program feature. This suggests that automation might also be an important theme to highlight in program marketing and messaging for certain customers. The program team should consider ways to emphasize the ways in which the program supports automation—both financially and through the expertise of the implementation team.

Based on the findings from the **PGE staff/implementer** interviews, Navigant also provides the following recommendations for consideration as the program moves forward:

- As a precautionary step, the program team will need to consider opportunities for clearly communicating the program design and options to customers as PGE transitions into marketing the program more broadly. Through clear marketing the team can help to minimize customer confusion, given that CLEAResult may not be available to guide each individual customer's decision-making process.

- Tailor program marketing messaging to various customer segments to address different drivers that customers have. For example, financial incentives are a significant motivator for some customers, such as financially-motivated municipals (e.g., with water pumping load), while other customers are not as focused on the money and participate more for corporate sustainability and community relationship reasons. Focusing different messaging on different groups can help effectively engage those customers.

- Furthermore, as participation begins to saturate within PGE's managed accounts and largest customers, the program team should begin tailoring the messages to the smaller, non-managed customers. As program outreach continues, new marginal customers will get smaller, meaning more customers will be needed to reach program goals. Smaller customers have different pain points than the larger ones, so the messaging will need to be adjusted to account for that.

- Conduct more end-to-end system testing to address the issues between multiple program platforms. Integration was more complex than anticipated, which is consistent with the flexible nature of the program design. The parties conducted robust acceptance testing on each individual system but testing on the overall system and between systems occurred to a lesser degree.

- Have targeted discussions with Enbala about ways to mitigate risks and bottlenecks associated with systems integration and development lead times, which continue to affect customer experience and be one of the most challenging parts of the program. Enbala has mentioned outsourcing some integration work to help support new development and this seems prudent to consider further, given the feature development PGE anticipates in the next 12 months.

- Continue building the working relationship between CLEAResult's account manager and the KCM team. While the interactions between these two teams are generally positive, CLEAResult can continue working on clearly communicating needs, expectations, and deadlines, as well as providing sales tips and lessons learned more regularly to deepen engagement with the KCMs.

- Continuously reevaluate the value proposition and "hassle factor" associated with Energy Partner participation for large customers, including:

- Investigating whether there is a cost-effective way to increase customer incentives to help increase enrollment rates of large customers who might have declined previously.

- Exploring whether there are additional ways to minimize the "hassle factor" for customer enrollment and enablement, such as providing materials to help sell/explain the program and its benefits to the customer's management team or additional support in the integration processes.

- Providing automation support to non-participating customers by clearly articulating that controls work qualifies for program payments and by keeping a Building Management System incentive on the Energy Partner roadmap.

- Explore further opportunities for streamlining PGE's marketing approval process (e.g., removing steps or expediting the process), which may be slowing CLEAResult's outreach efforts.

- Continue to explore ways for BTM storage to contribute to Energy Partner program goals. Lay out a long-term plan, while finding short-term opportunities with specific customers.

- As CLEAResult develops case studies for existing participants from different industry segments, ensure that these are shared with the KCMs to help educate and assure prospects that the program can make sense for them without jeopardizing operations.

- Continue to explore synergies with Energy Trust's Strategic Energy Management (SEM) program and opportunities for cross-selling these programs.

# 5. IMPACT EVALUATION FINDINGS

Navigant conducted an impact evaluation of the M/L customers in PGE's Energy Partner program for the following three program seasons:

- Winter 2017-18
- Summer 2018
- Winter 2018-19

The goal of Navigant's impact evaluation for these M/L customers was to replicate and validate the impact calculations for settlement payment performed by CLEAResult, PGE's implementation contractor.

This section of the report covers the impact evaluation findings, as well as any deviation from CLEAResult's calculated impacts, customers that did not deliver DR, issues encountered while validating CLEAResult's impact results for M/L customers, and recommendations based on the findings.

## 5.1 Summary of Impact Evaluation Results

Based on Navigant's calculations, PGE's Energy Partner program achieved up to 11.8 MW of demand reduction per event, as shown in Table 5-1. This represents nearly 44% of the 27 MW of the DR capacity target by year-end 2020. The single events in Winter 2017-18 and Winter 2018-19 achieved realization rates of 66% and 68%, respectively, while Summer 2018 exceeded the total nomination in each event with realization rates ranging from 110% to 159%. As of the Winter 2018-19 season, 38 customers were enrolled in the program.

**Table 5-1. Impact Evaluation Result by Event[8]**

| No. | Season | Event Date | Navigant Calculated Reduction (MW) | Total Nomination (MW) | Realization Rate |
|-----|--------|-----------|-----------------------------------|----------------------|------------------|
| 1 | Winter 2017-18 | February 22, 2018 | 2.7 | 4.0 | 66% |
| 2 | | July 12, 2018 | 10.5 | 7.6 | 138% |
| 3 | | July 16, 2018 | 11.8 | 7.4 | 159% |
| 4 | Summer 2018 | July 23, 2018 | 9.2 | 8.0 | 115% |
| 5 | | July 26, 2018 | 8.3 | 7.6 | 110% |
| 6 | | August 8, 2018 | 11.8 | 8.8 | 134% |
| 7 | | August 14, 2018 | 11.3 | 8.6 | 132% |
| 8 | Winter 2018-19 | February 5, 2019 | 6.6 | 9.8 | 68% |

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[8] The Navigant Calculated Reduction and the Total Nomination represent the demand reduction across all hours of the curtailment window for all participants. The Navigant Calculated Reduction is based only on customers whose event loads were below the baseline; customers whose event loads were above the baseline are considered as not having delivered DR and are assigned a zero reduction value for the purposes of the Navigant Calculated Reduction.

### 5.1.1 Winter 2017-2018 Impact Evaluation

As noted in Table 5-1, there was one event in the Winter 2017-18 season. Navigant's estimate of total average demand reduction during the three-hour event period was 2,690 kW, as shown in Table 5-2. CLEAResult's calculations resulted in a total average demand reduction of 2,687 kW. Thus, there is a 0.097% deviation in Navigant's results when compared to CLEAResult's. Reasons for this deviation are further discussed below.

**Table 5-2. Overview of February 22, 2018 Event**

| Event Date | Thursday, February 22, 2018 |
|---|---|
| Event Time | 16:00 - 19:00 |
| Customers Called in Event | 32 |
| Total Nomination (kW) | 4,045 |
| Navigant Calculated Total Reduction (kW) | 2,690 |
| CLEAResult Calculated Total Reduction (kW) | 2,687 |
| Difference Compared to CLEAResult (kW) | 3 |
| Difference Compared to CLEAResult (%) | 0% |
| Customers That Delivered DR | 28 |
| Realization Rate | 66% |

### 5.1.1.1 Customers Not Delivering Demand Response

Four customer sites did not deliver any DR during the Winter 2017-18 season. Figure 5-1 lists these customers and compares their nomination and system impact.

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[9] Numbers reflect CBL customers only and do not include Firm Service Load customers.

