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

September 30, 2021

Via Electronic Filing

Public Utility Commission of Oregon
Attn: Filing Center
201 High Street, S.E., Suite 100
P.O. Box 1088
Salem, OR 97308-1088

Re: UM 1514 Evaluations of PGE's Energy Partner Schedule 26 Demand Response Pilots for the Summer 2020 and Winter 2020/2021 Seasons

Dear Filing Center:

Enclosed is Guidehouse's (formerly Navigant) evaluations of the Portland General Electric (PGE's) Energy Partner Schedule 26 nonresidential demand response pilot. The evaluation provides pilot impact estimates and process recommendations for Summer 2020 and Winter 2020/21, and includes additional assessments focused on the suitability of the pilot's applications for program acceptance by the Public Utility Commission of Oregon (OPUC). This memo summarizes Schedule 26 evaluation outcomes from Summer 2020 and Winter 2020/21 and focuses on program acceptance insights.

The Summer 2020 and Winter 2020/21 evaluation reported the following:

The pilot faced several severe challenges during the Summer 2020 and Winter 2020/21 seasons, including: negatively impacted process loads from economic volatility caused by COVID-19 and associated, reduced marketing efforts resulting from Fall 2020 wildfires, as well as interruption of DR events during Winter 2021 ice storms. The evaluation resulted in the following key impact and process observations during these seasons.

- The pilot delivered its largest summer season average savings in Summer 2020—curtailing an average of 12.7 MW per event vs 12.4 MW for Summer 2019—and yielded an average of 10.2 MW per event in Winter 2020/21, significantly greater than Winter 2019/20 savings of an 8.5 MW per event (see Table 1 below).
- The pilot delivered a consistent realization rate of 84 to 95 percent over the course of five curtailment events in Summer 2020; the evaluation's calculated total curtailment during each event was within one percent of the initial post-event analysis for three of five events and did not exceed 2.8% for the remaining two events.

- The pilot conducted two Winter 2020/21 events; the events achieved realization rates of 86 and 91 percent, respectively. The evaluation's calculated total curtailment for each event was within one percent of the initial post-event analyses.
- The Summer 2020 Process evaluation identified the following pilot strengths based on participant interviews:
    - Helping the environment, achieving sustainability objectives, and bolstering the organization's green image were key program participation drivers for the majority of the interviewed participants.
    - Existing participants expressed a high degree of satisfaction with pre-event communication followed by post-event communication and options for flexible participation. Exited participants interviewed have not left the program due to poor event experience nor challenges with event participation, but due to site closures.
    - In general, the participants are very satisfied with the current program. The Summer 2020 process evaluation indicated an average customer satisfaction score of 9.5 out of 10.
- A continuing challenge for the pilot will be increasing automatic and semi-automatic participation among current manual curtailment participants. Customers who use process load as part of their participation, specifically, are hesitant to participate with automatic curtailment due to concerns that their company's core competency will be put at risk during due to unforeseen, automated curtailment of Energy Partner event.

A summary of pilot enrollment and performance by season is presented in Table 1:

Table 1. Summary of Schedule 26 Enrollment and Performance by Season

Season	Max. MW Nominated	Max # Enrolled	Max. MW Reduction	Avg. MW Reduction per Event	Avg. Realization Rate
Winter 2017–2018	4.0	33	2.7	2.7	66%
Summer 2018	8.8	43	11.8	10.5	131%
Winter 2018–2019	9.8	45	6.6	6.6	68%
Summer 2019	15.2	50	13.8	12.4	82%
Winter 2019–2020	11.8	61	8.5	8.5	73%
Summer 2020	14.3	61	13.5	12.7	91%
Winter 2020–2021	11.7	67	10.4	10.2	91%

* See Table 5-1 for the maximum number of MW nominated across events, maximum number of customers, maximum and average MW load reduction, and average realization rate for each season. *Source: Guidehouse*

The evaluation of Energy Partner's readiness to transition from Pilot to Program key findings:

The evaluation of the pilot's readiness to transition to a program represents key findings based on Guidehouse's three-year evaluation of the pilot in the context of the pilot-to-program transition review considerations set forth in the October 2020 OPUC Energy Resources and Planning Staff

memo titled "Utility Guidance: Pilots and Programs". Specifically, the evaluation addresses the following program review considerations stated in the memo:

- Predictable Outcomes
  - Customer satisfaction scores have consistently shown the pilot is viewed favorably by participants
  - Relatively stable pilot performance has been achieved year-over-year, despite significant internal and external events
- Discrete Offerings
  - Consistently high customer satisfaction with PGE's flexible pilot participation options
  - Opportunities exist to expand customer participation options and pilot design elements to facilitate new grid services and technologies
- Repeatable Process
  - Consistent customer engagement before, during and after each event season; realization rates routinely exceed 70%
  - Opportunities exist to continue refining the processes for balancing customer satisfaction and resource needs
- Reasonable Rates
  - Cost effectiveness is currently 1.45 under the Total Resource Cost (TRC) test
- Measurable Benefits
  - Financial benefits via robust incentive payments available to customers; consistent, measurable demand reduction during peak time events
- Ongoing Implementation
  - Opportunities exist to enhance PGE Key Customer Manager recruitment, expand recruitment and engagement to unmanaged PGE customers, and continue improving pilot-related data quality
- Periodic Evaluations
  - Conduct ongoing assessments of processes and impacts to inform continuous program improvement

These high-level findings, together with the detailed results outlined in the attached report, point to the success of the program.

If you have any questions or require further information, please call Alina Nestjorkina at (503) 464-2144. Please direct all formal correspondence and requests to the following e-mail address pge.opuc.filings@pgn.com.

Sincerely,

/s/ *Jaki Ferchland*

Jaki Ferchland
Manager, Revenue Requirement

Guidehouse

Energy Partner Demand Response Performance Report – Schedule 26

2019-2021 Report to the Public Utility Commission of Oregon

Prepared for:

PGE

Portland General Electric

Submitted by:

Guidehouse Inc.
1375 Walnut Street
Suite 100
Boulder, Colorado 80302

September 2021

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Executive Summary

PGE's Energy Partner demand response (DR) program under the Schedule 26 tariff offers commercial and industrial (C&I) customers an opportunity to participate in PGE's efforts to reduce the cost of supplying power and to manage the grid. Starting the winter 2017-2018 season, PGE redesigned the program and transitioned from EnerNOC's implementation under the name Automated DR to the rebranded Energy Partner program,[1] which consists of Schedule 26 for medium- and large-size nonresidential customers load curtailment (e.g., process and HVAC loads) and Schedule 25 for small- and medium-size nonresidential customer direct load control. PGE's objective for the program has been to cost-effectively deliver an average of 27 MW of demand reduction across the summer and winter seasons by the end of 2020.

This report presents the findings and recommendations from Guidehouse's three-year evaluation of Schedule 26. Starting with the winter 2017-2018 season, the evaluation activities included:

- Conducting an impact evaluation following each season to quantify the seasonal demand reduction impacts and validate the implementation contractor's impact calculations.
- Providing process evaluation findings on performance feedback and recommendations through PGE staff/implementer interviews at the end of each winter season and customer interviews at the end of each summer season.
- Summarizing the program impact and process evaluations in two final reports (in 2019 and 2021).

Where applicable, this report also addresses the current status of Schedule 26 relative to the OPUC's pilot-to-program transition review considerations and program review considerations.[2]

Schedule 26 has a strong foundation of stable, consistent load reductions from large C&I customers with high customer satisfaction and cost-effective program delivery. PGE successfully implemented the pilot by bringing together multiple solution providers to demonstrate the viability and value of Schedule 26 as a resource. Over the course of the pilot, PGE and the implementation contractors delivered reliable and steadily increasing levels of peak load reduction, while maintaining program cost-effectiveness, improving operations, and achieving consistently high customer satisfaction.

With this foundation, Schedule 26 could sustain peak load reductions near current levels (see Table 1-1) without significant changes to the existing program design or customer engagement approaches. However, the Schedule 26 team has enrolled most of the eligible larger C&I customers within PGE's service area and PGE's needs for the program are evolving as extreme weather events increase and PGE develops its smart grid. Thus, to meet the targets set forth by the OPUC and to meet PGE's evolving needs, PGE and the Energy Partner implementation contractors will need to augment the program's value proposition and customer enrollment

[1] Key program design changes resulting from the Energy Partner redesign include the ability to choose notification period, 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.

[2] OPUC Energy Resources and Planning, *Utility Guidance: Pilots to Programs*, October 2020.

efforts and through program design enhancements and expanded customer engagement approaches.

Table 1-1. Summary of Schedule 26 Enrollment and Performance by Season

Season	Max. MW Nominated	Max. # of Customers Enrolled	Max. MW Reduction	Avg. MW Reduction per Event	Avg. Realization Rate
Winter 2017–2018	4.0	33	2.7	2.7	66%
Summer 2018	8.8	43	11.8	10.5	131%
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Summer 2020	14.3	61	13.5	12.7	91%
Winter 2020–2021	11.7	67	10.4	10.2	91%

* See Table 5-1 for the maximum number of MW nominated across events, maximum number of customers, maximum and average MW load reduction, and average realization rate for each season.

Source: Guidehouse

Table 1-2 summarizes Guidehouse's findings on the areas of success over the pilot's implementation, as well as ongoing needs and opportunities for program improvement, by OPUC program review consideration and applicable program stakeholder.

Table 1-2. Summary of Program Review Considerations

Program Review Consideration	Report Section / Stakeholders	Successes	Needs / Opportunities
Predictable Outcomes	4. Customers 5. PGE	Average customer satisfaction score of 9.4 out of 10 (see Table 4-2) Relatively stable program performance year-over-year, despite significant internal and external events (e.g., COVID-19)	Monitor customer satisfaction and attrition with any new or changed program participation options
Discrete Offerings	4. Customers	Consistently high customer satisfaction with PGE's flexible program participation options	Consider clustering customers into subgroups and staggering event calling to facilitate more flexible response Explore expanded program design to facilitate new grid services and technologies (e.g., battery storage) Assess value and customer willingness for new participation options (e.g., shorter response times, automation, consecutive events, weekend events, etc.)

Program Review Consideration	Report Section / Stakeholders	Successes	Needs / Opportunities
Repeatable Process	5. PGE	Consistent customer touchpoints and engagement Good working relationships with implementation contractors Average realization rates above 70%* Event dispatch transition to PGE's PowerOps team in summer 2020 for reliability and economic dispatch	Complete testing of the new Enbala Concerto system across a full set of use cases Enhance program documentation Collaborate with PowerOps and CLEAResult on refining processes for balancing customer satisfaction with resource needs Develop and refine automated processes for energy usage data transfer
Reasonable Rates	N/A**	Cost-effectiveness of 1.45 under the Total Resource Cost (TRC) test[3]	Maintain cost-effective program delivery
Measurable Benefits	4. Customers 5. PGE	Customers consistently cite financial benefits as a primary reason for participation, with increasing motivation from public relations / green image Nearly threefold increase in nominated MW for both the summer and winter, with average realization rates of at least 65% (see **Error! Not a valid result for table.**)	Enhance customer portal and automation offerings Assess whether incremental value justifies increased incentives for any new participation options Evaluate current incentive structure's approach to reservation payments for non-event months
Ongoing Implementation	5. PGE 6. Implementation Contractors		Enhance KCM engagement Expand customer engagement through deeper savings with current participants and acquisition of new participants (e.g., unmanaged accounts) Begin planning for steady program growth Continue improving program-related data quality for evaluation Revies and refine marketing approval processes Explore options to help expedite EDM turnaround times
Periodic Evaluations	5. PGE	Regularly conducted process and impact evaluations from winter 2017-2018 through winter 2020-2021	Conduct ongoing assessments of processes and impacts to inform continuous program improvement

* With the exception of the winter 2017-2018 and winter 2018-2019 seasons (see Table 5-1)

** Addressed by PGE outside of this evaluation

[3] Portland General Electric Company, Application for Reauthorization of Deferred Accounting, UM 1514, November 2020.

Source: Guidehouse

1. Background

PGE's Energy Partner demand response (DR) program under the Schedule 26 tariff offers commercial and industrial (C&I) customers an opportunity to participate in PGE's efforts to reduce the cost of supplying power and to manage the grid.

Starting the winter 2017-2018 season, PGE redesigned the program and transitioned from EnerNOC's implementation under the name Automated DR to the rebranded Energy Partner program,[4] which consists of Schedule 26 for medium- and large-size nonresidential customers load curtailment (e.g., process and HVAC loads) and Schedule 25 for small- and medium-size nonresidential customer direct load control. Schedule 26 incorporates interchangeable components for various solution providers (see Figure 1-1), including a third-party implementer for customer engagement (CLEAResult), third-party evaluator for quality assurance (Guidehouse), asset management solution provider (EDM Software), notification platform (Apricity Energy), and DR management system (DRMS) provider (Enbala).

Figure 1-1. Energy Partner Schedule 26 Solution Providers and Data Flows

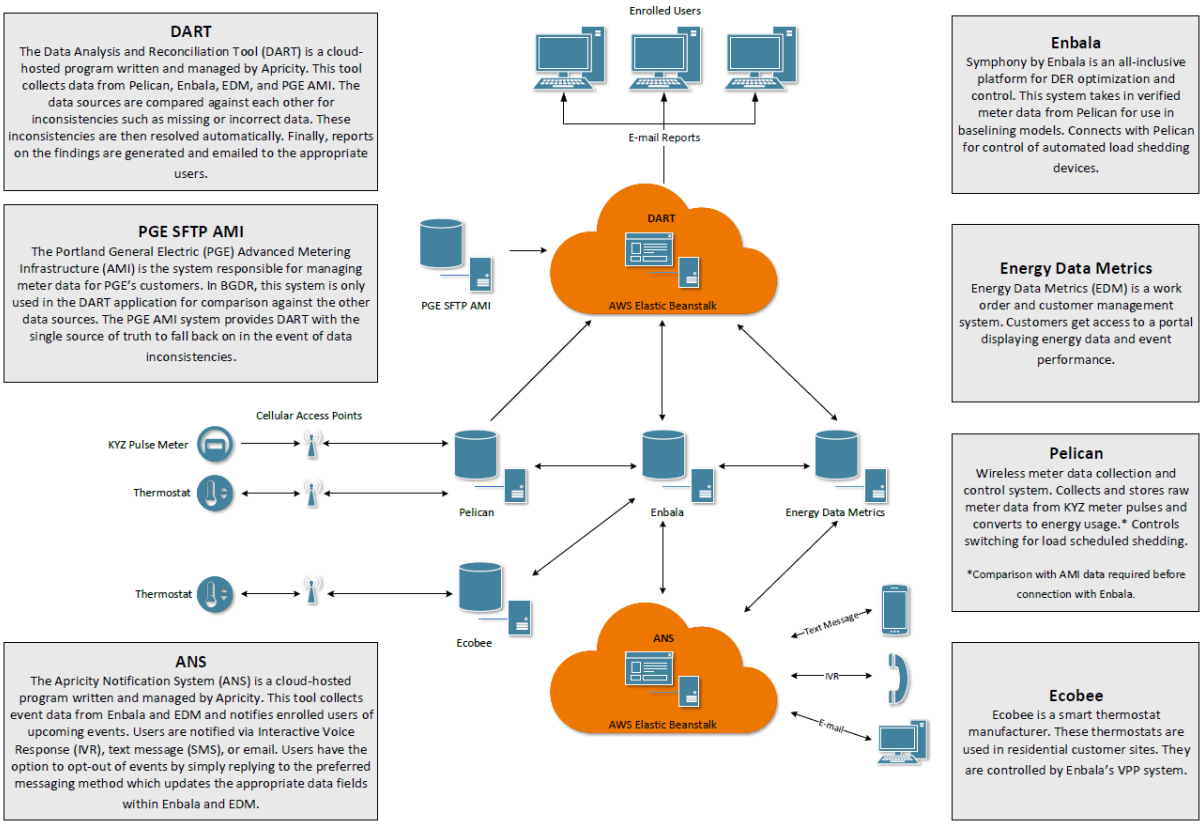


Diagram includes both Schedule 25 and Schedule 26; all elements pertain to Schedule 26, with the exception of Ecobee, which solely pertains to Schedule 25. BGDR refers to Business & Government DR, which was previously used to refer to Energy Partner.

Source: CLEAResult

[4] Key program design changes resulting from the Energy Partner redesign include the ability to choose notification period, 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.

PGE's original goal for Energy Partner was to achieve an average of 27 MW of peak load reduction across the summer season (June–September) and winter season (November–February) by year-end 2020. In early 2021, PGE revised these goals to 25.6 MW of enabled nominated load for summer 2022 and 19.5 MW of enabled nominated load for winter 2021-2022 by year-end 2021. This includes 1.0 MW in the summer and 2.8 MW in the winter for Schedule 25, with the remaining peak load reduction from Schedule 26.

In 2020, PGE indicated to the Public Utility Commission of Oregon (OPUC) that Schedule 26 has met the pilot-to-program criteria set forth in the OPUC's guidance on utility pilots to programs.[5] Subsequently, PGE is filing a pilot-to-program transition plan for Schedule 26 in parallel to the filing of this report.

The objectives for Guidehouse's evaluation of Schedule 26 included:

- Providing unbiased information to the OPUC about Schedule 26's program's performance.
- Providing PGE timely feedback on whether the program is on track.
- Providing PGE recommendations for continuous improvement to help PGE achieve its goals.