**Figure 5-1. Customer Nomination and System Impact, Winter 2017-2018**



| | B26-AGR-1000017 | B26-AGR-1000022 | B26-AGR-1000023 | B26-AGR-1000035 |
|---|---|---|---|---|
| ■ Nomination (kW) | -100 | -165 | -250 | -40 |
| ■ System Impact (kW) | 79.7 | 17.7 | 65.9 | 10.5 |
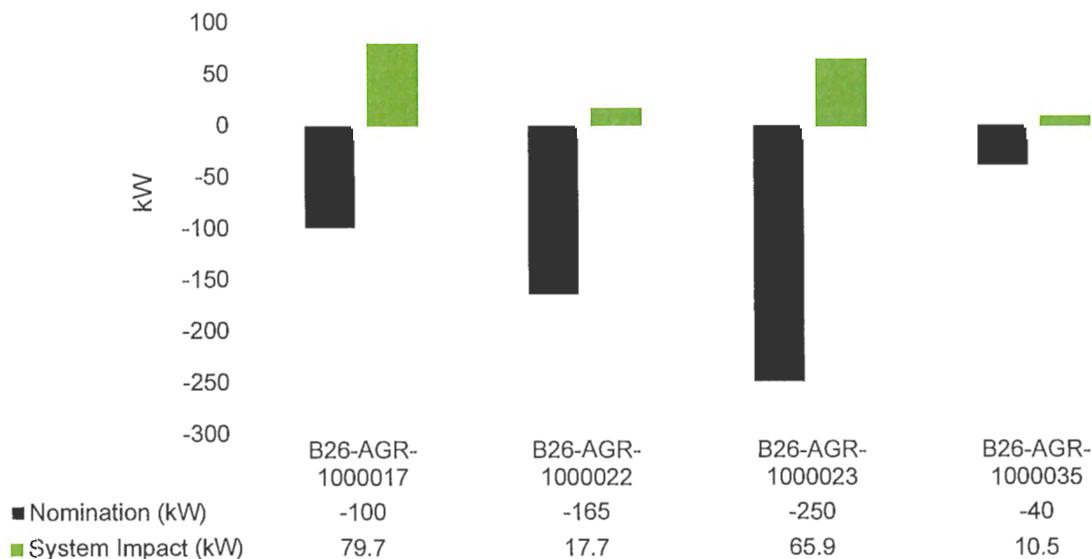
**Error! Reference source not found.**All these customers show an increase in their load during the event compared to their CBL, indicating that no DR was delivered. In the Winter 2017-18 season, two customers did not have a load reduction plan at the time of the event, which may have created confusion in operations during the event. One customer had communication issues between operators at two sites, while another customer had irregular pumping schedules that prevented load curtailment. Furthermore, it is possible that some of these customers chose not to curtail their demand if they deemed the incentive payment insufficient to stop production during the event hours.

### 5.1.1.2 Data Analysis Issues

Deviation in Navigant and CLEAResult's average hourly demand reduction estimates resulted from CLEAResult's code misapplying the interpolation method for zero interval data readings. Interpolation was applied to three customers with a span of zero interval readings shown in Table 5-3. Only one customer out of these three curtailed their demand, with the other two customers discussed above in Section 5.1.1.1.

**Table 5-3. Customers with Zero Interval Readings**

| Customer Site | CLEAResult Average System Impact (kW) | Navigant Average System Impact (kW) | System Impact Deviation | Demand Curtailment |
|---|---|---|---|---|
| B26-AGR-1000033 | -318.15 | -320.30 | 0.7% | YES |
| B26-AGR-1000035 | 10.12 | 10.54 | 4.1% | NO |
| B26-AGR-1000023 | 62.15 | 65.91 | 6.1% | NO |

Navigant worked with CLEAResult to get an understanding of the interpolation logic applied to the above customers. The interpolation logic looks for a series of zero reads in the dataset with at least two non-zero reads as bookends. For example, if the following are a series of usage reads:

| | |
|---|---|
| **5** | **Two non-zeros that surround a series of zeros** |
| **4** | **starts an interpolation group** |
| 0 | |
| 0 | |
| 1 | |
| 0 | |
| 0 | |
| 0 | |
| 0 | |
| **3** | **Two non-zeros that surround a series of zeros** |
| **2** | **ends an interpolation group** |

Within a group, the non-zero values are averaged. For this example, the average of non-zeros in the group is 3. The average is then used to fill in the zero reads within the group and the CBL analysis proceeds with the interpolated values.

| |
|---|
| **5** |
| **4** |
| 3 |
| 3 |
| 1 |
| 3 |
| 3 |
| 3 |
| 3 |
| **3** |
| **2** |

Navigant found that CLEAResult's code did not apply the interpolation logic as intended. However, since the deviation was negligible for the customer with demand curtailment, no corrective action was taken in terms of readjusting the original code or resettling payment with the customer.

### 5.1.2 Summer 2018 Impact Evaluation

As noted in Table 5-1, there were six events in the Summer 2018 season. Navigant estimates a total average reduction of 10,473 kW per event, with an average realization rate of 131% and an average reduction of 294 kW per customer per event for the Summer 2018 season.

Navigant and CLEAResult's total demand reduction estimates align for all Summer 2018 events. The impact of the six events that occurred during the Summer 2018 season are summarized in Table 5-4.

### Table 5-4. Impact Details, Summer 2018 Events

| Event Date | July 12, 2018 | July 16, 2018 | July 23, 2018 | July 26, 2018 | August 8, 2018 | August 14, 2018 |
|---|---|---|---|---|---|---|
| Event Time | 16:00 - 19:00 | 16:00 - 19:00 | 15:00 - 18:00 | 16:00 - 19:00 | 16:00 - 19:00 | 17:00 - 19:00 |
| Customers Called in Event | 38 | 38 | 43 | 38 | 38 | 38 |
| Total Nomination (kW) | 7,560 | 7,435 | 8,005 | 7,560 | 8,795 | 8,560 |
| Navigant Calculated Total Reduction (kW) | 10,470 | 11,789 | 9,204 | 8,307 | 11,755 | 11,314 |
| CLEAResult Calculated Total Reduction (kW) | 10,470 | 11,789 | 9,204 | 8,307 | 11,755 | 11,314 |
| Difference Compared to CLEAResult (kW) | 0 | 0 | 0 | 0 | 0 | 0 |
| Difference Compared to CLEAResult (%) | 0% | 0% | 0% | 0% | 0% | 0% |
| Customers That Delivered DR | 36 | 34 | 36 | 34 | 36 | 38 |
| Realization Rate | 138% | 159% | 115% | 110% | 134% | 132% |

#### 5.1.2.1 Customers Not Delivering Demand Response

Eleven customers did not deliver any DR during at least one event during the season. Table 5-5 summarizes the number of customers that did not deliver DR by event. There are several potential reasons as to why these customers did not deliver DR. It is possible that customers chose not to curtail their demand if the incentive payment was deemed insufficient to stop production during the event hours. For the Summer 2018 season, CLEAResult also identified that customers may not have curtailed in some cases due to operational issues, where there was a lack of maintenance staff to execute on the customer's load reduction plan.

### Table 5-5. Customers Not Delivering DR by Event

| PODID | July 12, 2018 | July 16, 2018 | July 23, 2018 | July 26, 2018 | August 8, 2018 | August 14, 2018 |
|---|---|---|---|---|---|---|
| Customers Not Delivering DR | 2 | 4 | 7 | 4 | 2 | 0 |

#### 5.1.2.2 Data Analysis Issues

Navigant experienced the following data issues throughout the analysis, from which lessons can be learned to apply for future impact evaluation cycles.

**Multiple Data Sources for Customer Loads**

Due to the time delay in receiving AMI meter data for some customers, CLEAResult used Pelican data for settlement purposes to supplement gaps and to enable CLEAResult to provide more timely performance results. In some cases where neither AMI nor Pelican data was available, CLEAResult made a request to PGE for meter data extraction. In the end, there were multiple data sources and sometimes multiple interval readings for a single interval to consider in the verification. Further, the interval data that CLEAResult initially sent to Navigant was more updated and had gaps filled compared to the version which CLEAResult used at the time of their analysis. This resulted in initial discrepancies between Navigant and CLEAResult's selected baseline days and average loads. To resolve the above issues, CLEAResult ultimately provided blended AMI and Pelican interval datasets for each event. This ensured that Navigant was using the exact same data that CLEAResult was using at the time of their event analysis.