To support these objectives, Guidehouse conducted the following activities, starting with the winter 2017-2018 season:

- Conducting an impact evaluation following each season to quantify the seasonal demand reduction impacts, validate the implementation contractor's impact calculations, and provide outcomes used to correct participants incentive payouts, where needed.
- Providing process evaluation findings on performance feedback and recommendations through PGE staff/implementer interviews at the end of each winter season and customer interviews at the end of each summer season.
- Summarizing the program impact and process evaluations in two final reports (in 2019 and 2021).

The remainder of the report presents the following:

- Impact and process evaluation results for PGE's Schedule 26 Energy Partner program since Guidehouse's (formerly Navigant) last report to the Oregon Public Utilities Commission (OPUC) in September 2019[6] (i.e., for the winter 2019-2020, summer 2020, and winter 2020-2021 seasons).
- Conclusive takeaways from the course of Guidehouse's 3-year evaluation.
- Current status of Schedule 26 relative to the OPUC's pilot-to-program transition review considerations and program review considerations.

[5] OPUC Energy Resources and Planning, *Utility Guidance: Pilots to Programs*, October 2020.

[6] Navigant Consulting, Inc. *Energy Partner Demand Response Performance Report: 2018-2019 Report to the Public Utility Commission of Oregon.* Prepared for Portland General Electric. September 2019.

The report is structed by program stakeholder group, which include customers, PGE program management and implementation, and implementation contractors. Where applicable for each stakeholder, the report addresses the OPUC's program review considerations for the pilot-to-program transition to help facilitate evaluation of the pilot's transition-readiness status and opportunities for improvement. These considerations include the following:

- Predictable outcomes
- Discrete offerings
- A repeatable process to deliver the program offering
- Just and reasonable rates (addressed by PGE outside of this evaluation)
- Measurable benefits
- Ongoing implementation
- Periodic evaluations

In parallel to the Schedule 26 evaluation, Guidehouse has been evaluating PGE's Schedule 25 Energy Partner pilot for small business smart thermostats DR, with the results of that evaluation presented separately.

2. Periodic Evaluations

This section summarizes Guidehouse's process and impact evaluation methodologies since the redesign in the winter 2017-2018 season, with the appendices providing additional detail on the specific methods used in each season.

2.1 Process Evaluation Methodology

The process evaluation assessed how well the Energy Partner Schedule 26 DR program operated and identified beneficial modifications in terms of program options (e.g., notification requirements, etc.) and processes (e.g., marketing, communication with participants, payment of incentives, etc.).

To support the process evaluation, Guidehouse conducted seasonal interviews (summer and winter) with the groups Table 2-1 identifies for each season from winter 2017-2018 through winter 2020-2021. Guidehouse interviewed each group annually and conducted interviews for completion after each season to help facilitate timely and effective program change.

Table 2-1. Interviewee Groups and Schedule

Program Season	Interviewee Groups	Interviewees
Winter	PGE Staff	PGE program management, Key Customer Managers (KCM), Power Operations (PowerOps)
	Implementation Contractors	CLEAResult, Enbala
Summer	Existing Participants	Customers enrolled for more than 12 months
	New Participants	Customers enrolled for less than 12 months
	Nonparticipants	Customers who have neither enrolled nor declined
	Declined Customers	Customers approached by CLEAResult who declined participation
	Exiting Customers	Customers who were enrolled and stopped participation

* Guidehouse conducted interviews in the 3 months following each program season. Guidehouse interviewed PGE program management, CLEAResult, and existing participants annually, with other interviewees interviewed on a frequency agreed upon between Guidehouse and the PGE evaluation teams.

Source: Guidehouse

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

Table 2-2. Interview Topics by Interviewee Group

Interview Topic	PGE Staff	Implementation Contractors	Existing/New Participants	Nonparticipants/ Declined/Exited
Program Rules	◖	◖	●	◖
Participation Drivers / 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

Source: Guidehouse

2.2 Impact Evaluation Methodology

This section outlines the technical approach and data Guidehouse used to estimate impacts for each individual C&I customer who participates in PGE's Schedule 26 Energy Partner program.

For the Schedule 26 impact evaluation, the overarching objective was to validate the estimates of load curtailment provided by the vendors for C&I customers. To support this, Guidehouse replicated and validated the impact calculations for settlement payments performed by CLEAResult, PGE's implementation contractor, using the data and methods described below.

2.2.1 Impact Evaluation Data

This section presents the data Guidehouse used to support the impact evaluation.

To conduct the impact evaluation, Guidehouse primarily used AMI data provided by PGE. If AMI data was not available or complete, Guidehouse supplemented the gaps with data provided by CLEAResult from the Pelican data collection system.[7] In contrast, to estimate impacts for

[7] The Pelican data collection system is monitoring, communication, and automation equipment that serves the following functions: 1) provides real-time energy usage data to customers, 2) provides real-time energy usage data to the program implementation team for settlement and event performance estimates in the DRMS, and 3) enables automated event calling for customers with automated curtailment by connecting to the customer's building management system (see Figure 1-1).

CLEAResult's settlement processes, CLEAResult primarily used Pelican data, where it was available. If Pelican data was not available or complete, CLEAResult used AMI data from their daily feed. For the winter 2017-18 and summer 2018 evaluation cycles, while CLEAResult was still in the process of implementing Pelican devices at customer sites, Guidehouse and CLEAResult used identical data sources, which were mainly AMI interval data supplemented by Pelican data.

Table 2-3 describes the categories and examples of data fields provided by PGE and CLEAResult for the Schedule 26 impact evaluation.

Table 2-3. Impact Evaluation Data Categories

Category	Description	Fields
Participant Interval Data	Fifteen-minute or hourly interval consumption data for Energy Partner participants for whom AMI data are available for all months of each evaluation cycle. For customers where AMI data was not available, Guidehouse used interval data from Pelican system.	• Consumption (kWh) • Date • Time stamp (hour ending in which the demand in that interval was observed) • Customer service point ID (SPID)
Participant Cross-Sectional Data	Program tracking data	• Customer service point ID (SPID) • Customer aggregated ID • Nominated curtailment • Total number of participants by event • Flag indicating a requirement for an 18-hour advanced notification • Flag indicating if a customer is a firm service level customer • Notification strategy by event (e.g., 18-hour, 4-hour, etc.)
Event Schedule	DR event schedule	• Dates of the events • Event start time and end time • Time zone (e.g., PST, PDT etc.)
Customer with Onsite Generation	A list of customers with onsite generation to help identify reasons for negative interval data (if present)	• Customer service point ID (SPID) • Flag indicating if customer has on-site generation
Performance Summary Data	Data are required to validate CLEAResult's results against Guidehouse's calculations for customer baseline load and impact from AMI data	• Customer service point ID (SPID) • Customer aggregated ID • Event date • Event hour • Average hourly demand • Unadjusted baseline demand • Additive adjustment • Adjusted baseline demand • Customer system Impact • Documentation on the baseline procedure followed, if different from PGE's standard CBL methodology

Source: Guidehouse

2.2.2 Customer Baseline Load Methodology

Guidehouse calculated the impacts for C&I 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 CBLs.

The key steps for calculating the C&I customer CBL baseline follow:

1. **Assess the look-back period.** Select the 10 non-holiday[8] business days immediately preceding the event being evaluated.
2. **Select the baseline days.** CBL is calculated using 5 of the 10 days included in the look-back period. The 5 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 5 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 2-hour period that begins 6 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.
    b. **Apply the day-of load adjustment.** If the customer receives an 18-hour advance notification period for a specific event, the event occurred during a winter morning, or CLEAResult has determined that a non-adjusted baseline is a better measure for onsite operations, no adjustment is applied and the customer's unadjusted baseline becomes the final estimated CBL baseline. Otherwise, the adjustment value is added to the unadjusted baseline value for the given customer and the adjusted baseline becomes the given customer's final estimated CBL baseline.
5. **Calculate impacts.** The average event impact for a given customer is the difference between the final estimated CBL baseline and actual average load during the event hours.

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. PGE provides customers with an incentive payment if their DR impact is equal to 70% or more of their nominated load.[9]

[8] 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.

[9] Portland General Electric Company, Schedule 26, Nonresidential Demand Response Program, Second Revision of Sheet No. 26-1, https://assets.ctfassets.net/416ywc1laqmd/58Ec9RPWBJIL6E6UHYE2of/c3d1ba104ea6ef002588f94125ac9e6c/Sched_026.pdf.

3. Pilot-to-Program Transition Review Considerations

This section summarizes the key findings from Guidehouse's three-year evaluation as they relate to the pilot-to-program transition review considerations set forth by OPUC staff. Sections 4 through 7 of this report provide supporting detail on these transition review considerations, as well as Guidehouse's findings on the OPUC's program review considerations.

Guidehouse's findings on the pilot-to-program transition review considerations are based on the combined results of Guidehouse's process and impact evaluations from the winter 2017-2018 season through the winter 2020-2021 season. These findings reflect learnings through the normal course of the evaluation that help support Schedule 26's current transition status. These findings distill the key evaluation takeaways, with emphasis on the evaluation's most recent learnings and the implications for future progression. While these findings include discussion of the summer 2021 season to help illustrate that future progression where applicable, the summer 2021 season was outside of the scope of this evaluation.

Finally, to answer questions about the suitability of the pilot to transition to program status, this evaluation addresses guidelines and criteria set forth in the OPUC's Pilots and Programs document.[10] Guidehouse expects the OPUC may permit the program to test new flexible load concepts, pending evidence of cost-effectiveness. within an existing program. In the case of Schedule 26, new flexible load concepts for PGE's C&I customers may be offered to the same customer base from the same implementation vendors and bundled with the offerings of the existing program. Thus, Guidehouse has recommended that these concepts are at least considered for testing under the existing program, and that doing so would not necessarily require reverting to a pilot, given the core functionality would remain intact. In all cases, however, Guidehouse expects that testing new concepts would justify thorough cost-effectiveness analysis to ensure the concepts benefit ratepayers.

Question 1a: Was the pilot run successfully?

PGE brought together multiple solution providers to demonstrate the viability and value of Schedule 26 as a resource. Over the course of the pilot, PGE and the implementation contractors delivered sustained, predictable, and steadily increasing levels of peak load reduction, while maintaining program cost-effectiveness, improving operations, and achieving consistently high customer satisfaction.

To reach these milestones, the program team overcame challenges with systems integration across multiple partners, unforeseen external events, staffing changes, marketing hurdles, and building standardized processes for program operations. As the pilot transitions to a program, PGE and the implementation contractors have opportunities to continue improving Schedule 26's operations.

Table 3-1 summarizes Guidehouse's findings on the areas of success over the pilot's implementation, as well as ongoing needs and opportunities for program improvement, by program review consideration and applicable program stakeholder. Sections 4 through 7 provide further detail on these findings.

[10] OPUC Energy Resources and Planning, *Utility Guidance: Pilots to Programs*, October 2020.

Table 3-1. Summary of Program Review Considerations

Program Review Consideration	Report Section / Stakeholders	Successes	Needs / Opportunities
Predictable Outcomes	4. Customers 5. PGE	Average customer satisfaction score of 9.4 out of 10 (see Table 4-2) Relatively stable program performance year-over-year, despite significant internal and external events (e.g., COVID-19)	Monitor customer satisfaction and attrition with any new or changed program participation options
Discrete Offerings	4. Customers	Consistently high customer satisfaction with PGE's flexible program participation options	Consider clustering customers into subgroups and staggering event calling to facilitate more flexible response Explore expanded program design to facilitate new grid services and technologies (e.g., battery storage) Assess value and customer willingness for new participation options (e.g., shorter response times, automation, consecutive events, weekend events, etc.)
Repeatable Process	5. PGE	Consistent customer touchpoints and engagement Good working relationships with implementation contractors Average realization rates above 70%* Event dispatch transition to PGE's PowerOps team in summer 2020 for reliability and economic dispatch	Complete testing of the new Enbala Concerto system across a full set of use cases Enhance program documentation Collaborate with PowerOps and CLEAResult on refining processes for balancing customer satisfaction with resource needs Develop and refine automated processes for energy usage data transfer
Reasonable Rates	N/A**	Cost-effectiveness of 1.45 under the Total Resource Cost (TRC) test[11]	Maintain cost-effective program delivery
Measurable Benefits	4. Customers 5. PGE	Customers consistently cite financial benefits as a primary reason for participation, with increasing motivation from public relations / green image Nearly threefold increase in nominated MW for both the summer and winter, with average realization rates of at least 65% (see **Error! Not a valid result for table.**)	Enhance customer portal and automation offerings Assess whether incremental value justifies increased incentives for any new participation options Evaluate current incentive structure's approach to reservation payments for non-event months

[11] Portland General Electric Company, Application for Reauthorization of Deferred Accounting, UM 1514, November 2020.

Program Review Consideration	Report Section / Stakeholders	Successes	Needs / Opportunities
Ongoing Implementation	5. PGE 6. Implementation Contractors		Enhance KCM engagement Expand customer engagement through deeper savings with current participants and acquisition of new participants (e.g., unmanaged accounts) Begin planning for steady program growth Continue improving program-related data quality for evaluation Revise and refine marketing approval processes Explore options to help expedite EDM turnaround times
Periodic Evaluations	5. PGE	Regularly conducted process and impact evaluations from winter 2017-2018 through winter 2020-2021	Conduct ongoing assessments of processes and impacts to inform continuous program improvement

* With the exception of the winter 2017-2018 and winter 2018-2019 seasons (see Table 5-1)

** Addressed by PGE outside of this evaluation

Source: Guidehouse

Question 1b: Were the research objectives accomplished and did the pilot answer the research question?

PGE's primary research question for Schedule 26 has been whether it can sufficiently and cost-effectively deliver an average of 27 MW of demand reduction across the summer and winter seasons by the end of 2020.

Schedule 26 faced several setbacks in 2020-2021 from COVID-19, wildfires, ice storms, and staffing changes, which decreased program nominations by as much as 6 MW and slowed program enrollment efforts. Given these setbacks, PGE has been targeting revised goals of 25.6 MW nominated for the summer 2022 season and 19.5 MW for the winter 2021-2022 season by the end of 2021. The program maintained relatively consistent realization rates throughout 2020-2021 and many customers have returned to their pre-pandemic program nominations. With 20.6 MW nominated for the summer 2021 season, 15.1 MW nominated for the winter 2021-2022 season, additional MW in the enablement phase, and a robust sales pipeline, the program team is on track to meet year-end goals.

The Schedule 26 team will need to further intensify enrollment efforts for harder-to-reach customers and adapt program design elements to reach 27 MW, which may require another 1-2 years of continued growth. Beyond 27 MW, PGE plans to continue seeking cost-effectively obtainable DR, unlocking more potential as new customers move into the region, existing customers grow their operations, and new DR technologies become commercially available.

Question 2: Did the results of the pilot indicate that the idea is worth adopting?

Schedule 26 successfully provides cost-effective demand reduction for both the summer and winter seasons, demonstrating sustained performance and ratepayer benefits. PGE's PowerOps team is already using Schedule 26 as an important resource for reliability and avoiding high market prices. Furthermore, customers are satisfied with the program and appreciate the opportunity to earn financial benefits.

Question 3: Did new, pressing questions or obstacles arise as a result of this research?

This research has highlighted open questions on the program's implementation for further assessment. The open questions primarily speak to the program's progress towards its MW goal, as delayed by COVID-19 and other operational factors, and also PGE's ongoing efforts to balance customer needs with PGE's evolving grid needs. During the program redesign in 2017, PGE shifted Schedule 26's emphasis from being a 'resource' (e.g., dispatchable, flexible resource) to a more customer-centric 'program' (e.g., optimized customer experience) to facilitate scale in its pilot phase. With this pilot-to-program transition, PGE is achieving scale as a program and also bringing in more elements of a resource, such as PowerOps dispatch, 10-minute notification, and consideration of additional grid services. Many of these open questions relate to the operation of Schedule 26 as both a program and a resource and is up to the OPUC whether the investigation of these questions occurs under the definition of pilot or program. As discussed in the sections below, Guidehouse notes that PGE's efforts going forward should be to maintain the core successful elements of the customer-centric program, while also assessing beneficial opportunities for expanding to a flexible resource through added participation optionality that minimizes impacts on existing customers and thorough cost-effectiveness testing.

Table 3-2 summarizes these open questions and discusses the drivers contributing to these questions arising and not yet having resolution. Further, Guidehouse proposes next steps to ensure Schedule 26 continues to demonstrate stable, ongoing cost-effective program performance as the program reaches scale.