During the analysis of the blended interval data, Navigant identified missing data for customer ID B26-AGR-1000034. PGE initially provided this data to CLEAResult via a patch file which CLEAResult did not include in the initial set of blended data sent to Navigant. Once Navigant and CLEAResult identified this issue, CLEAResult then provided updated data to include this customer.

Navigant and CLEAResult's calculated total reduction initially differed due to an exception in calculating the July performance for customer ID B26-AGR-1000023. During the time of event analysis, CLEAResult's AMI data had gaps and there was no Pelican data available to fill these gaps. Thus, CLEAResult selected baseline days to include eligible days that went further back than the ten non-event business days preceding the event, given that data was unavailable for some of the ten preceding non-event business days.

Table 5-6 compares the baseline days that would have been used under the standard CBL procedure versus what was used (because Pelican data were unavailable) for the CBL calculations for customer ID B26-AGR-1000023. It was discovered through further analysis of this customer that the blended data provided to Navigant included fewer than ten baseline days for customer ID B26-AGR-1000023 for the July events. This is because CLEAResult only provided data for as many as ten non-event business days preceding the event for each event for all participants, although the data for customer ID B26-AGR-1000023 was missing for some of these days. Since the initial data provided to Navigant included less than the required ten baseline days, this led to different top five days compared to CLEAResult. Ultimately, Navigant requested the complete interval data for this customer and re-ran the analysis. This resulted in validation of CLEAResult's impact calculations for all customers.

**Table 5-6. Example of Baseline Days for July 16, 2018
Event for Customer ID B26-AGR-1000023**

| Days | Standard Procedure Baseline Days | Used by CLEAResult | Days |
|:---:|:---:|:---:|:---:|
| 1 | 2018-07-13* | | |
| 2 | 2018-07-11* | | |
| 3 | 2018-07-10* | | |
| 4 | 2018-07-09* | | |
| 5 | 2018-07-06* | | |
| 6 | 2018-07-05 | 2018-07-05 | 1 |
| 7 | 2018-07-03 | 2018-07-03 | 2 |
| 8 | 2018-07-02 | 2018-07-02 | 3 |
| 9 | 2018-06-29 | 2018-06-29 | 4 |

| Days | Standard Procedure Baseline Days | Used by CLEAResult | Days |
|------|------|------|------|
| 10 | 2018-06-28 | 2018-06-28 | 5 |
| | | 2018-06-27 | 6 |
| | | 2018-06-26 | 7 |
| | | 2018-06-25 | 8 |
| | | 2018-06-22 | 9 |
| | | 2018-06-21 | 10 |

*Denotes gaps in AMI data at the time of CLEAResult's event analysis

**Errors in Performance Summary Data**

Navigant also identified a couple of cases where customers with multiple PODIDs had their PODIDs switched around in the performance summary data. This was due to issues linking the incoming Pelican feed with the matching PODID as these customers had multiple meters at the same site. Thus, after confirming with CLEAResult, Navigant made corrections to the performance summary data of customer ID B26-AGR-1000027 and B26-AGR-1000024.

An error for customer ID B26-AGR-1000005 was also identified, where CLEAResult had multiple performance data of different values for some of the event hours. CLEAResult sent Navigant a corrected version of the performance data for this customer.

**Errors in Implementer Baseline Calculation**

As part of the analysis, Navigant compared the selected baseline days with those of CLEAResult's and found that some of the days were not aligning. CLEAResult discovered that the file with the baseline days initially provided to Navigant was based solely on PGE AMI data (not the blended AMI and Pelican data). CLEAResult corrected this and provided Navigant with baseline days based on the blended interval data.

The final discrepancy was due to CLEAResult not excluding one of the event days (2018-08-08) from the baseline days when calculating the performance for 2018-08-14. CLEAResult corrected this and provided an updated performance summary data for this event.

With the above corrective actions, Navigant and CLEAResult's CBLs and impacts were the same for all customers.

### 5.1.3 Winter 2018-2019 Impact Evaluation

Navigant estimates a total reduction of 6,645 kW, with a realization rate of 68% for the Winter 2018-19 event, as shown in Table 5-7. Navigant's estimated total demand reduction is 6% higher than CLEAResult's due to discrepancies in calculated impact results for 13 out of 45 customers. Details on the root causes are discussed further below.

## Table 5-7. Overview of February 5, 2019 Event

| Event Date | Tuesday, February 5, 2019 |
|---|---|
| Event Time | 18:00 - 20:00 |
| Customers Called in Event | 45 |
| Total Nomination (kW) | 9,825 |
| Navigant Calculated Total Reduction (kW) | 6,645 |
| CLEAResult Calculated Total Reduction (kW) | 6,252 |
| Difference Compared to CLEAResult (kW) | 393 |
| Difference Compared to CLEAResult (%) | 6% |
| Customers That Delivered DR | 38 |
| Realization Rate | 68% |

### 5.1.3.1 Customers Not Delivering Demand Response

Seven customer sites did not deliver any DR during the Winter 2018-19 season. Figure 5-2 lists these customers and compares their nomination and system impact.

**Figure 5-2. Customer Nomination and System Impact, Winter 2018-2019**
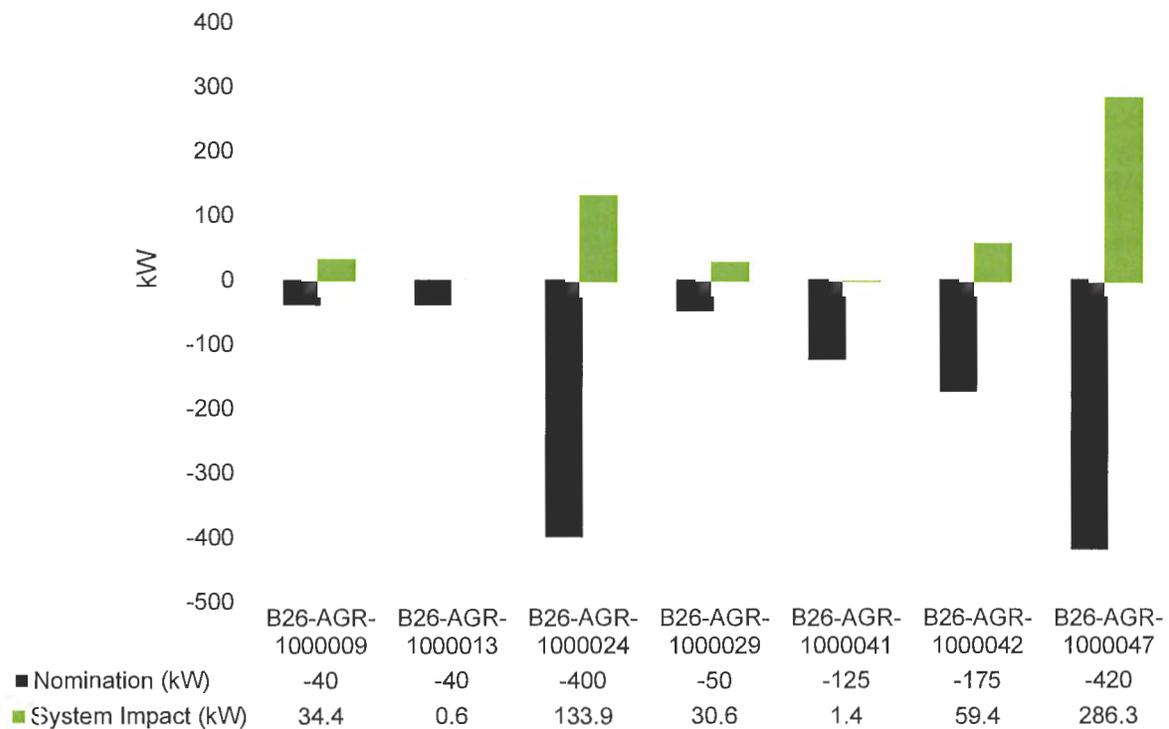


| | B26-AGR-1000009 | B26-AGR-1000013 | B26-AGR-1000024 | B26-AGR-1000029 | B26-AGR-1000041 | B26-AGR-1000042 | B26-AGR-1000047 |
|---|---|---|---|---|---|---|---|
| ■ Nomination (kW) | -40 | -40 | -400 | -50 | -125 | -175 | -420 |
| ■ System Impact (kW) | 34.4 | 0.6 | 133.9 | 30.6 | 1.4 | 59.4 | 286.3 |

There are several potential reasons as to why these customers did not deliver DR. It is possible that customers chose not to curtail their demand if the incentive payment was deemed insufficient to stop

production during the event hours. Also, in the Winter 2018-19 season, Navigant identified significant differences between the Unadjusted CBL and Adjusted CBL system impacts for certain customers, suggesting that further investigation into the appropriate CBL type for these customers may be beneficial.

### 5.1.3.2 Data Analysis Issues

Navigant compared impact results with CLEAResult and identified discrepancies greater than or equal to 5% for 13 out of the 45 customers. Navigant and CLEAResult further investigated these customers to determine root causes for these discrepancies, how customer incentive payments are affected, and if a site visit is required to resolve any issues. The discrepancies across these 13 customers are driven by one of the following main reasons:

- Minor differences between Pelican and AMI hourly data, which propagate to differences in impact results. However, the absolute differences are low and CLEAResult's investigation did not show evidence of systemic difference between AMI and Pelican.

- Scalar factors in the Pelican system required adjustment to match AMI readings.

- Recurring pulse sync issues or a non-functioning meter, which requires a site visit to further investigate (e.g., the meter does not appear to be sending readings to both Pelican and AMI at the same time).

- Mismatch in customer SPID and meter code / serial number, which requires clarification via a site visit.

- Of the 13 customers, only one customer's incentive payment was affected by the discrepancies. In contrast to CLEAResult, Navigant's calculated impact for customer B26-AGR-1000045 reached 70% of their nomination and, thus, this customer should have received an incentive payment. PGE subsequently paid this customer.

## 5.2 Navigant Impact Recommendations

This section summarizes key recommendations for continued improvement of PGE's impact evaluation processes to enhance efficiency and improve overall program impacts, based on Navigant's impact evaluations conducted to date. As the program team has demonstrated a collaborative, problem-solving ethos throughout this evaluation process, some of those recommendations are already in the process of being implemented, but they are documented here nonetheless:

- In cases where CLEAResult makes a request to PGE for meter data extraction to supplement their settlement data, Navigant recommends establishing a clear procedure for developing the final interval data to be used for settlement. Moreover, PGE or CLEAResult should provide the final settlement dataset to Navigant, if multiple interval data sources were used.

- Navigant recommends that CLEAResult provides documentation on any deviation from PGE's CBL methodology to provide clarity on the procedure followed for handling gaps in the interval data.

- Navigant recommends continuing to enhance quality assurance for the data collection processes, including but not limited to troubleshooting errors in the scalar factors used in the Pelican system to match AMI readings, mismatch in customer SPID and meter code / serial number, and meter pulse sync issues.

- Similarly, Navigant recommends continuing to enhance quality assurance for the data transfer processes, including but not limited to ensuring the same AMI data is provided to CLEAResult and Navigant. Historically, and partially due to limited control over the data in PGE's meter data

management system, discrepancies have existed between AMI data provided to CLEAResult and Navigant due to system updates/corrections. While these inconsistencies may continue to exist, steps to mitigate and address issues of data-sharing and quality have already been taken and should continue be implemented.

- Navigant recommended that PGE provide the customer affected by the discrepancy identified in the Winter 2018-19 season with their incentive payment, which PGE subsequently addressed.

- Some customers may have onsite generation such as solar. Navigant recommends clarifying whether the AMI data reflects load, generation, or net load. This is to confirm that participants are incented based on their net draw from the grid.

# 6. CONCLUSIONS

This section presents key findings of the evaluation and their associated recommendations for improvements to program implementation or future research. As the program team has demonstrated a collaborative, problem-solving ethos throughout this evaluation process, some of those recommendations are already in the process of being implemented, but they are documented here nonetheless.

**Finding #1:** **PGE's Energy Partner program achieved up to 11.8 MW of demand reduction per event, as shown in Table 5-1..** This represents nearly 44% of the 27 MW of the DR capacity target by year-end 2020. As of the Winter 2018-19 season, 38 customers were enrolled in the program.

**Finding #2:** **Achieving the program's megawatt targets for 2020 will be challenging and will require creative and strategic approaches to marketing and enrolling harder-to-reach customer segments.** The program is on track to meet its 2019 MW goal. However, PGE and CLEAResult alike expressed that it will still be challenging to meet the 2020 MW goal. Marketing will need to be increased to medium-sized unmanaged accounts and Schedule 25 customers for the thermostat program offering, with uptake from these customers still uncertain. Consideration will also need to be given to how the program can increase committed capacity through BTM storage.

> **Recommendation #2a:** Highlight themes of financial benefit and helping the community to potential new participants.

> **Recommendation #2b:** Highlight the availability of data about energy consumption, curtailment, and the functionality of the web portal (as these capabilities mature) in program marketing and messaging to attract those customers interested in these program aspects.

> **Recommendation #2c:** Highlight automation in program marketing and messaging for certain customers. The program team should consider emphasizing the ways in which the program supports automation—both financially and through the expertise of the implementation team.

> **Recommendation #2d:** Continue to explore ways for BTM storage to contribute to Energy Partner program goals. Lay out a long-term plan, while finding short-term opportunities with specific customers.

> **Recommendation #2e:** Tailor program marketing messaging to various customer segments, to address different drivers that customers have.

> **Recommendation #2f:** Continue to explore synergies with Energy Trust's Strategic Energy Management (SEM) program and opportunities for cross-selling these programs.

> **Recommendation #2g:** Continuously reevaluate the value proposition and "hassle factor" associated with Energy Partner participation for large customers, including:

>> Investigating whether there is a cost-effective way to increase customer incentives to help increase enrollment rates of large customers who might have declined previously.

>> Exploring whether there are additional ways to minimize the "hassle factor" for customer enrollment and enablement.

**Finding #3:** **Existing participants are generally very satisfied with the current program.** Specifically, the existing participants expressed a high degree of satisfaction with the new program participation options and CLEAResult's performance.

**Finding #4:** **The greatest opportunities for program implementation improvement include enhancements to customer data availability and web portal functionality, as well as addressing**

**ongoing technical integration issues.** Examples of ongoing technical integration issues include integrating Enbala's platform version 2, integrating the Ecobee thermostats, and turning around new platform feature developments quickly. Minor improvements could also be made to incentives processing.

> **Recommendation #4a:** As the program team continues developing functionality of the web portal and expands usage to Schedule 25 customers, they might consider some of the recommendations from existing participants documented in the "Data and Web Portal" section of Appendix B.1, if not already addressed.

> **Recommendation #4b:** More end-to-end system testing is recommended to address the integration issues between multiple program platforms.