Table 3-2. Summary of Open Questions and Research Opportunities

Questions	Drivers	Proposed Next Steps
Program goal: Is the 27 MW goal an average across the winter and summer seasons or the maximum from the two seasons? Is it based on the average load reduction or maximum load reduction in each season?	Need for alignment between OPUC, PGE, and CLEAResult on expectations	Discussions between program, IRP, and PowerOps teams on resource need Alignment with OPUC expectations
Resource needs: What are the requirements for the program in terms of availability and performance (e.g., months of the year, days of the week, hours of the day, frequency and duration of dispatch, and advance notification)?	Evolving grid needs are driving an increasing range of flexibility and grid services sought from the program Program is reaching scale and can begin considering an expanded set of options / offerings	Discussions between PGE and PowerOps teams on the need for various program participation options, associated value, and customer willingness to participate

Questions	Drivers	Proposed Next Steps
Resource needs: Under what conditions (e.g., extreme weather types, market conditions, grid constraints, etc.) is the program expected to perform or not perform?	Unprecedented extreme weather patterns are changing resource planning needs PowerOps has been building experience operating the program and knowledge of appropriate use cases for dispatch	Discussions between program, PowerOps, and CLEAResult teams on the criteria and limitations for event calling under differing scenarios for extreme conditions Development of an event dispatch framework that balances weather, market, grid, and customer conditions
Event dispatch: What are appropriate and acceptable limitations on event dispatch when balancing PGE's resource needs with the customer experience? What are the optimal processes for ensuring communication across PowerOps, the PGE program team, and CLEAResult to ensure continued customer satisfaction under PowerOps dispatch?	Evolving grid needs are driving an increasing range of flexibility and grid services sought from the program PowerOps has been building experience operating the program and knowledge of appropriate use cases for dispatch	Discussions between program, PowerOps, and CLEAResult teams on the criteria and limitations for event calling under differing scenarios for extreme conditions Development of an event dispatch framework that balances weather, market, grid, and customer conditions
Program options: What portion of customers are capable of providing a higher number of event hours per season (e.g., up to 80 hours)? What price signals and technology options are needed to support higher frequency dispatch?	Evolving grid needs are driving an increasing range of flexibility and grid services sought from the program Program reaching greater scale and sophistication	Discussions between PGE program, PowerOps, and CLEAResult teams on the criteria and limitations for event calling under differing scenarios for extreme conditions Development of an event dispatch framework that balances weather, market, grid, and customer conditions
Program options: What is the need and value to PGE for shorter notification periods (e.g., 10-minute) in the near- and longer-term? Can the incremental value to PGE help offset enhanced incentives to customers (e.g., for automation)? What portion of customers could be capable of responding to shorter notification periods with greater automation support?	Evolving grid needs are driving an increasing range of flexibility and grid services sought from the program Program reaching greater scale and sophistication	Discussions between PGE program, PowerOps, and CLEAResult teams on the criteria and limitations for event calling under differing scenarios for extreme conditions Assessment of incremental costs relative to anticipated benefits to determine implications on overall program cost-effectiveness

Questions	Drivers	Proposed Next Steps
Enrollment: Can Schedule 26 enrollment be cost-effectively expanded to medium-size unmanaged customers? Is the value proposition for Schedule 26 appropriate for attracting more medium-size unmanaged customers?	Program reaching full-scale with large-size customers Delays pursuing this in 2020 given COVID-19	Continuation of PGE and CLEAResult enrollment efforts already underway Assessment of incremental costs relative to anticipated benefits to determine implications on overall program cost-effectiveness
Incentives: Do the existing incentive levels appropriately motivate the desired customer behaviors to address current grid needs?	Evolving grid needs are driving an increasing range of flexibility and grid services sought from the program	Assessment of incremental costs relative to anticipated benefits to determine implications on overall program cost-effectiveness
Incentives: What is the incremental value to PGE for more flexible program participation options? What are the appropriate incentives to motivate that value?	Evolving grid needs are driving an increasing range of flexibility and grid services sought from the program	Assessment of incremental costs relative to anticipated benefits to determine implications on overall program cost-effectiveness
Program performance: What is the resilience of the resource in terms of robustness of customer participation? What systems and processes are in place to address customer attrition? If one or more customers leave the program or are unable to participate, how significant of an impact could it be and are there ways to mitigate this impact?	Program has been in active growth mode and will need to more closely monitor attrition and plan for risk mitigation as the program scales and becomes a more crucial reliability resource	Discussions between program and CLEAResult teams to review participant impacts over time to identify low and high performers Conduct worst-case scenario planning on program resiliency if key customers unenroll or are unable to perform as expected

Source: Guidehouse

4. Customers

Customers expressed satisfaction with Schedule 26 since the program redesign in winter 2017-2018, as indicated through positive responses in customer interviews, customer feedback reported by PGE and CLEAResult, and low year-over-year attrition. PGE should maintain the successful core elements of the program, including customer-centricity, flexibility in program options, and close coordination across the program implementation teams on behalf of the customer.

As with any program, opportunities exist for continued improvement, particularly as PGE evolves the program operations. Some exploration is merited in terms of what customers can deliver relative to what PGE would like from the program as a resource—higher incentives, greater support for automation, and an expanded program base may be needed to achieve the resource objectives.

The following subsections discuss areas of customer satisfaction and continued improvement in more detail.

4.1 Discrete Offerings

Since the program redesign for Schedule 26 in winter 2017-2018, customers have expressed consistently high satisfaction with PGE's flexible participation options (e.g., for various notification periods, event duration, and event timeframes). For example, the average score for participant satisfaction with the program rules was 9.3 in 2020, with the notification periods (18-hour and 4-hour) cited as particularly helpful in supporting their nomination.[12]

These scores reflect PGE's investment in designing a customer-centric program with flexible options for program participation. This continues to align with PGE's strategic priorities and the best interests of the customer and should remain a guiding principle for the program.

As PGE's needs for Schedule 26 evolve, the following program participation options should be reviewed in balance with the customer experience:

- **Maximum event hours nomination:** The program has 20-hour, 40-hour, and 80-hour options for the maximum number of event hours per season. For instance, under the 80-hour nomination option, a customer could be dispatched for up to 80 hours in a season. Given the anticipated resource constraints for the summer 2021 season, PowerOps anticipates maximizing the available dispatch hours through the program, which may entail dispatching some Schedule 26 customers up to 80 hours. This roughly equates to dispatching an event every 6 business days. Prior to the summer 2021 season, CLEAResult communicated to customers that the program will be called more frequently going forward. However, the Energy Partner program has never been dispatched more than 6 times and 17 hours in a single season (in summer 2018), so customers' experience in practice may not align with PGE's operational needs. The program implementation team expressed concerns about customer fatigue with that level of program dispatch, which aligns with Guidehouse's experience in other jurisdictions for a capacity-based peak load reduction program, given the typical timing and duration of

[12] In the 2019 evaluation report, Guidehouse (formerly Navigant) noted "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" as the most beneficial or important program options to customers.

events. Guidehouse notes that 40 hours is a general industry standard for maximum number of dispatch hours across a season for capacity-based peak load reduction, and PGE and the program team will need to proactively communicate expectations to customers, monitor early warning signs of fatigue (e.g., increasing levels of participant opt outs and overrides), and communicate with the PowerOps team over the course of the season. Alternatively, certain resources are inherently better suited for higher dispatch frequency (e.g., cold storage, battery storage, etc.), but would require adjustment of certain program design elements (e.g., customer engagement tactics, incentive structures, etc.) to attract these resources in addition to Schedule 26's current mix of C&I end use loads.

  - **Recommendation:** Ensure communication channels are in place between CLEAResult, the PGE program team, PowerOps to monitor and address any signs of customer fatigue in response to higher event hours over the summer 2021 season. Continue planning for communications with customers in advance of the summer 2022 season.
  - **Recommendation:** Consider clustering customers into subgroups and staggering event calling across the different subgroups if needed to meet higher dispatch needs while minimizing customer fatigue.
  - **Recommendation:** Investigate expanded program designs to facilitate participation from resources that are inherently better suited for higher dispatch frequency (e.g., cold storage, battery storage, etc.).

- **Advance notice option:** The program offers notification periods, including 18-hour, 4-hour, and 10-minute advance notification of an event. Program team members have observed that some customers face challenges even with an 18-hour response time (e.g., needing sufficient lead time to adjust shift schedules for participation) and have considered optionality for longer notification periods with these customers. On the other hand, energy storage offers near real-time response and a subset of customers can respond to 10-minute notification or less with end use load, depending on their end use load types, degree of automation, and business operations. Prior to the redesign, PGE required all customers to be able to respond to 10-minute notification, although the program implementer often still gave 10-minute customers day-ahead or day-of notification that a 10-minute call might arise that day. At the time, the 10-minute requirement restricted customer eligibility, added program cost, and PGE used it sparingly, so PGE expanded to more options during the redesign to more cost-effectively facilitate the range of customer capabilities. Under the current Schedule 26 tariff, customers receive roughly 14% higher reservation prices (per kW) for 10-minute notification relative to 18-hour. Although PGE can currently dispatch customers based on different notification times, events have largely been dispatched with at least 18 hours of notification across all customers, regardless of their selection, which means that some customers are being paid for 10-minute response capabilities that are rarely used. If PGE expands use of Schedule 26 as a flexible resource (e.g., for participation in Energy Imbalance Market (EIM), as contingency reserves, etc.), PowerOps anticipates increased interest in the shorter duration (e.g., 10-minute) notification period and stated that real-time dispatch capabilities would be highly utilized.
  - **Recommendation:** Continue conversations with PowerOps to determine the value of shorter notification periods (and the time horizon for achieving that value, if applicable) and develop a more detailed, shared understanding of customers' abilities to respond quickly by customer segment. If warranted,

consider redesigning the program option for 10-minute notification and conduct short notification test events with a subset of customers in future DR seasons. This topic should be a focus for future evaluation activities.

- **Automation:** If PGE expands use of the 10-minute notification periods, it is generally predicated on customers having fully automated control systems for their enrolled loads, which then depends on the nature of the load, educating the customer about automated dispatch (e.g., there is still the ability to override), and sufficient funding for any required equipment upgrades. Automation is a challenging topic and will have limited applicability to customer end use loads, since customers may be unwilling, technically unable, or financially unable to automate their loads, particularly for complex process loads. Nearly 70% of the program's enrolled load and more than 50% of enrolled customers currently have manual curtailment (see Table 4-1). CLEAResult's experience is that most of the participants whose end use loads can be automated without significant investment have been automated (or at least semi-automated). That said, through the 2020 customer interviews, some participants indicated they may be interested in increased automation if they are able to override it or they can receive financial incentives, which suggests there may be opportunity for increased automation within the existing participant base, though at additional cost.

Table 4-1. Schedule 26 Enrollment by Automation Status

Controls	Total kW	Customer Count
Manual	14,346	38
Manual / Semi-Automated*	2,600	7
Automated	3,615	25
Total	**20,561**	**70**

* Manual/Semi-Automated is a designation for customers who have controls, but do not have a relay for direct load control by the utility. Rather, these customers manually trigger the controls system in response to a scheduled event.

Source: CLEAResult as of September 14, 2021

  - **Recommendation:** PGE's PowerOps team would ideally have more Schedule 26 customers move toward 10-minute response over time. In parallel, customer interest in automation will likely grow as corporate interest in sustainability and energy management continues to increase. PGE should assess the benefits from expanded use of automation and whether that could support financial incentives to customers to help offset automation costs for end use loads or the purchase of energy storage.
  - **Recommendation:** CLEAResult should continue to assess the understanding of existing and new participants about automation (e.g., the benefits, the costs, the ability to override, etc.) and continue identifying customers who might be possible candidates for enhanced control systems.
  - **Recommendation:** As recommended in the 2019 evaluation report, PGE should explore synergies with Energy Trust's Strategic Energy Management (SEM) program and opportunities for cross-selling SEM with Energy Partner—and whether there are opportunities for cross-subsidization of customer system upgrades.

- **Consecutive events:** DR programs across the country have different rules around consecutive events (i.e., two DR event days in a row). Schedule 26 does not prohibit consecutive events, but the program team typically avoids calling consecutive events, since certain customers are unable to participate on successive days due to technical limitations with their load (e.g., one customer must have at least two full days between events).
    - **Recommendation:** As the program use cases evolve and the region experiences more extreme extended weather events, PGE may consider breaking participants into separate groups to call consecutively or offering participation in consecutive events as an option. In the latter case, PGE should explore customer willingness to participate in consecutive events, whether they would reduce their nominations or require higher incentives, and, if so, would the incremental value justify higher incentives.
- **Eligible event days:** Schedule 26 events are currently limited to weekdays in the summer and winter seasons. With PGE reaching a new system peak during the heat wave on Sunday, June 27, 2021 (only to be broken by the peak on Monday, June 28, 2021), PGE may consider offering participation over the weekends as a program option. Additionally, as PGE evaluates opportunities for Schedule 26 to support a broader suite of grid services, PGE may also consider offering participation year-round to facilitate services like frequency response.
    - **Recommendation:** Assess the increased administrative costs and expected level of customer participation relative to the benefits of program options for weekend and year-round participation.
- **Pre-schedule opt-out days:** The Schedule 26 tariff specifies that customers may pre-schedule 4 opt-out days per season without affecting their reservation payment; however, these days must be scheduled 5 days in advance of the season starting. As of spring 2021, only one customer had used this option (i.e., for planned construction).
    - **Recommendation:** If program dispatch increases, PGE might consider revisiting the design for this option as a supplement or alternative to increasing incentives for higher dispatch. For example, if a customer has the option to schedule an opt-out 1 month in advance with limited penalty, customers may be more amenable to higher dispatch while PowerOps has a firmer idea for resource availability.

4.2 Predictable Outcomes

Customer satisfaction with Schedule 26 remains high since the program redesign with an average score of 9.4 over 3 years (see Table 4-2). Interviewed customers noted that they have generally been satisfied with the options for program participation, pre-event and post-event program-related communications, and the relationship between PGE and CLEAResult.

Table 4-2. Customer Satisfaction Scores 2018–2020[13]

Program Year	Customer Satisfaction Score	Sample Size
2018	9.0	10
2019	9.8	10
2020	9.5	9

Source: Guidehouse

Program attrition has been minimal and largely driven by changes to the customer's business or ability to participate (e.g., going out of business, large renovations, etc.). Customers who left the program have done so due to business closure, and all interviewed exiting customers indicated that they would participate in the program again if the opportunity arose.

COVID-19 had a mixed effect on customers' participation, where the majority of customers interviewed following the summer 2020 season said COVID-19 did not majorly affect their Energy Partner participation. However, as Section 5.1 discusses, multiple customers did adjust their nomination amount, which led to decreased load reduction. As businesses return to pre-pandemic operations, CLEAResult is optimistic that these effects will normalize.

- **Recommendation:** PGE and CLEAResult should continue closely monitoring customer satisfaction and attrition with changes to program conditions, including any new or changed program participation options (see Section 4.1) that might affect customers' willingness or ability to participate (e.g., increased event dispatch). Include this as a focus area in the summer 2021 evaluation cycle.

4.3 Measurable Benefits

Schedule 26 offers customers the following benefits:

- Customers consistently cite the financial benefits (i.e., incentives 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. Customers found the extra income beneficial through the pandemic and appreciated the absence of penalty for non-performance.

- An increasing number of customers cite public relations and green image as a motivation for participating in Energy Partner. As more companies develop explicit corporate social responsibility goals, PGE should continue seeking opportunities to attract new customers through messaging about Energy Partner's role in a reliable, sustainable smart grid.

PGE should consider the following opportunities to enhance program benefits for customers:

[13] Guidehouse notes that these scores are based on interviews with program participants, of which there were some overlapping respondents across the evaluation years. Interviews were conducted in the fall (following the summer season) of each year noted. Respondents were asked: "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?"

- Customer satisfaction with the customer-facing program portal has generally increased over time as functionality has improved. However, customers and program staff have cited various areas for improvement for the portal, particularly in terms of providing customers with enhanced information on energy usage. The former PGE program manager noted that the program missed an opportunity during the redesign to create a comprehensive tool for all large customers (i.e., both Schedule 26 participants and nonparticipants) to see their real time usage and related analysis, instead of having separate Energy Expert and Energy Partner portals.
    - **Recommendation:** PGE may consider combining the Energy Expert and Energy Partner platforms and enhancing customer-facing features over time as an additional benefit to both Schedule 26 participants and nonparticipants. Customers have also suggested the following enhancements:
        - Additional troubleshooting support
        - Company-specific tailoring of portal features
        - Data presentation that reduces the need to navigate across different portal pages
        - Annual energy usage data showing year-over-year trends
        - More granular energy usage and event data at the equipment level (note: this would require additional metering)
        - Corporate social responsibility impacts (e.g., carbon reduction, general sustainability data)
- **Recommendation:** Enhance communication on the specifics of automated curtailment with participants who have eligible load types and may not universally understand end use automation. Based on lessons learned in other jurisdictions and through Guidehouse's interviews, customer education opportunities include providing more information on automation costs, whether customers could still override events, and the range of benefits for customers' broader energy management efforts, particularly for large commercial customers.
- **Recommendation:** Consider updating Schedule 26's tariff structure to incentivize a broader range of grid services as PGE evolves its valuation of load flexibility. Assess whether PGE's changing program needs cost effectively support changes to customer incentives, such as:
    - **Upfront incentives:** Provide the $/kW reservation payments or a specified amount upfront for a committed duration of participation to help provide capital and incentivization for backup during events (e.g., battery storage). Upfront incentives may help customers enable technology upgrades for automated DR or purchase of battery storage systems for a broader range of grid services.
    - **Enhanced flexibility incentives:** Provide additional or increased incentives for adjustments to program options, including frequency of dispatch (e.g., paying a customer with battery storage significantly higher for more frequent dispatch capabilities), notification periods, consecutive events, or event days (as Section

4.1 discusses). For example, if PGE begins calling more than 40 hours of events for all or a subset of program resources, PGE may consider changes to the reservation payment amounts, such as scaling linearly with the maximum number of dispatch hours or even offering higher incentives for higher volume dispatch. The current Schedule 26 tariff offers a monthly reservation payment of $6.86/kW for 40 hours of 10-minute dispatch in the summer season, compared to $9.12/kW for 80 hours. For storage or other higher frequency dispatch resources, the PGE team should assess the incremental value to PGE's system from incremental dispatch hours to determine the cost effectiveness of enhanced incentives (e.g., could increasing to 80 hours justify a reservation payment double the payment for 40 hours, where $9.12/kW increases to $13.72/kW).[14]

- **Year-round incentives:** Depending on PGE's needs for their grid, there may be value in extending participation options for Schedule 26 year-round (e.g., to enable participation in additional grid services like frequency response). CLEAResult estimated that at least some customers would have interest in participating year-round, though it would require additional administration and modifications on the part of CLEAResult. Year-round participation options may also help improve the economics for energy storage participation by augmenting the value streams available to customers.

[14] The current tariff offers a 33% higher per kW reservation payment per month for the 80-hour option relative to the 40-hour option, based on the reservation payment for the summer season 4 p.m.–8 p.m. window with 10-minute notification period for 40 event hours per season ($3.32/kW) relative to 80 event hours per season ($4.42/kW). The energy payments scale by MWh and only differ by month; they do not differ based on program option.

5. PGE Program Management and Implementation

Since the redesign in winter 2017-2018, Schedule 26 has operated as a customer-centric program, with positive customer experience its primary goal. Through the transition processes from pilot-to-program and to PowerOps dispatch, PGE is increasingly looking at Schedule 26 as both a program and a resource, which will require the program to balance customer capabilities and customer satisfaction with PGE's operational needs in new ways. To achieve these goals, PGE needs to maintain the core program elements that make Schedule 26 successful, including its emphasis on customer engagement, flexible program options, and strong relationships across the program implementation team. In parallel, PGE should explore additional program elements that incentivize customers toward more real-time, higher frequency dispatch—whether that be through end use loads or battery storage—and explore whether the value to PGE's grid justifies higher incentives.

Since Guidehouse's 2019 evaluation report, major program changes and events have included the following:

- **Internal and external events:** At the beginning of 2020, the program team felt there was a good chance of reaching their year-end 2020 goals. However, significant events have affected the program's overall enrollment, performance, and timelines, as Section 5.1 describes. These events include:
    - Internal: PGE staff changes
    - External: COVID-19, wildfires, and the ice freeze
- **Pilot-to-program transition:** Schedule 26's transition from pilot-to-program is a major milestone. As the first of PGE's programs to make this transition, it has required a shift in funding mechanism for the program, a common understanding of the criteria and process for the transition, and the transition of event dispatch responsibility from the program team to PGE's PowerOps team (as Section 5.2 details).
- **Bifurcation of Schedule 25 and Schedule 26:** In 2020, PGE began to separate Schedule 25 and Schedule 26, with the objective of providing more visibility into Schedule 25 operations and cost-effectiveness. Schedule 26 benefits from this split by once again having program management and targets specific to that program and its customers.

Table 5-1 shows key metrics for each season since the beginning of Guidehouse's evaluation, including the maximum number of MW nominated across the events in each season, maximum number of customers enrolled in each season, maximum and average MW load reduction, and average realization rate.

Table 5-1. Schedule 26 Enrollment and Performance by Season

Season	Max. MW Nominated	Max. # of Customers Enrolled	Max. MW Reduction	Avg. MW Reduction per Event	Total # of Events	Avg. Hrs. per Event	Avg. # of Customers with Reduction	Avg. Realization Rate
Winter 2017–2018	4.0	33	2.7	2.7	1	3	28	66%
Summer 2018	8.8	43	11.8	10.5	6	2.8	36	131%
Winter 2018–2019	9.8	45	6.6	6.6	1	4	38	68%
Summer 2019	15.2	50	13.8	12.4	3	2.3	42	82%
Winter 2019–2020	11.8	61	8.5	8.5	1	3	54	73%
Summer 2020	14.3	61	13.5	12.7	5	3	54	91%
Winter 2020–2021	11.7	67	10.4	10.2	2	3	64	91%
Summer 2021*	20.6	70	Not yet available					

* Summer 2021 nominations and number of customers enrolled based on CLEAResult reporting as of September 2021. Summer 2021 performance will be available upon completion of the summer 2021 evaluation.

Source: Guidehouse

5.1 Predictable Outcomes

Schedule 26 saw customer enrollment and performance fluctuate through 2020 and 2021 due to several significant internal and external events. Even through these events, year-over-year program performance never decreased by more than 1 MW, indicating relative stability. Internal and external events included the following:

- **PGE staff changes (2020-2021):** The PGE program manager retired in Q3 2020 after managing the program since before the redesign. Two interim program managers followed before the new full-time program manager stepped into the role in Q1 2021. During that transition, program progress slowed, given the level of knowledge transfer required to bring the new program managers up to speed and their limited engagement in decision-making. With a new full-time program manager in place, the impacts from this transition should be minimal going forward and program stakeholders have already seen benefits.
- **PGE pilot-to-program transition (2020-2021):** When Schedule 26 began its transition to event dispatch by PGE's PowerOps group for the summer 2020 season, a few customers changed their hours nomination option from 80-hours to 40-hours and another handful of customers reduced their nomination by around 20%. Even though no changes in event dispatch had occurred at that time, customers elected to make changes in anticipation of a higher number of events. The net impact was a loss of about 1 MW of load reduction.
- **COVID-19 (2020-2021):** The program lost around 5 MW of enrolled load due to COVID-19, according to CLEAResult. Customers had to cut back on their nominations (e.g., offices having to reduce their nomination given less usage during event windows due to COVID-19 closures) or even temporarily pausing participation (e.g., a school suspending participation given the campus was shutdown). CLEAResult recruited new customers who had increased interest in the incentives as a result of the pandemic, and ultimately maintained roughly the same number of customers. However, the interested customers were generally smaller in size and did not offset the significant decrease in MW. The program still had realization rates of around 90%, which suggests that customers who remained enrolled either worked with CLEAResult to appropriately adjust their nomination upfront or did not have significant pandemic-related effects on their business operations. As facilities return to pre-pandemic operations, CLEAResult is hopeful that customers can return to their pre-pandemic nominations and that the new customers who enrolled during COVID-19 continue participating.
- **Wildfires (fall 2020):** PGE put a hold on all marketing due to the fall 2020 wildfires. As a result, a Schedule 26 email marketing campaign was delayed, then moved down in queue, and ended up being put on hold again over the holidays, resulting in a net delay of several months for new lead generation and program enrollments.
- **Ice freeze (winter 2021):** PGE suspended DR events throughout the February 2021 ice storm, since PGE's system was not capacity constrained and PGE anticipated extreme effects on customer comfort and safety from the storm. This was the right decision considering DR would not have helped alleviate the grid outages from this particular storm and it avoided additional customer comfort impacts. PGE also held marketing again, which delayed the delivery of 3D mailing boxes to the leads identified by CLEAResult in the email marketing campaign and further affected Schedule 26's marketing efforts.

5.2 Repeatable Process

Since the redesign in 2017, Energy Partner has progressed significantly in terms of establishing repeatable processes for delivering the program offering. Notable areas of success include the following:

- Consistent customer touchpoints and engagement
- Good working relationships between PGE and the key vendors of CLEAResult and Enbala
- Average realization rates consistently above 70%, the threshold for incentive payments, apart from the first two winter seasons (see Table 5-1)
- Transition to PowerOps dispatch

Areas for improving the repeatability of program processes include the following:

- Continuity through staffing changes: Over the past year, Schedule 26 has been challenged by staff changes on PGE's side and, more recently, CLEAResult's side. With four different PGE program managers over the course of roughly 6 months, the program's momentum slowed. CLEAResult ended up driving some of the education on program processes, which suggests that enhanced internal program documentation would benefit continuity at PGE. CLEAResult also expressed the need for quicker PGE response times to challenges with customers through this transition period; for example, when PGE's contract signing for a major customer took more than a month. However, CLEAResult noted that having a full time PGE program manager in the role has already helped to resolve these issues and PGE has recently created Program Implementation Manuals (PIMs) for program operational processes to address process documentation gaps.
    - **Recommendation:** Enhance internal PGE program documentation on processes and change histories to optimize knowledge transfer through staffing changes.
- Communications across teams: In the initial program years, the Enbala and CLEAResult had numerous topics to resolve, so PGE requested that the two teams proactively discuss issues and develop proposed solutions together before discussing with PGE. In 2018-2019, Enbala and CLEAResult developed a coordination and communication strategy that has resulted in clear, solutions focused discussions with PGE. With the new PGE program team in place, it is again worth revisiting the existing communications structure between PGE, CLEAResult, and Enbala.
    - **Recommendation:** As the program matures and Enbala and CLEAResult continue their positive working relationship, the teams may consider engaging PGE in more working discussions for transparency and more efficient knowledge transfer to PGE staff.
- Addressing gaps in the event dispatch and notification systems: There have been some gaps between Enbala's Symphony, EDM, and Apricity systems that have required manual intervention in recent seasons. For example, during the February 2021 ice freeze, the program team had to manually intervene to ensure customers were not called for DR events. Similarly, the 2021 heat wave required the PGE program manager to manually schedule the event for Monday, June 28 over the weekend, as Symphony was not setup at the time to call events more than 2 days in advance. (Note: this issue

has since been resolved). Some of these gaps should resolve when Enbala migrates from Enbala's Symphony system to the new Concerto system (following Schedule 25, which already migrated to Concerto). Enbala originally planned this move in advance of summer 2021; however, it is still in progress with a target of completion before the winter 2021-2022 season. This transition will include migrating the Apricity system and EDM processes to Concerto notification. PGE, Enbala, CLEAResult, Apricity, and EDM should conduct full end-to-end testing upfront for a wide range of use cases to review as many of these potential gap areas as possible.

  - **Recommendation:** Complete testing of the new Enbala Concerto system across a full set of use cases prior to the start of the winter 2021-2022 season in coordination with PowerOps, CLEAResult, Apricity, and EDM.

- Dispatch integration: Schedule 26 transitioned to PowerOps dispatch for the summer 2020 season. PowerOps found the program to be an important resource for both reliability- and economic-based dispatch purposes. The processes for PowerOps' Schedule 26 dispatch include open communication between PowerOps and the program team, reviewing the weather forecasts and market fundamentals on the best time to call the program (e.g., based on market prices), then PowerOps determining when to call the events. PowerOps has largely called all Schedule 26 customers together. With Schedule 26 transitioned to PowerOps dispatch, there are a number of opportunities for improving process repeatability, including the following:
  - As Section 4.1 discusses, PowerOps would ideally operate Schedule 26 like a resource—e.g., with minimal limitations on program dispatch beyond the program options chosen by customers, ability to call consecutive events, and near real-time dispatch by having all customers on automated or 10-minute notification (or even 4-hour notification, relative to 18-hour notification) for use as contingency reserves. That said, PowerOps recognizes the importance of balancing customer-centricity with the resource needs from Schedule 26.
  - Thus far, the transition to PowerOps had negligible effect on customer satisfaction over the summer 2020 season given the number of events was consistent with previous seasons (i.e., 5 events in the summer 2020 season equating to 15 hours). Prior to the start of the summer 2021, PowerOps expected it to be a low hydropower year, with high market prices and resource shortages and intended to maximize Schedule 26 dispatch over the summer 2021 season if needed for economic or emergency reasons to address grid constraints. If dispatch exceeds past seasons, PGE and CLEAResult should monitor for signs of customer fatigue (as Section 4.1 discusses).
    - **Recommendation:** The CLEAResult and PGE program teams should work closely with PowerOps to balance customer satisfaction and optimized dispatch by developing predetermined constraints that apply consistently across seasons and maximize customer reductions.
  - PowerOps notes that Schedule 26 is being dispatched with an assumed discount on the number of MW that will respond (e.g., if 20 MW, assume 15 MW will respond), and that Schedule 26 is not set up yet as a resource in the virtual power plant. PowerOps indicated that information on the actual performance of Schedule 26 after events could be helpful, particularly if broken down by notification period and degree of automation.

        - **Recommendation:** Share CLEAResult's event results back with PowerOps for visibility into program performance, plus include provisions for disaggregating impacts by notification period and degree of automation.
    - The PGE program team called two optional events in the winter 2020-2021 season. PowerOps called zero events, as none of the days met the criteria PowerOps set forth in advance of the season. However, there was some ambiguity on who had ownership for optional events outside of the criteria (i.e., the program team or PowerOps), which was in part driven by the program team's staffing changes.
        - **Recommendation:** Clarify ownership on the decision-making roles and dispatch of optional events outside the PowerOps criteria in advance of the winter 2021-2022 season.

- Data transfer processes: Both CLEAResult and the third-party evaluator rely on regular access to customers' detailed energy usage data. Previously, CLEAResult has received data annually on hourly average load per month by hour for eligible customers to help with program targeting and other analyses. However, as of spring 2021, CLEAResult's most recent data extract was from mid-2019, which has offered limited accuracy since the start of the pandemic. CLEAResult ideally would receive this data biannually or quarterly from PGE but noted that the data access process has historically been difficult and taken months each time. Separately, as the third-party evaluator, Guidehouse has observed significant improvements in the AMI data transfer processes for Schedule 26 since the beginning of the evaluation, though it still depends heavily on the efforts of the PGE program team, thus has opportunity for continued refinement (e.g., through additional documentation and automation).
    - **Recommendation:** Develop and refine automated processes for biannual or quarterly transfer of customers' detailed energy usage data to both CLEAResult and the third-party evaluator, with pre-defined provisions for customers who do not allow PGE to share their data.

5.3 Measurable Benefits

As of the latest evaluated season (winter 2020-2021), Schedule 26 has provided validated, maximum load reductions of up to 13.8 MW in the summer and 10.4 MW in the winter (see

Table 5-1).

PGE is dispatching Schedule 26 primarily as an economic-based DR resource (to help avoid high market prices) and as a reliability resource. The extreme weather events of 2020 and 2021 highlight Schedule 26's potential value as a reliability resource. Such events may warrant closer review of the program's ability to respond under various emergency conditions and the incremental value that provides for PGE's system and customers.

The PGE program team should continue discussions with PowerOps on the ability and value of the program participating in EIM. Several conditions need to be reached for Schedule 26 to be an eligible resource, which is not likely to occur in the near-term. If this occurs in the longer-term and the program scales to a sufficient size, PowerOps suggested that Schedule 26 could be used as a flexible resource that helps free up hydro and peaking gas resources, which would have incremental monetary value for PGE's system.

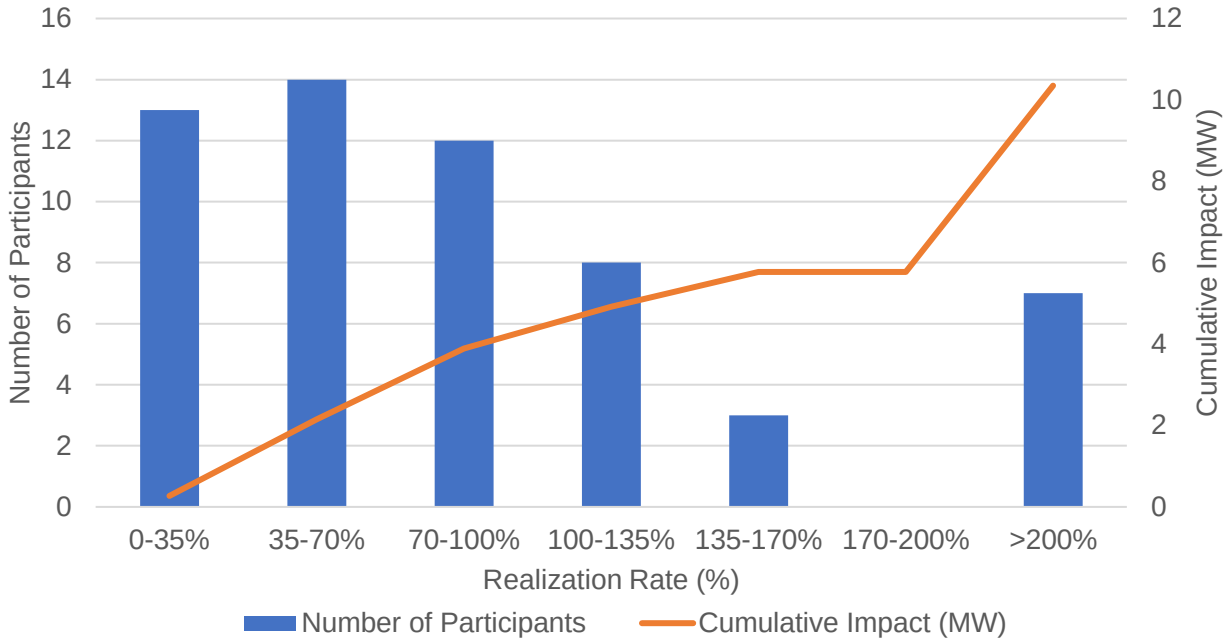
As Section discusses, participants value the financial benefits (i.e., incentives or reduced energy costs) they receive from the Energy Partner program and indicate that they are the most important driver for their participation. Under the current tariff, customers can receive incentives for partial participation across events. For example, in the 2020 customer interviews, one customer stated that their company participated in roughly 25% of the events and received a $600 check. Although this amount was lower than the customer's historical incentive amounts, the participant was pleased not to have to pay out for low participation levels. This program feature is important for customer satisfaction and customer retention but may also have implications for the program's load reduction. The Pareto charts in Figure 5-1 and Figure 5-2 show the number of participants by percent of nominated load delivered (i.e., realization rate) and their overall contribution to the load reduction in each winter 2020-2021 event. Key takeaways include:

- About half of the customers delivered above 70% of their nominated load in each event.
- About half of the customers either did not deliver DR or delivered 70% or less of their nominated load.
- This indicates that nearly half of the participants missed the 70% threshold for receiving a monthly reservation payment in at least 1 month of the season.
- Furthermore, the delivered reduction of the program relied on a handful of customers who significantly outperformed their nomination amounts, with roughly 1 out of 10 customers providing more than 200% of their nomination amount.