> **Recommendation #4c:** Have targeted discussions with Enbala about ways to mitigate risks and bottlenecks associated with systems integration and development lead times, which continue to affect customer experience and be one of the most challenging parts of the program. Enbala has mentioned outsourcing some integration work to help support new development and this seems prudent to consider further, given the feature development PGE anticipates in the next 12 months.

**Finding #5: The program implementation team is working well together after having overcome some initial software and coordination hurdles.** Specifically, communication and collaboration between CLEAResult and Enbala have improved since the start of the program.

**Finding #6: The KCMs are satisfied with CLEAResult and have had good interactions with customers regarding the program.**

> **Recommendation #6a:** CLEAResult can continue working on clearly communicating needs, expectations, and deadlines, as well as providing sales tips and lessons learned more regularly to deepen engagement with the KCMs.

> **Recommendation #6b:** Explore further opportunities for streamlining PGE's marketing approval process, which may be slowing CLEAResult's outreach efforts.

> **Recommendation #6c:** As CLEAResult develops case studies for existing participants from different industry segments, ensure that these are shared with the KCMs to help educate and assure prospects that the program can make sense for them without jeopardizing operations.

> **Recommendation #6d:** To further increase customer satisfaction and improvement, new case studies and materials may help KCMs persuade additional customers to enroll.

**Finding #7: PGE and CLEAResult have been taking steps to mitigate and address issues of data-sharing and quality that have arisen to-date in the impact evaluation**, with the following recommendations to continue improving and streamlining processes:

> **Recommendation #7a:** Continue to enhance the quality assurance for the both the data collection and data transfer processes to both Navigant and CLEAResult.

> **Recommendation #7b:** Clarify whether the AMI data reflects load, generation, or net load to help confirm participants are incented based on their net draw from the grid.

> **Recommendation #7c:** Ensure all parties follow a standard procedure for developing interval data to be used for settlement to ensure consistency between Navigant's validation dataset and the settlement dataset.

# APPENDIX A. PROGRAM LOGIC MODEL DETAIL

The following appendix presents more detail on the logic model section of the Energy Partner DR Performance Report, including the elements and outcomes of the logic model.

## A.1 Logic Model Elements

This section describes each program logic element.

**Problem Statement and Barriers**

The Energy Partner program staff identified seven barriers to broad participation of business and government customers in DR programs which the program seeks to address:

- Lack of understanding of DR
- Lack of understanding of community goals related to DR and how they can contribute
- Lack of motivation to participate
- Desire for autonomy
- Concern about effect on operations
- Lack of understanding of enabling technology capabilities
- Lack of financial means to purchase enabling technologies

**Target Audiences**

Program staff identified potential target audiences within the broadly defined business and government customer segments. Target audience findings were used to create four personas used in program design. Target audience personas helped PGE better understand the customer base and guided design of program features accordingly.

Target audience personas included:

- Nate National
- Nate National
- Mike Multiple
- Shelly One Site
- Community Cal

These personas have not been part of the Energy Partner program's go-to-market strategy to date; once the program features were created, PGE implemented a separate marketing plan to engage with relevant customers based on the needs of the program design.

**Inputs**

The primary inputs required for implementing the Energy Partner program are PGE funds, PGE staff time, CLEAResult time, Enbala staff time, and subcontractor/trade ally time.

## A.2 Logic Model Visual Diagram

The program logic model presents the above-mentioned elements in a visual diagram, with an emphasis on identifying the logical links between the following:

- Programs inputs (the financial and intellectual resources put into the program)
- Program outputs (what the program directly produces, e.g., marketing collateral, incentives)
- Short- and long-term outcomes of program activities (e.g., changes in behavior)
- Long-term impacts of those outcomes (energy and demand savings)

**Energy Partner Demand Response Performance Report**

## Figure A-1. Energy Partner Logic Model



**PGE Energy Partner Demand Response Program**

Target Audiences: Business and government customers (Nate National, Mike Multiple, Shelly One Site, Community Cal)

Inputs: PGE funds, PGE program staff time, Clearesult staff time, Enbala staff time, subcontractor/trade ally time

**Barriers**
- Lack of understanding of demand response
- Lack of motivation to participate
- Desire for autonomy
- Concern about effect on operations
- Lack of understanding of enabling technology capabilities
- Lack of financial means to purchase enabling technologies

**Activities**
- Value Proposition Development; Marketing and Recruiting
- Technical Support, Performance Feedback
- Technology Selection & Deployment (Infrastructure)
- Event Management
- Incentive Administration
- Customer Recognition

**Outputs**
- Marketing materials produced and distributed; in-person contacts/meetings made with potential customers
- Technical materials on program processes & measures available for all C&I customer sizes; customer portal available; timely responses to program participation inquiries by implementer; timely event performance reports to participants
- Enbala software is operational; thermostat option is available
- Event dispatch strategies developed
- Incentive system developed
- Participant recognition tools developed (PR templates, decals, window stickers)

**Short-term Outcomes**
- Customers gain awareness and understanding of program opportunity and agree to enroll
- Participants get custom Load Reduction Plans (LRPs); metering installed
- Participants understand what DR is, event procedures, and their own performance after events
- Participants don't opt out of events; demand (MW) reduced
- Participants receive financial incentives for meeting their agreed-upon threshold
- Participants recognized for DR performance

**Intermediate Outcomes**
- Participants move to auto DR strategies
- Participants optimize their strategy to increase load reductions
- Participants get needed support
- Participants are satisfied that LRPs suit their operational needs; stay in program
- Some participants become DR evangelists; promote program to peers
- Participants have internal buy-in and recognition of program benefits

**Long-term Outcomes**
- Participants continue to participate at their maximum capacity
- Program meets or exceeds targeted participation level and realization rate goal
- Program achieves 2021 MW goal cost-effectively

Program Goals: At least 14 MW by Jan. 2019 and 27 MW by Jan. 2021 (cumulative totals), cost-effectively, with a 85%+ realization rate and a positive customer experience

# APPENDIX B. PROCESS EVALUATION DETAIL

This appendix provides more detail on the findings from the customer and PGE staff/implementer interviews in the process evaluation section of the Energy Partner DR Performance Report.

## B.1 Summer 2018 Customer Interviews

This section provides more detailed findings from the Summer 2018 customer interviews by topic area. Within each area, comments from stakeholder groups are consolidated to show where there is broad agreement, or potentially disagreement.

### B.1.1 Topic Area Findings by Customer Group

To help understand how the program changes have impacted satisfaction with the program, Navigant interviewed 10 customers who have been participating since the EnerNOC program (i.e., prior to the Winter 2017-18 season).

**Program Marketing and Participation Drivers and Barriers, Existing Customers**

- Every participant identified financial benefits (i.e., incentives and/or reduced energy costs) as one of the primary reasons for participating in the program, with seven customers citing financial benefits as the most important driver for participation. One customer said: "The line I use is that as a Chief Engineer, I'm always tasked with reducing energy costs and this is the only avenue I know of where I could make money."

- Six participants also identified "doing good for the community" as another primary reason for participating. Of the three customers who did not specify financial benefits as the primary driver for participation, one customer cited the community benefits as the most important participation driver and one customer said that doing good for the community was equal with the incentives (one customer did not specify). Customers tended to frame this as "doing good for the community," as opposed to "doing good for the environment." A couple of customers explicitly mentioned the benefits as "infrastructure efficiency improvement for the region" and to "help reallocate resources so don't have to build a new power plant," indicating that they understood the broader implications of the program.

- Participation challenges that customers cited included the timing of events in relation to production or equipment schedules (this was the most common issue), limitations in staffing, baseline energy demands that change by season or even day and enabling automated controls. The existing participants had either found ways to work through these challenges since the program began or were in discussions with CLEAResult about how to make improvements (e.g., adjusting the baseline methodology to account for a Cogen system or partial response, automating additional aspects of the system, etc.).

- When asked what factors are most likely to prevent a company such as theirs from participating in the Energy Partner program, some customers cited operational barriers (e.g., flexibility in scheduling operations, having sufficient labor, etc.), but other customers stated: "Not realizing how much money they could make" and "I see no reason why anyone would not want to join. There's no risk."

**Program Rules and Incentive Structures**

- The program options that customers noted as the most beneficial or important include the ability to change nominations each month, more flexibility in the event hour windows, the ability to optout of events, and weekly notifications of possible events from CLEAResult. No existing participants expressed confusion with the options or how they were presented, though it is important to remember that these customers were already familiar with the program concepts through the EnerNOC program.

- Two customers highlighted challenges with how the program rules and baseline methodology apply to their unique production or equipment schedules. Both customers have been discussing with CLEAResult ways to participate more fully and accommodate their unique requirements.

- Some customers expressed interest in further DR automation and one customer thought that PGE needs to more clearly communicate and advertise the funds available for automation and working with vendors of the automation equipment.

### Enrollment Process, Customer Communications, and DR Event Experience

- Customers expressed no dissatisfaction with the enrollment process, event experience, program communications, or relationship with their KCM.

### Data and Web Portal

- The greatest opportunity for improving customer satisfaction pertains to the web portal and the availability of data on the customer's performance and energy usage.
  - One customer said: "I really really look forward to when we can see the data. I know it's been coming, but it's been coming for a while and we would really benefit." This customer said that getting the data has taken longer than planned (i.e., it was expected in June and still not available) and was a little disappointed because they wanted to see their performance during summer and adjust.[10]
  - Another customer requested a phone app to monitor electricity usage. One customer has spoken with CLEAResult about issues with the webpage and its limitations in helping customers understand what their performance is and how the incentives are calculated. This customer also noted that that the "willingness of CLEAResult to fix that is heartening."
  - One customer said that their incentive check goes directly to Accounts Payable and suggested that the program email the customer the total incentive amount directly, so they can track what they received. Navigant notes that if the web portal ultimately includes this information, this may help solve this customer's concern without requiring separate emails.[11]
  - One customer suggested making nominations through the portal, rather than having to email.

### Program Contractor Performance and Coordination

- Existing participants are very pleased with the switch from EnerNOC to CLEAResult. All 10 participants expressed high degrees of satisfaction with CLEAResult, and multiple customers explicitly stated that they were more pleased with CLEAResult than with EnerNOC.

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[10] Navigant notes in the time following this comment, PGE launched a web portal to give customers access to data related to their participation in the program.

[11] Navigant notes in the time following this comment, this functionality is now available to customers.

- Customers consistently expressed satisfaction with CLEAResult's communication, including CLEAResult's responsiveness (i.e., tackling issues and responding to questions in a timely manner), explaining the program clearly, and having frequent touchpoints.

- Customers also identified CLEAResult's flexibility and willingness to troubleshoot issues as positives.

- Customers identified no major areas for improvement with CLEAResult's performance; however, they did suggest the following minor improvements:

  o The customer that expected the portal to be available in June said that "setting reasonable expectations would be good" (i.e., give a realistic timeline).

  o One customer felt that they would benefit from more "assistance with figuring out where the demand reductions could be" and that the customer themselves had been "leading the charge on the level of reductions." The customer noted that CLEAResult seemed "reluctant to use SCADA data but are willing partners and have a good relationship."

  o Customers also noted a few areas for improvement with respect to the incentives process and availability of data that CLEAResult may influence, as noted above.

**Declined Non-Participants**

- One customer currently participates in Energy Trust of Oregon's Strategic Energy Management (SEM) Program and was not interested in participating in another program or continuing the interview.

- One customer suggested speaking with one of his managers. Subsequently, Navigant was unable to reach the manager within a reasonable number of contact attempts.

- One customer provided by the KCMs was not actually aware of the program but was interested in learning more.

  o This customer expressed interest in automation to help facilitate participation and thought that the incentives would be the primary driver for participation

  o Navigant passed along this contact information to PGE.

## B.1.2  Stakeholder Group Themes

The following table highlights the major themes conveyed by specific stakeholder groups.

### Table B-1. Stakeholder Group Thematic Findings

| Stakeholder Group | Themes |
|---|---|
| PGE Program Managers | • Program is less restrictive, but more complex to manage now as compared to the previous Energy Partner Program<br>• Collaborative Approach with CLEAResult and Enbala, with PGE much more involved than previously (this is expected to diminish some over time)<br>• Having a strong local presence from CLEAResult has been helpful for management and marketing |
| CLEAResult | • The challenging part is going to be 2020 – not going to attain participation goals through "bread and butter" KCM engagement. Currently working on a roadmap/strategy for getting there<br>• Evolving the offering is going to get a lot of attention in the next year or so: thermostats, storage, refrigerated warehouses, etc.<br>• Still rolling out the energy monitoring capability through the portal |

| Stakeholder Group | Themes |
|---|---|
| Enbala | • Some challenges and short timelines, not a low-stress environment<br>• More complex program design than anticipated, leading to too much to do and not enough time<br>• Need to do more end-to-end testing in the future<br>• Happy with CLEAResult relationship |
| KCMs | • Not familiar with program marketing materials or thermostat option<br>• Not driven by financial incentives, but long-term customer relationships<br>• Would be nice to have one engineering resource in initial meeting with customer to answer questions. Give CLEAResult more customer data upfront to do realistic analysis to give the customer a proposal during initial meetings |
| PGE Business Market Manager | • PGE did a great job redesigning the program, looked at other utilities. PGE followed a competitive market process, defined needs, segmented, validated market size. Classic product development process<br>• Originally proposed a DR easy entry program for business customers (thermostat), but not sure where program is on delivering<br>• Does not have a lot of information on the current program status but can help move it forward more quickly if there is a role to play |

## B.2 PGE Staff/Implementer Interviews

This section provides more detailed findings from the PGE staff/implementer interviews.

### B.2.1 Winter 2017-18 PGE Staff/Implementer Interviews

This section organizes more detailed findings from the Winter 2017-18 PGE staff/implementer interviews by topic area. Within each area, comments from stakeholder groups are consolidated to show where there is broad agreement, or potentially disagreement.

**Program Management Coordination and Communication between PGE and Contractors**

- There is general agreement that the team has developed a collaborative approach, with a good relationship between all parties.

- PGE is much more involved in program management now than it was with EnerNOC, and it is a heavier lift with the more complex program design and the interdependencies between CLEAResult and Enbala.

- However, it took some time initially to synch up and understand everyone's roles. The program had to launch in 3-4 months, and transitioning customers over from the old program also took a little longer than expected, given that contracting took longer than expected in some cases.

**Program Contractor Performance and Coordination**

- PGE stakeholders are pleased with the switch from EnerNOC to CLEAResult. The EnerNOC local representative was effective, but as a company, CLEAResult has more local presence, more experience on customer touch methods, and better customer relationships. The transition from EnerNOC to CLEAResult has been smooth.

- The integration with Enbala has been the most challenging part of the program, which was unexpected at the start of it. More details on the technical integration are included in the Data and Systems Integration section below.

- Enbala and CLEAResult have learned how to work together and have worked through some initial points of friction. They are implementing lessons learned appropriately as the program progresses.

**Program Marketing and Participation Drivers and Barriers**

- Having a local presence with CLEAResult adds to the validity of the program, rather than the out-of-state management by EnerNOC. Also, the program is now branded as a PGE program, whereas before it was EnerNOC, which has helped with customer trust and awareness.