Because customers receive their full monthly reservation payment when no events were called in a given month and there were only 2 events over the winter 2020-2021 season, there were some customers receiving their full monthly reservation payment despite having limited ability to contribute consistent load reduction during actual events.

- **Recommendation:** Further evaluate the extent to which customers who do not consistently qualify for a proportional reservation payment during event months (i.e., they do not provide a minimum 70% of their nomination) are receiving full monthly reservation payments in non-event months.

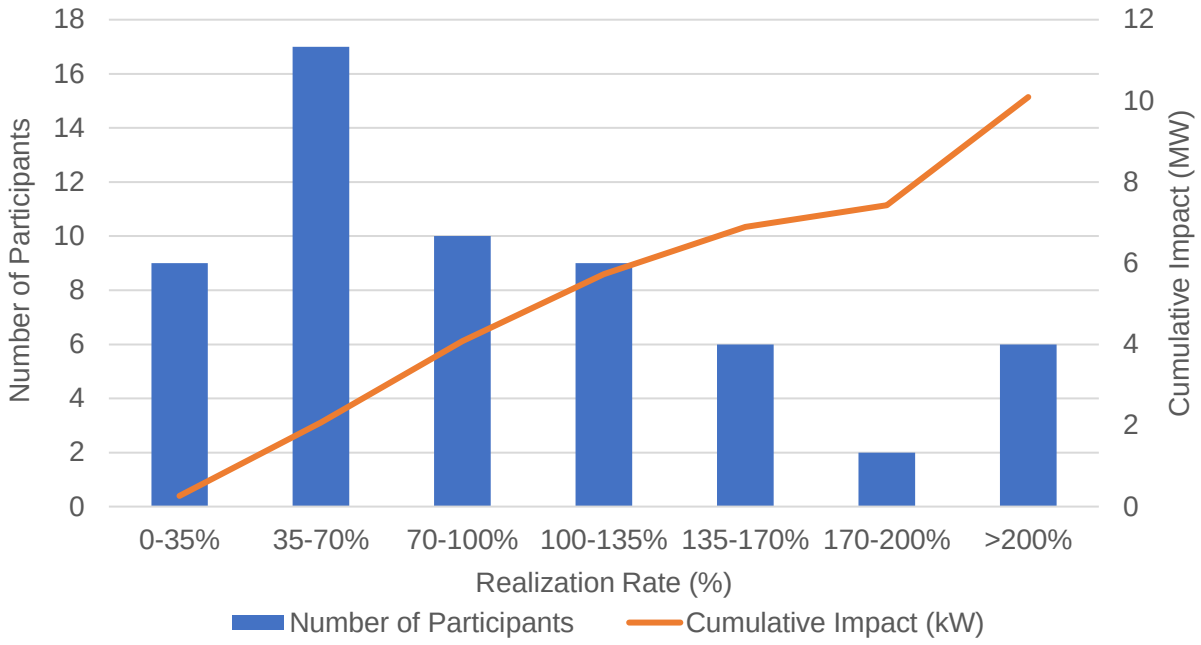
Figure 5-1. Winter 2020-2021 Frequency of Participation by Realization Rate and Impact – January 26, 2021*



* Excludes 4 customers who did not provide DR impacts.

Source: Guidehouse

Figure 5-2. Winter 2020-2021 Frequency of Participation by Realization Rate and Impact – February 10, 2021*



* Excludes 8 customers who did not provide DR impacts.

Source: Guidehouse

5.4 Ongoing Implementation

This section discusses areas for ongoing improvement in the program's implementation.

5.4.1 Enrollment

PGE seeks to achieve its near-term MW goals for Schedule 26's implementation and, ultimately, optimize Schedule 26's performance as a robust flexible load resource. Through the events of 2020-2021, CLEAResult was able to maintain relatively stable enrollment and low attrition, although customer nominations declined. The program could likely maintain its enrolled customer base at today's levels without significant incremental investments, presuming the program dispatch parameters remain relatively consistent (e.g., number of event hours, notification time, etc.). However, the program's performance is dependent on the consistent participation of PGE's largest customers and changes for a single large customer can have significant impacts on the overall program (see Section 5.3). Furthermore, because many of PGE's largest customers have already been enrolled, new customer enrollment will require new tactics and a higher level of effort and cost per MW.

Thus, the Schedule 26 team will need to intensify enrollment efforts for harder-to-reach customers and adapt program design elements to meet the 2022 goal. Ultimately, the program may require another 1-2 years of continued growth before it reaches the current targeted demand reductions, with the former PGE program manager predicting spring 2023 for consistently reaching the 27 MW target. Beyond that, PGE will continue to seek all cost effectively obtainable DR, unlocking more potential as new customers move into the region, existing customers grow their operations, and as new technology that supports DR becomes commercially available.

The remainder of this section discusses two phases from the perspective of the PGE team: accelerated growth (i.e., to hit the near-term MW goals) and steady growth (i.e., as the market evolves).

Accelerated Growth

With many of the larger eligible customers in PGE's service area already enrolled, PGE and CLEAResult need to optimize existing approaches and, in parallel, pursue new customer engagement approaches to meet the program's near-term MW goals.

In terms of optimizing existing approaches, CLEAResult requested more support from PGE in encouraging PGE's KCMs to promote Schedule 26 to PGE's managed account customers. After 3 years of program implementation, CLEAResult has contacted most of the managed accounts at least once but continues to need KCM support in facilitating outreach to customers not yet contacted and customers whose level of interest changed. Generally speaking, the relationship between KCMs and third-party implementer is often complex, in that the KCM owns the client relationship and typically has a broad set of responsibilities that extend beyond just a single program. Thus, KCMs tend to be time constrained and selective about how they engage with their accounts. However, the KCM typically benefits from the third-party implementer's help in selling DR programs like Schedule 26, given the complexity of the program, while the third-party implementer benefits from the KCM's relationship with the customer. Currently, PGE requires CLEAResult to engage the large, managed account customers through the KCMs. PGE has assigned one of the KCMs as CLEAResult's primary point of contact for communication with the other KCMs; however, this approach has had limitations according to CLEAResult because the

KCM point of contact has no direct authority over the other KCMs. Furthermore, KCMs are not accountable for promoting Energy Partner, so the level of engagement with Schedule 26 varies widely across the KCMs.

- **Recommendation:** Advance discussions between CLEAResult and PGE's program manager on opportunities for redesigning and optimizing CLEAResult's engagement with KCMs to maximize touchpoints with the eligible managed account customers who are not yet enrolled.

Pursuing new customer engagement approaches will require expanded value propositions to attract new customers and a higher acquisition cost per MW of load reduction as program enrollment shifts toward more medium-size C&I customers (i.e., unmanaged accounts). In Q2 2021, PGE hired a new dedicated salesperson to start performing outreach to unmanaged medium-size C&I customers.

- **Recommendation:** Consider growth strategies for expanded customer engagement, such as:
    - Deeper savings with **current participants**:
        - Exploring opportunities to improve the value proposition (e.g., through incentives for automation upgrades or energy storage, etc.), to deepen current customers' use of the program
        - Enhancing the customer portal (e.g., offering a tool for real-time energy use monitoring and predictive energy usage, building an integrated incentive calculator, providing a nomination editor, etc.), as Section discusses
    - Acquisition of **new participants**:
        - Exploring opportunities to improve the value proposition (e.g., through incentives for automation upgrades or energy storage, enhanced customer portal, etc.), to broaden program appeal to new customers
        - Continuing to broaden the focus of customer outreach and education efforts to medium-size C&I customers
        - Involving engaged participants in developing messaging around Energy Partner's benefits to support marketing efforts
        - Exploring synergies for marketing and enrollment with Energy Trust of Oregon's SEM program

Steady Growth

PGE plans to continue building and developing Schedule 26 as a flexible load resource beyond its near-term MW goals, where cost-effective potential exists. As with any program, Schedule 26 will need to continuously improve and adapt to new drivers and external factors (e.g., changing weather patterns, evolving market dynamics, emerging technologies, customer behavior changes, etc.) on a rapidly changing grid. These changes may also create new opportunities for customer engagement, as new customers move into the region, customer awareness and acceptance of DR grows, new DR technologies become available or scale down in costs, and

PGE's participation options and value proposition evolve. Schedule 26 will also need to continue enrolling new customers to account for natural attrition.

To support the program's steady growth over time, PGE will face questions about whether PGE or CLEAResult is best suited to address these changes, and how CLEAResult will most effectively provide ongoing cost-effective support. For example, one PGE program team member noted that having an internal PGE salesperson to support Energy Partner full time could be beneficial for building closer relationships with customers. However, CLEAResult's account manager is viewed positively by program participants and staff alike, as evidenced by Guidehouse's customer and staff interviews, so PGE should preserve that value and the relationships but may consider either a hybrid staffing approach or gradual transition to an internal PGE salesperson.

Recommendation: Begin planning discussions on the longer-term staffing and operational needs for Schedule 26, including implications for CLEAResult's contract.

5.4.2 Dispatch Integration

Potential future use cases for Schedule 26 that may influence PowerOps' dispatch and merit further discussion over time include the following:

- Integration of Schedule 26 with PGE's GenOnSys system platform, a PGE custom-built distributed energy resource management system (DERMS) that aggregates and dispatches PGE's dispatchable standby generation program and may ultimately control PGE's DER through one centralized system. This integration has not started.

- PowerOps expressed interest in Schedule 26 customers having fully automated responses in the future to enable dispatch in EIM as a participating resource, which requires response times of 5 minutes or 15 minutes. Currently, PGE participates in EIM and Schedule 26 appears in the load forecast but is not a standalone resource, so PGE informs CAISO about Schedule 26 dispatch for CAISO to incorporate the load reduction, help balance the EIM, and provide market benefits to PGE. PowerOps noted there would be value in having Schedule 26 participate in the EIM in the longer-term; however, this would require a number of steps, including expanding faster responding automated technologies within Schedule 26, meeting EIM communications and metering requirements, and potentially changing the current EIM rules.

- Incorporation of battery storage, which PowerOps could potentially dispatch for energy cost optimization or contingency reserves—or possibly even frequency response, if the Balancing Authority controlled dispatch.

- Dispatch directly by the Balancing Authority in grid emergencies, which would require the Balancing Authority having a detailed understanding of the customers capable of responding in emergencies (i.e., with automated or 10-minute response) and having primary control over dispatch, with PowerOps advising on non-emergency dispatch.

5.4.3 Data and Systems Integration

Since the winter 2017-2018 redesign, Guidehouse's access to PGE's program-related data has improved significantly. PGE's and Guidehouse's ability to generate insights based on that data has also improved as a result, though opportunity still exists for improvement and streamlining.

Recommendation: Collaborate with CLEAResult and the third-party evaluator on the following opportunities for continuous improvement with program-related data in future evaluation seasons:

- Add a data quality field (e.g., to indicate AMI data that is estimated) in the AMI dataset that PGE provides for the evaluation to help assess the quality of the AMI data relative to the Pelican data that CLEAResult provides.

- Continue to evaluate the optimal CBL type after each season for customers who did not deliver DR, if switching CBL type (i.e., from unadjusted to adjusted or vice versa) would better reflect the nature of the customer's end use load and operations (see Section 2.2.2).

- Continue to enhance quality assurance processes during the season to ensure CLEAResult has in-season AMI data for all customers experiencing issues with Pelican data.

- Continue evaluating the methodology for calculating scalars for meters with frequent zero readings to improve effectiveness. Root causes for the discrepancies in CLEAResult and Guidehouse's results have included 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.

6. Implementation Contractors

The program implementation team (i.e., PGE, CLEAResult, Enbala, EDM, and Apricity) have generally been working well together. Communication and collaboration between the core vendors, CLEAResult and Enbala, have significantly improved since overcoming initial software and coordination hurdles at 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, spring 2020 through spring 2021 was a challenging year between COVID-19, PGE staff turnover, and several external events affecting program timelines and participants. As a result of these challenges, CLEAResult is not where it wanted to be with respect to the program's MW target, with a loss of 7 MW at one point. Despite these setbacks, the program maintained the majority of participants and MW of reduction, and CLEAResult is confident about still hitting its year-end 2021 goals (i.e., 25.6 MW of summer 2022 nomination and 19.5 MW of winter 2021-2022 nominations), given the enrollment pipeline and CLEAResult's ability to exceed goals in each of the past program years.

CLEAResult anticipates the following challenges may continue affecting the program:

- Needing augmented access to managed customers (see Section 6.1.2)
- Having to enroll harder-to-reach and more difficult customers (see Section 6.1.2)
- Requiring access to recent customer data from PGE (see Section 5.2)

6.1 Ongoing Implementation

Multiple exogenous influences affected CLEAResult's marketing and enrollment efforts in 2020-2021, including COVID-19, wildfires, and the ice freeze. Changes in PGE program staff contributed to additional delays and overhead.

Through these challenges, CLEAResult noted the importance of having the incoming Schedule 25 CLEAResult program manager engaged on Schedule 25, such that the Schedule 26 team could effectively address program losses. CLEAResult also expressed that PGE's new full time program manager has already benefited the program implementation through increased consistency and focus.

As of Q1 2021, CLEAResult had signed seven contracts with four pending, which was slightly ahead of CLEAResult's typical target of around two customers per month (or roughly five customers per quarter). CLEAResult noted there is a need to push enrollment at a higher rate this year given some level of diminishing returns as the program moves toward engaging smaller customers than previously.

6.1.1 Marketing

Prior to 2020, the Schedule 26 implementation team recruited customers who would be valuable program participants by visiting them in person, speaking with them over the phone, or emailing customers. However, PGE paused all program marketing from March 2020–June 2020 due to COVID-19 and temporarily paused in-person interactions. Additional market suspensions occurred in fall 2020 and winter 2021 (see Section 5.2). First, an email campaign planned for fall 2020 was paused until the end of 2020 due to the wildfires. This led to some overlap with the

holidays and the new leads mostly coming through in 2021. Then the February 2021 ice freezes led to further delays, including another marketing hold that paused the delivery of 3D mailing boxes to the new leads. As a result, customer engagement with the program was limited in 2020 and early 2021. Ultimately, CLEAResult did generate new leads and at least one additional enrolled customer through these campaigns, but with significantly delayed timelines.

In addition to the extenuating circumstances of 2020-2021 that delayed marketing, interviews with the program implementation team indicated opportunities remain for compressing timelines for approving, scheduling, and sending marketing (as recommended in the 2019 evaluation report). Determining governance policies upfront for email marketing may have helped expedite CLEAResult's email marketing campaign efforts, including developing policies around email addresses (e.g., CLEAResult purchased contact information with PGE approval, then the email campaign was further delayed for several months while PGE created a policy for use of purchased emails) and who sends the emails (e.g., CLEAResult designed an email campaign to send out, then the campaign was delayed when PGE ultimately decided to send the emails).

- **Recommendation:** Review marketing approval processes for opportunities to expedite, including opportunities to streamline multiple rounds of review across multiple stakeholders (e.g., coincident review sessions). Consider developing contingency plans to minimize delays resulting from extenuating situations.

6.1.2 Enrollment

CLEAResult's process for enrolling new customers has been to target new customers based off energy usage data. They then engage customers through coordination with PGE's key customer managers (KCMs), in-person meetings where possible (with COVID-19 having significantly limited potential for in-person interactions), phone calls and virtual visits in the absence of in-person visits, and email campaigns.

In addition to affecting already enrolled customers (as Section 4.2 discussed), COVID-19 also affected CLEAResult's enrollment processes. The former CLEAResult program manager called these effects a "double-edged sword." Enrollment was harder because companies were distracted and disinterested and recruiting had to happen virtually rather than face-to-face, but it was easier in cases where new companies were more interested because of the incentive.

As a result of COVID-19, enablement processes slowed because site assessments had to occur virtually rather than onsite. Typically, CLEAResult meets the customer onsite, does guided brainstorming, then walks the facilities to gain perspectives on operational details. All of this had to be done remotely, which relied on the customer providing data in a timely manner and providing their best guess at what is useful. Furthermore, PGE made a push via social media and other platforms to look out for COVID-19 scams and people posing as PGE, which made it difficult for CLEAResult to convince customers to enroll as it represents PGE as a third party. CLEAResult guesses that may have had some incremental effect in customers being generally less responsive, in addition to pandemic-related influences.

As COVID-19 restrictions have started to lift, CLEAResult has moved to a hybrid approach of engaging customers in-person or, where needed for safety, still engaging virtually.