- The direct marketing efforts between CLEAResult and the PGE KCMs has been effective at reaching and enrolling customers. It took a little time to build that relationship, but now they collaborate well. The KCMs generally appear to be less motivated by the financial incentives they can earn from the program and are more invested in their long-term customer relationships and making sure the timing of approaching customers about the program is appropriate and not interfering with other customer issues. This makes the KCMs an important link in the marketing/recruitment chain, but the CLEAResult team must supplement KCM efforts, and drive outreach to non-managed accounts and small/medium businesses.

- The next steps in program marketing will be trying to get wider awareness with non-managed accounts and not relying on individual outreach for smaller customers. There is a need to improve the use of market segmentation and enhance the messaging of the value proposition, including using testimonials of existing customers. Sending email messages to customers could also help increase outreach to smaller customers, if email addresses are available for decision makers at the business.

- PGE used to have an annual customer breakfast where these types of programs could be promoted, but it has been lacking for a couple of years. It would be good to have another forum like that and have CLEAResult with a table there and present the program.

- CLEAResult initially assumed that the financial incentives would not be a big customer motivator, but they are – especially for financially-motivated municipals (e.g., with water pumping load). However, there are other customers who are not as focused on the money and participate more for corporate sustainability and community relationship reasons.

- A few main program barriers were identified:
  - Many manufacturing sites express concern about affecting production by participating in the program and must weigh the value of the program versus maintaining product flow.
  - Direct Access load is not allowed (although the program goals were structured taking this into account).
  - The big customers are already enrolled, so new marginal customers will get smaller, meaning more customers will be needed to reach program goals. Enrollment process, Program rules, and Incentive structures

- Stakeholders generally agree that the redesigned program options are better than before: It is now less restrictive, pays more, and the impacts for not participating are clearer. The program has a menu of flexible options compared to other programs around the country.

- CLEAResult and PGE have designed the program with the objective to enable everybody to participate and have creatively taken down barriers by being sensitive to customers' needs.

- Many customers appreciate the numerous options and view the program as less intimidating than the prior offering. That said, program selection is a little confusing to customers due to the multiple choices and the need to select a specific option in the customer contract makes some customers nervous that they may commit to the wrong one, which may add time to the enrollment process. CLEAResult is mitigating this by being available to support customers when making the decision and being clear that the customer can change their selected options.

- There was a desire expressed for PGE to move faster after a customer signs a contract to get the enrollment process going, meet with the customer on an engineering level, and get implementation of metering equipment in place.

- In lieu of rolling out other aspects of the program, the thermostat program option was not originally discussed with the KCMs and has been slower to be implemented. It is seen as a good way to get smaller customers enrolled in the program, since it is simpler for understanding and participation.

**Customer Communications, DR Event Experience, Customer Satisfaction, and Reasons for Dropouts**

- The program realization rate has been on average 130%. There is a mix of very high performers and about 4-5 customers still struggling a bit and needing handholding (e.g., due to a change in management, change in manufacturing practices, etc.).

- There has been a general strategy of starting off customers conservatively, and then increasing their nominated load reduction as they get more comfortable.

- Customers are generally satisfied, with few complaints being reported by any of the stakeholders.

**Data and Systems Integration**

- Integration was more complex than anticipated, which is consistent with the flexible nature of the program design. There are a variety of different vendors and systems that work together to deliver the program, including Enbala, CLEAResult, Pelican (pulse provider), and EDM. Ultimately, there was too much to do within the available timeframe, and contingency plans had to be implemented.

- The parties conducted robust acceptance testing on each individual system but testing of the overall system and between systems occurred to a lesser degree. More end-to-end testing is recommended to address the seams issues between systems.

## B.2.2  Winter 2018-19 PGE Staff/Implementer Interviews

This section organizes more detailed findings from the Winter 2018-19 PGE staff/implementer interviews by topic area. Within each area, comments from stakeholder groups are consolidated to show where there is broad agreement, or potentially disagreement.

**Program Management Coordination and Communication Between PGE and Contractors**

- There is again general agreement that the team has developed a collaborative approach, with a good relationship between all parties.

- The contractors are moving forward past start-up mode, they have addressed past issues (e.g., initial software and coordination hurdles), and shown strong professionalism. However, it has taken time to get some things done, such as the customer portal, which took longer than desired to launch (late last year) for Schedule 26 and is now undergoing updates for Schedule 25.

- The program management is transitioning from launch mode to operational mode. CLEAResult is now focused on optimizing processes and being more efficient and effective.

- PGE's level of expectations for CLEAResult were different last year than this year. PGE has higher expectations for CLEAResult this year, including pushing customers from manual to automated processes and identifying actions and capital investments that customers can make to provide more demand reduction. Last year, CLEAResult was primarily targeting customers from

the previous program with EnerNOC, with assistance from PGE. CLEAResult did well with this, but these types of recruitment opportunities will be less available in 2019.

## Program Contractor Performance and Coordination

- Positive attributes of CLEAResult's approach is that they have a dedicated, local team of salespeople and engineers who can sit with customers, define what needs to be done for DR, and work with customers on an ongoing basis. With CLEAResult's local presence, they also have a better understanding of PGE's market and customer base than was demonstrated by EnerNOC.

- Communication and collaboration between CLEAResult and Enbala have improved since the start of the program. The two teams are more proactive in discussing issues and developing proposed solutions together before discussing with PGE, per PGE's guidance to have a clear plan for making changes in advance of escalating to PGE.

  The impetus for PGE issuing this guidance was when Enbala shared information with PGE about delaying the rollout of version 2 for Energy Partner (as discussed further in the Data and Systems Integration section below). It came as a surprise to PGE and Enbala had not coordinated with CLEAResult in advance, so PGE effectively became the referee in helping guide the decision. While Enbala is now coming to CLEAResult first in the process to resolve issues and providing updates earlier than they were previously, even more advanced notice from Enbala could help improve the process further.

- The integration with Enbala has been the most challenging part of the program (as discussed further in the Data and Systems Integration section below). Enbala has good project managers assigned to this program, but the development side is a bottleneck and new features have created challenges. Given the nature of how PGE wants to use the system, a lot of build-out and new feature development is required, particularly in the next 12 months. Enbala has talked about outsourcing some of the integration work to help support this new development.

## Program Marketing and Participation Drivers and Barriers

- CLEAResult's core marketing strategy has been to target specific verticals and talk to each facility in the service territory, within that vertical. The first vertical CLEAResult approached was water/wastewater—most of these facilities have now been enrolled, aside from those that are too small. The second vertical has been downtown buildings—where they are currently signing up the sixth building, taking advantage of building managers who manage multiple buildings. Next, CLEAResult will approach the two to three cold storage customers within PGE's portfolio. CLEAResult is applying this approach to enroll participants that can then share experience with other similar customers.

- The KCMs have been pleased with CLEAResult, specifically their account manager (AM). He works well with the KCMs and respects their relationships with customers. He is doing a better job of articulating the benefits to customers than at the program outset and reaches out to KCMs when needed. CLEAResult's AM is very engaged/involved, has given updates at meetings, and has provided sales tips and lessons learned.

- PGE's KCM manager has done an effective job of corralling the KCMs and coordinating with CLEAResult. The KCMs are responsive when CLEAResult's AM contacts them and CLEAResult's AM has been very appreciative of a new KCM who changed two customers who had declined the program to "maybe." There is an incentive program for the KCMs, which helps,

but is not their primary motivator—the KCMs are promoting Energy Partner for the good of PGE and their customers.