Overall, Schedule 26 enrollment needs to continue accelerated growing (i.e., to hit the near-term MW goals) and then to transition to steady growth, as discussed in Section 5.4.1. The

remainder of this section discusses the implications of those two phases from the perspective of the implementation contractors.

Accelerated Growth

Schedule 26 is still in the growth phase largely due to setbacks from COVID-19 and other major events in 2020-2021. CLEAResult is hoping to recoup some of these losses in 2021. In 2022-2023, CLEAResult hopes to grow load with new large customers opening business in PGE's service area and by enrolling more of PGE's existing customers.

As discussed in Section 5.4.1, Guidehouse notes that CLEAResult's continued coordination with the KCMs is critical to the program's growth and maintenance, since the KCMs serve as the gateway for access to PGE's larger managed accounts.

CLEAResult will also need to engage more medium-size customers as the number of available large managed customers decreases. This will require changes in targeting and outreach, and have potential cost implications. These customers are harder to reach (e.g., in the absence of a KCM, not always having a dedicated facilities manager, etc.), less likely to have technically suitable load for DR, and offer less load reduction than the larger customers—which typically leads to higher enrollment costs on a per kW load reduction basis.

The program will have to explore ways to engage medium-size customers while maintaining cost-effectiveness or consider an altered program design that can help engage medium-size customers affordably. In CLEAResult's experience, engaging these customers generally requires direct outreach, such as cold calling and identifying the right person to speak with directly. For example, the lead that CLEAResult converted to a participant from the email campaign in late 2020/early 2021 was a result of cold calling one of the contacts identified through the email campaign, rather than through the emails directly. As of March 2021, CLEAResult and PGE did not have a detailed plan for engaging medium-size customers. CLEAResult identified two potential needs, including a) having access to additional analytics on medium-size customer energy usage data and b) bringing on an additional staff member (i.e., in addition to CLEAResult's primary account manager for Schedule 26) to support the growing number of participants and outreach to medium-size customers.

- **Recommendation:** Develop a detailed plan for engaging unmanaged medium-size customers, including a significant emphasis on direct outreach tactics. Assess cost scenarios for different outreach scenarios for the unmanaged medium-size customer segment (e.g., incremental CLEAResult staffing, data-driven customer targeting with augmented analytics, altered program design with lower touch engagement, etc.) relative to benefits of medium-size customer engagement.

Steady Growth

The steady growth phase for Schedule 26 would begin when the program reaches its exiting MW goals. Steady program growth will still require sustained engagement with customers and enrollment efforts to account for natural levels of attrition, but the overall levels of engagement are expected to be lower than in the accelerated growth phase.

The former CLEAResult and PGE program managers saw this steady growth phase as "not in view," particularly given substantial setbacks due to COVID-19 in terms of recruitment, enablement, and the effort required to recoup load lost to COVID-19. However, CLEAResult and PGE should begin to align on the vision and plan over the next year. Some considerations for that vision include the following:

- **Continued customer engagement:** Planning for regular customer touchpoints and having program bandwidth to maintain contact with existing participants is important for persisting customer engagement and satisfaction. Two elements of the current program are likely to be important:
    - **Pre-season check-ins:** CLEAResult has a regular pre-season check-in with the person who receives the incentive check in the advance of each season. In 2021, CLEAResult had 70 of these meetings over the month of May. During these check-ins, CLEAResult confirms the person is still in the same role, collects feedback on the program, determines if there were any challenges with the past season's plan, adjusts the plan as needed, and reviews the nomination and projected incentive estimates with the customer. CLEAResult has found that these check-ins help keep customers motivated and achieving target realization rates, particularly since incentive checks are often delivered to someone at the organization other than the person ultimately receiving the incentive. For example, in May 2020, CLEAResult connected with all of the program participants and adjusted their nominations in response to COVID-19, which resulted in realization rates relatively consistent with past seasons. As another example, when Energy Partner transitioned from EnerNOC to CLEAResult, several customer contacts changed jobs without EnerNOC's awareness, which required starting completely anew with certain customers, particularly those who were not fully automated. Maintaining contact with participants confirms these types of changes are captured on the customer side.
    - **Single point of contact:** Even with the customer portal, customers have continued to call the CLEAResult account manager directly for support, which suggests calling is easier than trying to address through the portal. Having a single point of contact that the customer is comfortable calling may be important for ongoing customer satisfaction and is something that future evaluations should consider assessing—especially as this may be more difficult to maintain as the program scales.
- **Continued enrollment:** Although a lower recruiting effort is expected for the program over time, CLEAResult will still need to find new participants and enroll new opportunities to account for natural attrition from the program.

Recommendation: Include provisions for successful customer engagement tactics (e.g., pre-season check-ins and having a single point of contact) and ongoing customer enrollment efforts to account for natural attrition in the program's plans for steady cost-effective growth.

6.1.3 Data and Systems Integration

Schedule 26 relies on the integration of multiple vendors

- Enbala: The PGE and CLEAResult teams generally have a positive view of Enbala as the DRMS provider. Enbala is viewed as responsive and willing to work through issues, such as when Enbala was able to quickly develop a manageable solution to gaps between EDM and Enbala's Symphony systems in the February 2021 ice freezes. A member of the sales team noted that Enbala's current system is "not very user friendly" and is "very complicated." One stakeholder also noted concerns about some customers' loads being switched on and off continuously in response to control sequences from Enbala's system, which may have liability implications if there are effects on the

customers' loads. Some of this may be addressed as Enbala transitions from Symphony to Concerto, which was originally planned for the summer 2021 season and has been delayed to the winter 2021-2022 season (see Section 5.4.3).

- EDM: One area of continued challenge is the relationship that both PGE and CLEAResult have with EDM, who is providing the CRM functionality for the program. Challenges include:
    - Significant delays on turnaround times and requests that affect the program's overall timelines
    - Difficulties accessing data from the EDM system, which provides a number of different data streams and creates delays for both CLEAResult and PGE
    - Challenges managing event windows between EDM and Symphony, which became an acute issue during the February 2021 ice freezes when CLEAResult was trying to black out event windows. Ultimately, EDM, CLEAResult, and Enbala were able to coordinate during the ice freezes to avoid calling customers during certain time periods.
- Apricity: Apricity is currently subcontracting to Enbala to help with programming of various features and functionality, including the event notification system. Both PGE and CLEAResult have appreciated the working relationship with Apricity and note that Apricity has ultimately been a crucial resource for helping ensure EDM's platform operates effectively.
    - **Recommendation:** Explore options for Apricity to subcontract to EDM, in addition to Enbala, to help expedite EDM's turnaround times.
- Pelican: Energy usage data collection meters installed at all participant locations. The Pelican meters generally have a high degree of reliability outside of communication-related issues and provide both CLEAResult and customers with access to energy usage data, which can provide ancillary benefits to customers (e.g., as a means to validate energy savings data for Energy Trust incentives).

7. Conclusions

Schedule 26 has a strong foundation of stable, consistent load reductions from large C&I customers with high customer satisfaction and cost-effective program delivery. With this foundation, Schedule 26 could sustain peak load reductions near peak load reductions of 20-25 MW without significant changes to the existing program design or customer engagement approaches. However, the Schedule 26 team has enrolled most of the eligible larger C&I customers within PGE's service area and PGE's needs for the program are evolving as extreme weather events increase and PGE develops its smart grid. Thus, to meet the targets set forth by the OPUC and to meet PGE's evolving needs, PGE and the Energy Partner implementation contractors will need to augment the program's value proposition and customer enrollment efforts and through program design enhancements and expanded customer engagement approaches.

. More detail on the related findings for each recommendation is available in the report sections noted in the Program Stakeholder and Program Review Consideration columns.

Table 7-1 summarizes the recommendations that Guidehouse presents within this evaluation report for advancing Schedule 26 towards its goals. More detail on the related findings for each recommendation is available in the report sections noted in the Program Stakeholder and Program Review Consideration columns.

Table 7-1. Summary of Schedule 26 Evaluation Recommendations

Stakeholder Perspective	Program Review Consideration	Recommendation
4. Customers	**4.1 Discrete Offerings**	a. Ensure communication channels are in place between CLEAResult, the PGE program team, PowerOps to monitor and address any signs of customer fatigue in response to higher event hours over the summer 2021 season. Continue planning for communications with customers in advance of the summer 2022 season.
		b. CLEAResult and PowerOps may consider clustering customers into subgroups and staggering event calling across the different subgroups if needed to meet higher dispatch needs while minimizing customer fatigue.
		c. Investigate expanded program designs to facilitate participation from resources that are inherently better suited for higher dispatch frequency (e.g., cold storage, battery storage, etc.).
		d. Continue conversations with PowerOps to determine the value of shorter notification periods (and the time horizon for achieving that value, if applicable) and develop a more detailed, shared understanding of customers' abilities to respond quickly by customer segment. If warranted, consider redesigning the program option for 10-minute notification and conduct short notification test events with a subset of customers 10-minute notification in future DR seasons. This topic should be a focus for future evaluation activities.
		e. PGE's PowerOps team would ideally have more Schedule 26 customers move toward 10-minute response over time. In parallel, customer interest in automation will likely grow as corporate interest in sustainability and energy management continues to increase. PGE should assess the benefits from expanded use of automation and whether that could support financial incentives to customers to help offset automation costs for end use loads or the purchase of energy storage.
		f. CLEAResult should continue to assess the understanding of existing and new participants about automation (e.g., the benefits, the costs, the ability to override, etc.) and continue identifying customers who might be possible candidates for enhanced control systems.
		g. As recommended in the 2019 evaluation report, PGE should explore synergies with Energy Trust's Strategic Energy Management (SEM) program and opportunities for cross-selling SEM with Energy Partner—and whether there are opportunities for cross-subsidization of customer system upgrades.

		h. As the program use cases evolve and the region experiences more extreme extended weather events, PGE may consider breaking participants into separate groups to call consecutively or offering participation in consecutive events as an option. In the latter case, PGE should explore customer willingness to participate in consecutive events, whether they would reduce their nominations or require higher incentives, and, if so, would the incremental value justify higher incentives.
		i. With PGE reaching a new system peak during the heat wave on Sunday, June 27, 2021 (only to be broken by the peak on Monday, June 28, 2021), PGE may consider offering participation over the weekends as a program option.
		j. If program dispatch increases, PGE might consider revisiting the design for this option as a supplement or alternative to increasing incentives for higher dispatch. For example, if a customer has the option to schedule an opt-out 1 month in advance with limited penalty, customers may be more amenable to higher dispatch while PowerOps has a firmer idea for resource availability.
	4.2 Predictable Outcomes	a. PGE and CLEAResult should continue closely monitoring customer satisfaction and attrition with changes to program conditions, including any new or changed program participation options (see Section 4.1) that might affect customers' willingness or ability to participate (e.g., increased event dispatch). Include this as a focus area in the summer 2021 evaluation cycle.
	4.3 Measurable Benefits	a. PGE may consider combining the Energy Expert and Energy Partner platforms and enhancing customer-facing features over time as an additional benefit to both Schedule 26 participants and nonparticipants. Customers have also suggested additional enhancements discussed in Section □.
		b. Enhance communication on the specifics of automated curtailment with participants who have eligible load types and may not universally understand end use automation. Based on lessons learned in other jurisdictions and through Guidehouse's interviews, customer education opportunities include providing more information on automation costs, whether customers could still override events, and the range of benefits for customers' broader energy management efforts, particularly for large commercial customers.
		c. Consider updating Schedule 26's tariff structure to incentivize a broader range of grid services as PGE evolves its valuation of load flexibility. Assess whether PGE's changing program needs cost effectively support changes to customer incentives, such as upfront incentives, enhanced flexibility incentives, or year-round incentives.
5. PGE Program Management & Implementation	**5.2 Repeatable Process**	a. Enhance internal PGE program documentation on processes and change histories to enable smoother knowledge transfer through staffing changes.

		b. As the program matures and Enbala and CLEAResult continue their positive working relationship, the teams may consider engaging PGE in more working discussions for transparency and more efficient knowledge transfer to PGE staff.
		c. Complete testing of the new Enbala Concerto system across a full set of use cases prior to the start of the winter 2021-2022 season in coordination with PowerOps, CLEAResult, Apricity, and EDM.
		d. The CLEAResult and PGE program teams should work closely with PowerOps to balance customer satisfaction and optimized dispatch by developing predetermined constraints that apply consistently across seasons and maximize customer reductions.
		e. Share CLEAResult's event results back with PowerOps for visibility into program performance, plus include provisions for disaggregating impacts by notification period and degree of automation.
		f. Clarify ownership on the decision-making roles and dispatch of optional events outside the PowerOps criteria in advance of the winter 2021-2022 season.
		g. Develop and refine automated processes for biannual or quarterly transfer of customers' detailed energy usage data to both CLEAResult and the third-party evaluator, with pre-defined provisions for customers who do not allow PGE to share their data.
	5.3 Measurable Benefits	a. Further evaluate the extent to which customers who do not consistently qualify for a proportional reservation payment during event months (i.e., they do not provide a minimum 70% of their nomination) are receiving full monthly reservation payments in non-event months.
	5.4 Ongoing Implementation	a. Advance discussions between CLEAResult and PGE's program manager on opportunities for redesigning and optimizing CLEAResult's engagement with KCMs to maximize touchpoints with the eligible managed account customers who are not yet enrolled.

		b. Consider growth strategies for expanded customer engagement, such as:
		• Deeper savings with **current participants**
		  ○ Exploring opportunities to improve the value proposition to deepen current customers' use
		  ○ Enhancing the customer portal
		• Acquisition of **new participants**:
		  ○ Exploring opportunities to improve the value proposition to broaden program appeal
		  ○ Continuing to broaden outreach and education efforts to medium-size customers
		  ○ Involving engaged participants in developing messaging around Energy Partner's benefits
		  ○ Exploring synergies for marketing and enrollment with Energy Trust of Oregon's SEM program

		c. Begin planning discussions on the longer-term staffing and operational needs for Schedule 26, including implications for CLEAResult's contract.
		d. Collaborate with CLEAResult and the third-party evaluator on the following opportunities for continuous improvement with program-related data in future evaluation seasons: • Add a data quality field in the AMI dataset that PGE provides for the evaluation. • Continue to evaluate the optimal CBL type after each season for customers who did not deliver DR. • Continue to enhance quality assurance processes during the season to ensure CLEAResult has in-season AMI data for all customers experiencing issues with Pelican data. • Continue evaluating the methodology for calculating scalars for meters with frequent zero readings to improve effectiveness.
6. Implementation Contractors	**6.1 Ongoing Implementation**	a. Review marketing approval processes for opportunities to expedite, including opportunities to streamline multiple rounds of review across multiple stakeholders (e.g., coincident review sessions). Consider developing contingency plans to minimize delays resulting from extenuating situations.
		b. Develop a detailed plan for engaging unmanaged medium-size customers, including a significant emphasis on direct outreach tactics. Assess cost scenarios for different outreach scenarios for the unmanaged medium-size customer segment (e.g., incremental CLEAResult staffing, data-driven customer targeting with augmented analytics, altered program design with lower touch engagement, etc.) relative to benefits of medium-size customer engagement.
		c. Include provisions for successful customer engagement tactics (e.g., pre-season check-ins and having a single point of contact) and ongoing customer enrollment efforts to account for natural attrition in the program's plans for steady cost-effective growth.
		d. Explore options for Apricity to subcontract to EDM, in addition to Enbala, to help expedite EDM's turnaround times.

Source: Guidehouse

Appendix A. Process Evaluation

This appendix contains Guidehouse's (formerly Navigant) memos summarizing the process evaluation findings from the following evaluation seasons:

- Customer Interviews Summary Memo – Summer 2019
- PGE Staff / Implementer Interviews Summary Memo – Winter 2019-2020
- Customer Interviews Summary Memo – Summer 2020

The findings from the PGE staff / implementer interviews following the winter 2020-2021 season are embedded in this report, rather than presented in a standalone memo.

In some cases, these memos address both Schedule 25 and Schedule 26, given the evaluation activities for these two programs have largely been conducted jointly until 2020.

A.1 Customer Interviews Summary Memo – Summer 2019

Navigant is conducting a process evaluation of Portland General Electric's (PGE) Energy Partner Program (Schedule 26) and Energy Partner Smart Thermostat Pilot Program (Schedule 25). This memo summarizes the main findings from interviews with participants in the medium and large customer Schedule 26 program for the Winter 2018-19 and Summer 2019 seasons. The memo also summarizes the main findings from interviews with new participants in the small commercial smart thermostat Schedule 25 pilot program for the Summer 2019 season. All interviews summarized in this memo were conducted in November and December 2019.

Table 7-2 provides an overview of the customer groups interviewed, number of target and actual completes, and the key interview objectives for each group.

Table 7-2. Customer Groups Interviewed and Interview Objectives

Customer Group	# of Completes/Targets	Objectives
Energy Partner Program participants (Schedule 26)	10 / 12	Understand level of customer acceptance and satisfaction with all aspects of the program, including recruitment, customer service, etc.
		Identify the value proposition to the customer to help PGE maintain and enhance that value proposition
		Identify participation challenges and opportunities for improved program design
Energy Partner Smart Thermostat Pilot Program participants (Schedule 25)	3 / 3	Assess barriers to participation and opportunities for improved program design
		Identify the value proposition to the customer and how that value proposition can be enhanced
		Assess customer satisfaction and challenges in the pilot phase of the program

Source: Guidehouse

A.1.1 Energy Partner Program (Schedule 26)

Navigant interviewed 10 Schedule 26 customers who participated in the program through the Winter 2018-19 and Summer 2019 seasons. Nine have been participating since the EnerNOC program (i.e., prior to the Winter 2017-18 season) and one was recruited by CLEAResult and was enabled to participate following the first event of Summer 2019. Four of these 10 customers

participated in the Summer 2018 evaluation interviews, while six customers were first interviewed in 2019.