- It can be challenging for CLEAResult's AM that the KCMs are in the middle of the relationship with the customer, and in some cases CLEAResult's AM cannot contact customers directly. This has led to some frustration, such as when KCMs are focused on other things and CLEAResult's AM is still tasked with meeting his deadlines and targets. The KCMs noted that in some cases it was not always clear that CLEAResult's AM needed a response from KCMs.

- More marketing collateral would be helpful, such as sales aides to help explain the program. Case studies and getting word of mouth from existing customers who like the program would also be helpful. There may also be other angles to pitch the program, such as real-time energy data access.

- CLEAResult has implemented new marketing tools like LinkedIn ads and will utilize Google Analytics soon.

- PGE has a tedious process to approve marketing materials. PGE approval is required at many stages in the development process, including initial concepts, final copy and layout. First, CLEAResult must brief PGE staff, then the materials must go through an extensive approval process before CLEAResult can work on the materials. The approval process has delayed the process and hampered CR's ability to move quickly through the development process. PGE was supposed to speed up the validation process, but it is still a multi-step process.

- The next steps in program marketing will be trying to get wider program awareness among non-managed accounts and broadening outreach efforts beyond the account manager model to engage these smaller customers. As part of this transition, PGE would like to use market segmentation and enhance the value proposition messaging to non-managed accounts, including using testimonials of existing customers.

- Customers have a mix of motivations for participating in the program:
  - CLEAResult initially assumed that the financial incentives would not be a big customer motivator, but they are – especially for financially-motivated municipals (e.g., with water pumping load). For example, one customer said the incentives were sizable enough for them to add another shift, make the business case to fund it, and make it a 24-hour operation.
  - However, other customers are not as focused on the money and participate more for corporate sustainability and community relationship reasons.

- Regarding Schedule 25 customers, the program is still in its infancy as CLEAResult is still working to get the enrollment portal done this summer and has not started significant general marketing. CLEAResult will focus on recruiting municipalities this year, where each customer conversation can address multiple thermostats, such as the Portland Fire Bureau, which has 120+ thermostats ready to participate in the summer 2019 season. With (pending) approval from the Energy Trust of Oregon, PGE's Energy Efficiency team will be able to provide information to customers about the Schedule 25 DR program and they will eventually be able to enroll them onsite through the enrollment portal. It should be noted that the onsite enrollment process currently requires a lot of manual work for CLEAResult and would be difficult to scale up in its current form for larger volumes of customers. The Ecobee integration is also in progress, but Enbala's Symphony cannot effectively communicate with the thermostats without development of a new API. CLEAResult and PGE are coordinating with Ecobee and Enbala to develop the new API. In the interim, PGE will use Ecobee's utility portal to initiate DR events.

- For the DR Testbed efforts, community-based approaches for marketing are required along with coordination with existing programs. PGE is trying to identify incremental savings from non-participating customers and get CLEAResult to work within that incremental framework. There is additional budget for this effort.

- A few main customer barriers were identified:

  - The large load customers are already enrolled, so new adoption will involve smaller loads, meaning more customers will be needed to reach program goals.

  - Many manufacturing sites express concerns about affecting production by participating in the program and must weigh the value of the program versus maintaining product flow. Anytime "curtailment" is mentioned customers have a strong reaction due to concerns about interrupting operations and production. Also, there are several high-tech manufacturing customers within PGE's service area and this program does not work well with their needs. School schedules are hard for DR as well.

  - Further, there can be a lack of understanding by customers, miscommunication by KCMs, and a need for better understanding of customers' processes. One large customer thought that their electricity would be shut off in an event, and the team had to communicate with them to clear it up. This discussion was successful and now they are enrolling part of their industrial processes in the program.

  - The current customer incentives are not enough of a motivator for many customers to participate and risk operational disruptions. The price point for the program is too low for customers to go through the hassle of getting it set up, selling it to management, and integrating DR into their facility management system.

  - Direct Access load is not allowed (program goals were structured taking this into account).

**Customer Communications, DR Event Experience, Customer Satisfaction, and Reasons for Dropouts**

- Customers are generally satisfied with the overall program, with few complaints being reported by any of the stakeholders.

- The program realization rate has been over 100%. The Summer 2018 season went very well, with customers wanting to start conservatively and then increase incrementally through the summer. There is a balance between having a good realization rate, which affects customer incentives, and customers' capacity nominations being too low. Thus, CLEAResult worked with customers on DR operations and developed customized load reduction plans, then followed up with them leading up to summer and in July. Some August events led to more increases in nominations. For the Winter, the realization rates tend to be lower. The February 2019 event had a lower realization rate than summer, but the yearly average is still good.

- Regarding automation, some customers do not want "big brother" or loss of control. On the cold storage side, CLEAResult has made more inroads. Customers need to understand that controls work qualifies for being paid for by the program. PGE has discussed a Building Management System incentive, but there is not budget for it right now.

**Data and Systems Integration**

- End-to-end testing has been improved since the last round of interviews.

- The customer portal has been launched, with 99% of the functionality for Schedule 26. The turnaround time was not as quick as PGE wanted, although it still met the need. CLEAResult and Energy Datametrics (EDM) is working on providing customers with a way to adjust nominations

and participation windows, as well as see how monthly payments will change. This change should be ready before summer starts.

- Enbala's updated operating system version has had a challenging launch, which has affected program delivery. Enbala originally targeted moving to version 2 of its platform for the Summer 2019 season, but ultimately decided that it was too risky to ensure a smooth transition before the season starts. Enbala will continue to support version 1 through the Summer 2019 season, with no impact to the customers, and transition to version 2 over time, which may still be 18 to 24 months away. Part of the reason for this delay was that PGE's water heater program took priority over Energy Partner on moving to version 2; however, PGE still expected Enbala to maintain its timeline and it was a surprise when Enbala had to delay.

- Enbala could not deliver the event notification system so they used Apricity as a subcontractor.

- Enbala had a plan to integrate a new thermostat vendor, Ecobee, and then Ecobee changed its API, so that integration is currently on hold until Q3 of 2019, dependent on the launch of Ecobee's new API.

- When a meter feed goes down, Enbala must backfill the data for the gap, and it can be onerous to find data. CLEAResult and Enbala have a plan to automate the process and ease the manual burden.

**Progress Toward Goals**

- PGE's confidence level is 75-80% to meet the 2019 goal for 20 MW. Things slowed down in January/February but are picking up again. The program is at 16.5 MW now and should be at 17 MW in June. PGE anticipates further load reductions may be recruited because CLEAResult has more managed accounts they are starting to engage with, some current participants can increase nominations, and there will be more outreach to unmanaged accounts in second half of the year.

- CLEAResult is confident about the pipeline to meet the 2019 goal for 20 MW by enrolling new customers and expanding existing customers. In some cases, the new customers are larger and more complex, and take more time to get electrical designs and figure out meter configurations. The easier large customers have been done already.

- As far as the 2020 goal of 27 MW, there is less certainty and confidence. CLEAResult expects an "all hands-on deck" effort to get there by driving as much load from new customers as possible and maximizing the load of existing customers. Schedule 25 will be a significant component.

- PGE's energy storage initiative may be able to contribute to the Energy Partner program goals. PGE's Program Manager is talking with that team, but implementation is still 12-18 months out. There are two batteries in the planning stage that are likely to be enrolled by Q1 2020 - one small and one large. CLEAResult is looking at storage vendors who might be willing to work with them on DR. CLEAResult also has a new DR team looking nationwide at storage that can be leveraged. There is a battery solution for larger customers, but currently the economics are not favorable (e.g., $500K cost with a long payback), so the customer must have other reasons (e.g., resilience benefits) to pursue energy storage.