Based on the results of these interviews, Navigant identified a few key takeaways for the program implementation team and for further exploration in future process evaluation activities:

- In general, the **participants are very satisfied with the current program**. Interview participants responded with an **average score of 9.8 to the question**[15]: "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?" This represents a 0.8 increase over the average score of 9.0 in the 2018 customer interviews. Six new contacts gave the program a satisfaction rating of 10. This is consistent with these same customers' ranking of specific program elements, including options for program participation[16] and pre-event communication.

- Specifically, the **existing participants expressed a high degree of satisfaction with the options for participation** (e.g., ability to adjust curtailment strategy) and CLEAResult's performance, including CLEAResult's responsiveness, willingness to troubleshoot, and frequency of touchpoints.

- The **customer data portal continues to present opportunities for improvements**. These opportunities primarily pertain to increasing general awareness and engagement with the portal and modifications to the user interface (listed below). **The average satisfaction level with the portal was 7.8.**

    - Four customers indicated that they have had limited or no interaction with the portal in the past year or are not aware of its full functionality. Customers infrequently logged into the portal, citing reasons such as "doesn't fit into my daily priorities", and "haven't had time".

    - One customer was not aware of the full functionality of the portal and clicked through the portal's individual tabs for the first time during the interview to find data they had not previously been aware of. This customer noted that he "usually pays attention to the first graph".

    - Another customer had a specific suggestion for user interface enhancement. This customer had multiple meters enrolled in the program and noted that navigating to multiple screens to view information on the performance of individual meters was cumbersome and would like to view information on all meters on a single screen with a dropdown for meter selection.

    - Some customers find the portal information beneficial for reviewing equipment operations, which is value add beyond their program participation.

Navigant provides the following recommendations for staff as the program moves forward:

[15] One new participant scored their satisfaction as a 10, the average score among the 9 existing participants was a 9.78.
[16] One new contact scored this as a 9 but does not have suggestions for PGE-specific improvement.

- **Program incentives are a primary motivator for the majority of the participants** (7 out of the 10 interviewed) to enroll in the program. **Equally important are "public relations/green image", "helping the environment"** and **"achieving sustainability objectives."** A couple of participants mentioned participating to help control peak energy demand and drive down costs to all customers as a primary motivator. The abovementioned points are PGE marketing messages, which appear to be resonating with program participants. Accordingly, as the program team markets the program more broadly, it should continue to emphasize the "green image" and sustainability benefits and how the program helps achieve these to potential new participants. Additionally, program outreach should continue to emphasize "benefits for all" ratepayers by lowering costs through control of peak energy demand. Program outreach could also highlight benefits participants could derive through real time data access.

- **The greatest opportunities for enhancing customer satisfaction relate to increasing customer awareness of the portal information and improving the user interface**. While improvements have been made to the online data portal in the past year, some customers have not visited the portal frequently since the upgrade. The program team should consider educating customers on navigating through the various levels of information that is currently presented across multiple tabs on the portal. The team could also modify the user interface to streamline presentation of the information for customers that had multiple sites enrolled (a participant with multiple sites enrolled suggested that viewing the information for all meters on one screen would be beneficial with a dropdown for selecting the site meters enrolled in the program).

- Six out of the ten interviewed participants indicated that they understood the incentive calculations either "reasonably well" or "very well", suggesting that there are opportunities for **improving customer understanding of incentive calculations.** Participants noted that they would like to see:

    - how nomination changes impacted their incentive amounts,

    - greater assistance from CLEAResult in understanding how incentives are calculated, and

    - a clearer explanation of the relationship between amount of load curtailed and the corresponding incentives received.

One participant noted – "I did look at the portal and didn't understand everything. Got it at a high level." Addressing these topics, going forward, will be helpful to enhance customer understanding of incentive calculations. The program team should consider **establishing touchpoints with participants to review the incentive calculations in the portal and address any questions/concerns participants may have on incentive calculations.**

This section organizes key findings from these interviews by topic area. Within each topic area, comments from each customer are consolidated to show where there was broad agreement, or potentially disagreement.

Program awareness

- **Six out of ten interviewed participants first learned about the program from a PGE Key Customer Manager (KCM). All of these customers transitioned over to Energy Partner from the prior EnerNOC program. The only new participant interviewed indicated learning about the program directly from CLEAResult**. Customers appreciate being informed about the program through their KCM. The customer who was first approached by CLEAResult noted he would not decide until receiving validation and information from PGE's KCM.

Participation drivers and perceived participation barriers

Participation drivers:

- **Seven out of 10 participants identified financial benefits** as one of the primary reasons for participating in the program.

- Four participants additionally indicated **"public relations/green image" as a primary driver,** another explicitly mentioned **"helping the environment"** as a primary motivator, and an additional participant was driven primarily by **sustainability objectives**. A couple of participants mentioned helping to control peak demand and drive **down costs that benefits all ratepayers** as a primary motivator.

- Of the participants who cited non-financial participation reasons, **two stated that their organizations actively informed employees of the company's Energy Partner program participation to enhance their profile as a community member or environmentally conscious business.** One indicated that they were considering doing so in the future.

- Two participants indicated **having access to real time energy information as a primary driver** for participation.

Perceived participation barriers:

- A majority of the participants cited **operational constraints** as a potential participation barrier. (e.g., flexibility in scheduling operations, having sufficient labor for curtailment when an event is called, etc.). One customer stated, "we can always recover after the event, but another company cannot do that."

- Participants acknowledged that the program flexibility vis-à-vis the EnerNOC program was beneficial.

- **One participant cited the program impacting employee/customer comfort** during summer as a possible participation barrier.

- **One participant indicated fear of the utility or third-party having control over operations** as a perceived participation barrier.

Program rules and event experience

- **All interviewed participants are aware of the Energy Partner program flexibility** (e.g., notification time, event duration, timeframe of events). One customer stated this is

a, “big part of their decision,” to participate in the program. **Average score on participant satisfaction with regards to** program rules was very high at 9.7.

Only one participant indicated that they would prefer an 8-hr. event notification option (seemed to think that there was a wide gap between 18-hours and 4-hours notification choices).

- **Customers could not think of areas for improvement by CLEAResult or PGE with regards to program rules.** One noted that the rules have “been simplified and they work.”

- **Participants continue to have to opt out of some events due to operational and process requirements**, but generally recalled that there were not too many of these instances in Summer 2019. Typically, customers recall opting out of one to two events, or not participating fully, during the summer season. Two participants reported inability to participate in winter events specifically.

- **All customers are aware of the ability to change their nomination**, and 7 out of 10 stated they have taken advantage of this either on a one-time or seasonal basis. Participants **did not have any suggestions on improving the nomination change process and appreciated the assistance CLEAResult provided.**

- **Customers with manual load reduction generally did not think automated curtailment would be viable due to their need to reduce and respond to process loads.** Two customers stated that they use an automated curtailment strategy. One said, “We don’t have to sit there and turn off manually […]; it has worked out well from a program and operations standpoint, assuming the right numbers are put in.”

Ongoing customer communications and technical support

- Participants report **high satisfaction with the level of support provided by CLEAResult** and did not have any suggestions for improvements.

- Participant **satisfaction levels with both pre- and post-event communication are very high**. Average participation satisfaction on pre-event communication was 10 out of 10 and on post-event communication was 9 out of 10.

    - Only one participant gave a score of 7/10 on post-event communication – however, that customer indicated that the relatively lower rating was because he did not take the time to view participation performance in the portal and there were no issues with the program itself.

    - A couple of suggestions on improving post-event communication included providing an automated report to the customer showing that they hit x% of target and providing a text message notifying customer that an event had ended. As PGE already provides this latter service, this indicates customer education needs.

Incentive levels

- **Responses were split with regards to the usefulness of incentives. Where some (4 out of 10) said it helped their bottom line, an equal number noted that they were**

simply nice to have. Only one customer stated that incentives are not meaningful and that they participate for other reasons.

- **Customers with unique site-specific needs for incentive calculations reported no challenges with the baseline methodology.** In the Summer 2018 interviews two customers highlighted how baseline calculations were challenging for their specific sites. In the 2019 interviews, six customers noted adjustments to their nominations, with five crediting CLEAResult in assisting them with making nomination changes. These customers did not mention baseline determination challenges.
    - Two customers noted that additional assistance from CLEAResult may be helpful in understanding their incentive payments. One participant who changed their nomination for this season stated that, "[it] would be handy if incentives communications noted what you reduced and what that translates to."
- **Participants report varying levels of attentiveness to payment.** While one respondent did not recall receiving payment for the Summer 2019 season, most others reported they had received checks. Further, three customers noted that their accounting staffs receive the checks and they only occasionally check in.
- **Customers are pleased with how new program rules allow them to earn incentives more flexibly.** One customer stated, "I think the fact that we no longer have to hit 100% of our target was the biggest change in the calculation of incentives. We can never hit 100% [of the nomination] with how we operate, so having an incentive at 70% or higher has really helped."

Data and web portal (Customer-facing website)

- **Participants reported varying experiences regarding program portal use.** Three customers reported that it generally works quite well. Two have never used it, including the new participant, and two more rarely use it. Four have also had past issues with the portal but reported that those technical difficulties have been solved.
- **Seven customers gave the portal an average satisfaction rating of 7.8.** A couple of customers indicated that they never logged into the portal, and therefore did not rate it.
- **Customers who use the portal noted improvements in the website over the past year.** However, there seems to be room for improvement with regard to user functionality and interface. One customer stated their experience, "Started off really difficult. Lots of issues that required PGE emails and attention. Not as efficient, [but] they've made improvements. But you must go back and forth through different screens. It'd be nice to have it all on one screen."
    - Two customers described the need to toggle across multiple screens to view the various PODIDs associated with the program.
    - In Summer 2018 customers recommended a phone app, the ability to change nominations through the portal, and direct-to-site manager incentive emails. These suggestions were not mentioned in the Summer 2019 interviews. Of these

suggestions, PGE has already implemented the ability to change nominations in the portal.

- **Two customers stated that they use and value the portal for immediate feedback and real-time data.**

Program contractor performance and customer satisfaction

- **The average program satisfaction score was a 9.8 across all interviewed participants.** The new participant rated their overall satisfaction as a 10. Existing participants' average satisfaction score was a 9.78, with nine customers rating satisfaction as a 10 and one customer rating satisfaction as an 8.

- **Over the Summer 2019 season, participants expressed pleasure with regards to 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.

- **No participations would change how PGE offers the program with CLEAResult as the implementer**. Customers generally believe the relationship between PGE and CLEAResult is working very well.

- **Customers also expressed satisfaction in working with their KCM**; although they tend to interact more with CLEAResult on the program.

- **Suggestions for implementation improvement appear to be site-specific** with one customer requesting help in identifying more equipment to turn off during events, and another wanting to further leverage "different series within the Pelican family."

Looking Ahead

- **Nine out of ten interviewed participants plan to continue participation in the program.** The one customer who could not definitively commit their company's participation noted that it was due to corporate structural changes but does hope to continue participation.

    - Specifically, one respondent stated, "As long as it's not costing us more than what we're getting back we'll continue," then added, "the community here is leaning green so it's good for PR. That's our reason to continue."

- Customers echoed their historic reasons for participation when asked if they would continue to participate in the future.

- **Some participants have recommended the program to others, while others have not but may be willing to.** Three customers have discussed the Energy Partner program with other medium and large businesses while four have not. One customer responded that they "maybe" have, while the remaining two offered to or have spoken with prospects arranged by PGE.

A.1.2 Energy Partner Smart Thermostat Pilot Program (Schedule 25)

Navigant interviewed three customers participating in the Energy Partner Smart Thermostat pilot program during the Summer 2019 season. One customer enrolled and participated in both Winter 2018-2019 and Summer 2019 events, and the other two enrolled and participated during the Summer 2019 season only. Based on the results of these interviews, Navigant identified a few key takeaways for the program implementation team and for further exploration in future process evaluation activities:

- **Pilot customers feel as though PGE and CLEAResult could improve program outreach and engagement.** One participant was already familiar with CLEAResult, however, the other two provided suggestions for strengthening the program introduction to those who are unfamiliar with demand response, including a reduction in jargon used to describe the program and follow-up after initial contact.

- **Reducing energy bills, receiving the free thermostats, and earning program participation incentives are primary drivers** for small business participation in the program.

- **Customers are confused about incentive payout and are not sure when to expect their incentive check**. The same participants recognize that the free smart thermostat(s) were a part of the incentive to join the program and are generally satisfied with thermostat functionality.

- One participant would like to enroll additional sites in his facility, but his understanding was that these **sites would not be eligible for participation based on the program qualifying criteria**. However, the participant was not sure what the qualifying criteria were and how they limited additional site enrollment.

- **Satisfaction with the program averages 8.9 out of 10 across all three interviews.** No clear pattern for pilot challenges is visible from the small sample of pilot participants interviewed; each customer cited unique areas for improvement.

Navigant also provides the following recommendations for future program modifications:

- **As the Energy Partner Smart Thermostat program scales, the program team should continue to emphasize the financial benefits of participation**. Customers cited financial benefits as a primary driver for participation (including energy bill reduction, program incentives, free thermostats). None of the interviewees mentioned sustainability objectives or community benefits as drivers, unlike the medium/large customers in Schedule 26.

- **PGE and CLEAResult should strengthen communication to customers about when to expect their $60 incentive check.** Two of the three customers interviewed indicated uncertainty around the incentive amount (set at $60/season) and a lack of information on when their check will arrive.

- **The program team should proactively work to assuage concerns about events' impact on customer control and comfort in program advertisements.** No customer reported disruptive or uncomfortable events, beyond a couple of degrees in temperature change and no customer opted out of events. The program team should consider

including customer testimonials citing event experiences in program outreach materials to enhance enrollment.

- **Clear communication on qualifying criteria and participation eligibility** could help customers understand which sites would be eligible for program enrollment. Follow-up communication with the customer regarding possibilities of enrollment of additional sites could help address customer questions/concerns on this topic and facilitate enrollment of additional sites.

The sections below organize key findings from these three completed interviews by topic area. Within each topic area, comments from each customer are consolidated to show where there was broad agreement, or potentially disagreement.

Program awareness and motivation

- **Customers primarily learned about the program through their monthly bill invoice.** One customer has an existing relationship with PGE through Schedule 26, but the other two interviewees initiated contact with PGE following receipt of a bill insert. One of the two customers who first learned about the program through a bill insert also recalls seeing the program on the PGE website prior to his decision to enroll.

- **All three participants cited energy bill reduction as a motivation for participation, two cited the participation incentive checks and the free thermostats as well.** One customer also indicated “reduce environmental impact”, and “being directed by the CFO to reduce energy” as drivers.

- **Customers felt as though they understood the program by the time they officially enrolled and did not have concerns.** However, they recognize other customers may have concerns with regards to how the program will work and what it means to have a “utility-controlled” thermostat in their facility.

Program enrollment and thermostat installation

- **One customer described delays in the thermostat installation process.** This customer thought he was going to receive a free ecobee smart thermostat but was told the day before he would receive a Pelican smart thermostat instead. He found this odd as he had heard of ecobee and knew of it as reputable and stylish but had not heard of Pelican.

- **Thermostat installation was satisfactory to customers and installers addressed small challenges at the time of installation, requiring no participant effort.** One customer stated, “Effortless on our part, one thermostat did not function, but they fixed it right away.” Another customer noted that there was a challenge with connecting the thermostat to his office heat pump, and that he had to call Salem Electric to resolve the issue.

Event notification, comfort, and behavior during events

- **Interviewed participants did not opt out of events in Summer 2019** and they were generally or very satisfied with the email notifications prior to the event. Customers did not recall how far in advance they had elected to receive notification.
    - One customer stated it would be great if the thermostat indicated an event so that his employees would not adjust the thermostat during events; this same customer does not believe his company opted out of or overrode any events.
- **Two participants did not recollect being on the premise during events, and the one customer noticed a slight temperature change.** During a July event, this customer noted his staff felt the temperature increase, but that no major disruption took place.
- **Customers have generally adopted a set-it-and-forget-it mentality with their smart thermostats.** The thermostats are set on a schedule, either through the web platform by an Energy Partner specialist or on the thermostat and no reported adjustments have been made since.
- **Average satisfaction with thermostat performance was 9.1 out of 10 for the three interviewed participants.**

Incentive levels

- **All 3 customers report that the seasonal participation incentives are a primary driver for program enrollment.** However, 2 of 3 participants were unsure of when to expect their Summer 2019 incentive as noted above.
    - One customer stated, “They said we’d get an incentive check mailed. I still haven’t gotten that. I don’t know how that works, or if I’ll get it at the end of the year or end of the month. I called [CLEAResult] to ask and he said I’d get the check in the mail. [The] email was from August.”
- **Two customers reported that receiving free thermostats was a primary reason for program enrollment.** The third customer preferred their previous thermostat, which they believe had a high level of functionality and was more visually appealing than the Pelican thermostat.

Program satisfaction

- **The average satisfaction score of 8.9 from 3 interviews indicates customers are highly satisfied with the program.** Each customer cites unique areas for overall improvement varying from incentive payout, to follow-up, to thermostat function and data visibility.
    - One customer wondered if his thermostat preconditions the space before an event, as some thermostats enrolled in DR programs do this. This same customer has not been on site during an event but notes his employees have questioned the thermostat’s functionality outside of event hours.

- Another customer stated that he wished PGE would loosen the qualification criteria for sites to be eligible for program enrollment.

Looking ahead

- **All three customers are driven to continue participating so long as the program delivers value** either in the form of saved money, reduced energy consumption, or incentive checks.

- **Customers may share their participation with peers.** One customer already has, another said they would once the pilot ends, the third participant noted that they wish there was a sticker or marketing materials to let customers know they were participating, despite not having mentioned public relations/green image as a primary driver.

A.2 PGE Staff / Implementer Interviews Summary Memo – Winter 2019-2020

Guidehouse is conducting a process evaluation of Portland General Electric's (PGE) Energy Partner (EP) program. For the Winter 2019-20 season, Guidehouse conducted interviews with several program stakeholders:

- PGE program management staff
- CLEAResult program implementation staff
- Program marketing consultant

This memo summarizes the main findings from these interviews. The objective of these interviews was to understand the current status of the program and delve more deeply into successes, challenges, and recommendations for improvement as the program moves toward its 27 MW target. Conversations built upon past lessons learned and recommendations for improvement, including those identified during the previous set of staff interviews.

With this in mind, Guidehouse identified key findings and associated recommendations for consideration by the program implementation team and for further exploration in future process evaluation activities:

Finding #1 There is a consensus that the program has been on track to achieve the 27 MW target through plans for significant ramp up in Schedule 25 customer enrollment and planned continued enrollment of Schedule 26 customers. However, all parties cite the COVID-19 pandemic, and associated halt to marketing, as creating uncertainty to program approach. COVID-19 has impacted Schedule 25 site enablement with thermostat installations temporarily stopped. Site enablement for Schedule 26 customers is continuing at about 80% of the normal rate during the shutdown. The length of disruption to normal operations will be a factor in program success.

Recommendation #1a Coming out of COVID, PGE should develop a plan to engage new customers once restrictions on marketing and enablement are lifted to help the program make up for lost time in a sustainable fashion that minimizes enrollment bottlenecks.

Recommendation #1b Develop a data-driven system to provide regular or real-time updates about the program enrollment pipeline. These updates can help direct program marketing efforts and monitor engagement of harder-to-reach prospects for both Schedule 25 and Schedule 26.

Recommendation #1c Continue to work in coordination with PGE's Energy Efficiency Outreach team to generate Schedule 25 leads. Interview findings indicate that the cooperation and coordination with the Energy Efficiency Outreach team have been very effective in pre-qualifying customers and generating leads for Energy Partner and therefore the program should continue to further build on such efforts.

Recommendation #1d Continue to coordinate with the Energy Trust of Oregon's (ETO) Strategic Energy Management (SEM) program, which has been beneficial to date. SEM program managers are aware of Energy Partner and help promote the program to SEM participants. Energy Partner presentations are planned for the SEM Energy 350 program

participants to inform them about Energy Partner. For Schedule 25, PGE and the ETO also have a financial arrangement where the ETO rewards PGE with $100 for every Schedule 25 customer PGE helps to enroll in their pilot, and a memorandum to establish data-sharing related to the smart thermostats.

Recommendation #1e There is an indication that more challenging-to-enroll contacts are still prospects for participation in Schedule 26. CLEAResult notes that customers who have said "no" to participating in the past, when the program contracted with EnerNOC, show signs of renewed interest in 2020. Revisit engaging these customers, where applicable, coordinating with their KCMs to enroll more managed accounts into the program.

Recommendation #1f Work to enroll unmanaged accounts into Schedule 26; prepare to engage these customers as the number of prospective managed accounts begins to diminish.

Finding #2 There is continued improvement in data and systems integration between Enbala, CLEAResult, and PGE. Together, the program managers and contractors are working to address data discrepancies.

- For example, CLEAResult noted challenges in completing necessary calculations due to due to variance in reported units (kW and kWh) and reversed SPIDs and PODIDs. Addressing such issues will help provide more efficient data analysis in the future.
- Furthermore, access to more granular customer interval data with customer-signed letters of agreement (LOA) from Schedule 26 participants will help provide more information while alleviating data difficulties experienced in past years.
- Integration efforts will continue as Schedule 25 migrates to Enbala's Concerto platform over the summer season, and with Schedule 26 migration to Concerto later in the year or early in 2021.

Recommendation #2 Address known data integration issues and strategically engage stakeholders to prepare for ongoing challenges associated with the Concerto migration. Engage additional stakeholders such as Energy Data Metrics (developer of Enbala's portal) and continue to refine processes for rapid, accurate transfer of data between program contractors. Continue efforts to ensure meter data sent to Enbala matches the data sent to PGE, obtain granular customer interval data through signed LOAs, and ensure consistency in data formats.

Finding #3 As in 2018-2019, an opportunity exists to improve the efficiency of program marketing so that budgets and schedules are not negatively impacted. Specifically, improvements could be made to program marketing coordination. The program marketing consultant noted that current systems for shared involvement in marketing between various PGE departments, CLEAResult, and herself have resulted in miscommunication about marketing strategy and feedback among the internal marketing team; all parties noted extended approval timelines resulting from shared involvement.

Recommendation #3a Hold targeted discussions with CLEAResult about mitigating marketing bottlenecks through in the marketing design and approval processes, which have continued to pose a challenge in the Summer 2019 and Winter 2019-2020 seasons. Points of discussion and

process improvements can include updated communication on CLEAResult's marketing materials development and PGE's approval processes.

Recommendation #3b Contingent on findings from Test Bed marketing efforts, PGE may explore the benefits and challenges associated with undertaking Energy Partner program marketing and customer recruitment in-house at PGE for Schedule 25 customers, especially with increasing number of Schedule 25 customer leads coming from the Energy Efficiency Outreach team within PGE. This recommendation may be of particular relevance if PGE decides to create a more formal programmatic distinction between the Schedule 25 and Schedule 26 programs as both programs continue to scale.

Finding #4 No adjustments to program rules or incentive levels are planned at this time. However, the program is expected to transition to the power operations group as the program scales toward full deployment, which may lead to some changes in program parameters (e.g., more frequent event calling). Further, many Schedule 26 participants will enter the season without needing to change nominations or process equipment contributing to load. This will allow PGE to prioritize enabling new sites for both Schedule 25 and Schedule 26 participation, with strategies to continually engage and communicate with existing customers also in place.

Recommendation #4a Refine communications plans for customers at various stages of enrollment:

- Prepare for a larger number of communications and clarification for customers enrolling in the Schedule 25 program. Clarification may be required on program eligibility, incentive payment, and impact of events on operations.
- Refine communications plans for Schedule 26 customers who require minimal adjustment but continue to participate in the program.
- Develop mid-season communications for customers enrolled in both Schedule 25 and Schedule 26.

Recommendation #4b Host open dialogues about the transition from the Energy Partner pilot program to full-scale deployment. Conversations can begin to address where funding would come from once the program transitions out of the pilot phase, how relationships with program contractors will or will not change once the program is in a maintenance stage, and how to determine program cost-effectiveness.

The next section of this memo organizes responses by topic area. The second section breaks out responses by stakeholder group to show broad themes conveyed by each group.

A.2.1 Topic Area Findings

This section organizes interviewee responses by topic area. Within each topic area, comments from each stakeholder group are consolidated to show where there was broad agreement, or potential disagreement.

Program Management and communication between PGE and contractors

- Program management with PGE and contractors is well-coordinated and continues with good relationships across all parties.
- There are significant efforts to scale up the program to hit the targeted 27 MW reduction.
    - There is a focus on increasing enrollment of both managed and unmanaged Schedule 26 customers. Stronger coordination and engagement between PGE's KCM team and CLEAResult is expected to increase managed account enrollment for Schedule 26 customers. Additionally, both PGE and CLEAResult agree that unmanaged Schedule 26 customers need to be recruited (mostly during late 2020 and early 2021 timeframe) to help meet program target.
    - Schedule 25 customer recruitment has been ramping its coordination with PGE's Energy Efficiency Outreach team and leveraging leads generated by that team for enrollment in Energy Partner.
- The program has been progressing well to meet goals. However, the COVID-19 situation creates challenges and uncertainties, especially for Schedule 25 customer enrollment. Schedule 26 is more shielded since most new customers have already been recruited and they are being currently enabled, most of which can be managed remotely. PGE perceives customer participation in the Energy Partner program as an opportunity for customers to earn additional revenue during these times.
- As Energy Partner scales up from a pilot to a program in the coming year, PGE plans to transition it from Program Operations to the Power Operations group, which could influence some of the program characteristics (e.g., more frequent event calling). However, certain aspects of the program, such as managing recruitment and engagement with contractors are likely to remain within the Program Operations group.
- A possible delineation between the Schedule 25 and Schedule 26 programs may take place as both programs continue to scale. In this instance, Schedule 26 progress would be measured with respect to MW targets, while Schedule 25 progress may be evaluated, in part, by number of thermostats enrolled.
- Possibilities of Direct Access (DA) customers participating in the Energy Partner program is currently being discussed at the PUC. However, it remains uncertain whether and when this will materialize.
- PGE expects to revisit the contract with CLEAResult after the program goal is reached this year (e.g., it could transition to a maintenance contract for Schedule 26 after recruitment levels off, with Schedule 25 still ramping up).

- CLEAResult noted that a longer timeline for program implementation would be beneficial. Additionally, due to the distinctions between Schedule 25 and Schedule 26, it may be helpful to have two program managers.

Program Marketing, Customer Outreach and Recruitment

Overall

- All parties agree on the overall program marketing plan for Schedule 25 and 26 customers for the upcoming year. Specific elements positively referenced by all parties include both new and existing marketing tactics, program messaging, and strategies for Schedule 25 and Schedule 26 marketing (e.g., close coordination with Energy Efficiency Outreach group for Schedule 25 and emphasis on non-managed customer recruitment for Schedule 26 customers).

- Although there is agreement on the marketing plan, marketing timelines and strategy coordination prove to be a challenge.

    - CLEAResult would like more ownership, given the standard delay in PGE's messaging cue. Further, the marketing strategies appear to diverge between the two companies in some instances, resulting in marketing collateral that are considered "off strategy" by one party.

    - The program marketing consultant also finds that requiring approval from both PGE and CLEAResult takes time and notes PGE's exploration of taking over marketing for the Test Bed population.

    - Shortening lead time for creation of marketing materials (almost at eight weeks currently) would be beneficial.

    - It is suggested that PGE should communicate to vendors on the new look-and-feel of the program and expedite approval of marketing materials.

    - Gaps in email address available for business customers continue to pose recruitment challenges.

    - Tightening of marketing budgets could result in fewer program ads this year, the impacts from which remain uncertain.

- There is a transition in program marketing from CLEAResult to PGE with PGE's purchase of Salesforce marketing. The program marketing team is trying to determine how the development of creative assets will be affected with this transition.

- PGE is considering implementing a more formal programmatic split as the Schedule 25 and Schedule 26 programs continue to scale toward full deployment. PGE is also considering bringing marketing for Schedule 25 in house, as the internal Energy Efficiency Outreach team has been generating pre-qualified leads for the program. By working with EEO Energy Efficiency Outreach group to market the program, PGE may be able to improve the efficiency of Schedule 25 marketing. CLEAResult would continue Schedule 26 marketing in this scenario.

- Regarding recruitment tracking, the program marketing consultant feels that obtaining weekly updates on customer pipeline and outreach procedures will help track recruitment progress.
    - Suggested improvements for CLEAResult are to provide weekly progress reports on recruitment status and stage (especially for Schedule 25 customers), information on the number of customer touchpoints and types of touchpoints, and whether customers are inside/outside of the Test Bed.

Schedule 26

- Engagement with the KCM team continues and is being strengthened to recruit additional managed account customers.
- Schedule 26 marketing will target potential participants with suitable load profile and specific segments such as water/wastewater treatment (established contacts at these facilities and attempting enrollment), cold storage facilities (trying to sign up additional sites), and industrial process loads (paper mill, metal processing, plastics melting and molding).
    - CLEAResult also notes that customers who have said no to participating in the past, when the program contracted with EnerNOC, show signs of renewed interest in 2020. They indicated that customers with “hard NOs” were being revisited and retargeted with KCM engagement.
    - PGE noted a push toward recruiting unmanaged customers this year, though CLEAResult indicates that there are still managed accounts that have not been targeted, and that a push for unmanaged accounts will more likely come later.
- Interviewees referenced a “3D Collateral” gift box that includes wares (sample products) from participating Schedule 26 customers as a new tactic to be used for enrollment for new customers. Additionally, program outreach will include LinkedIn ads.
- Historic outreach took place through the Energize and Business Connection newsletters for Schedule 26 customers. Targeted newsletters to Schedule 26 customers are no longer sent, but the program marketing consultant notes they were an effective outreach method with high open rates. PGE could reevaluate and reconsider opening it in future.
- There is close coordination with ETO’s SEM program (Energy 350) in marketing Energy Partner to SEM program participants. SEM program managers are aware of Energy Partner and present program information to SEM participants. This is expected to generate leads for the Energy Partner program.
- Annual recognition of Schedule 26 Energy Partner program participants by giving out framed certificates has been successful in strengthening customer relationships and will be continued this year by sending PDFs of certificates to participants.

Schedule 25

- Schedule 25 marketing experienced delays in 2019 due to a bottleneck in the installation pipeline. CLEAResult was able to hire more installers and speed up the installation process clearing the bottleneck and permitting more marketing.
    - New installers, however, came in just a few weeks before all new installations were halted due to COVID-19. Marketing for the Schedule 25 program has since been put on pause, so data to determine the success is limited.
- Marketing to prospective Schedule 25 participants has consisted of emails, direct mail, and an Energize Newsletter to date. Marketing has been targeted at any qualifying business. Given the limited timeframe in which marketing has occurred, it is challenging to identify what tactics work best.
    - All interviewees referenced door-to-door marketing through Green Mountain Energy as a potential pathway to higher volumes of lead generation and enrollment, however, this tactic will have to be moved toward Q4.
- This year, engagement with PGE's Energy Efficiency Outreach team has helped forge a successful partnership between that team and the Energy Partner program team. The Energy Efficiency Outreach team provides pre-qualified Schedule 25 leads for enrollment in Energy Partner and that strategy is expected to continue and be further strengthened to scale up Schedule 25 enrollment.
- The Energy Partner program is being marketed to Schedule 25 customers in the Test Bed. Lessons learned from Test Bed marketing would be useful to incorporate in the Energy Partner program.
    - For example, digital ads were a very effective outreach method in the Test Bed, and accordingly, the program has planned targeted digital marketing of the Energy Partner program to all customers visiting the PGE business page.
    - Another tactic is to coordinate with Chinook Book to market Energy Partner program in the coupon pack for business customers (in coordination with Test Bed activities).
- Establishing the enrollment portal took longer than expected for Schedule 25. Now that COVID-19 has halted marketing and installations, its use has been put on hold; however, it should provide for enrollment and self-scheduling once COVID-19-related restrictions have been lifted.

Data & Systems Integration

- PGE and CLEAResult recognize that processes have been implemented to improve data consistency and accuracy and for speeding up data analysis. Additionally, there are steps toward improving data visibility and clarity. These include:
    - Ongoing efforts to shorten the data analysis timeframe from about a week to a few days and for seamless integration with the EDM system.

  - Address data discrepancies with EDM (inconsistencies in meter data going to Enbala and PGE).
  - Reversal of SPIDs and PODIDs in the past, which has since been corrected.
  - Signed LOAs from Schedule 26 participants provide access to granular customer interval data to help determine the kW amount, which was previously determined from hourly averages.
  - Greater consistency in data formats remain to be addressed (e.g., intervals for kW and kWh at times don't match).

- Schedule 26 system integration took longer than expected and has been successfully completed.
  - Schedule 26 customers can change nomination amount in the portal
  - Migration from the existing platform (Symphony) to Enbala's new platform (Concerto) will take place either later this year or beginning next year.

- Schedule 25 accomplishments include:
  - Completion of the customer portal set up. Customers can self-enroll through the portal. There were some unanticipated delays due to fees associated with customer access to Ecobee portal, but these have been resolved.
  - Ongoing integration with the new Concerto platform, with Ecobee thermostats being integrated first, followed by the Pelican thermostats.

DR Event Experience

- There have been technical issues dispatching both Schedule 26 and Schedule 25 events in the summer.
  - In June 2019, events were called for both Schedule 26 and Schedule 25 events which caused issues in the Enbala Symphony platform. At a high-level, problems stem from Symphony's inability to support both Schedule 25 Pelican thermostat customers and Schedule 26 Auto-DR customers with relays in the same portfolio. High levels of load on the system, coupled with communications challenges caused Pelican Auto-DR relays to open and close, thus causing building management systems to start and stop DR sequences repeatedly. After the event restart for Schedule 26 participants (the event was not restarted for Schedule 25), several Auto-DR customers opted out or had equipment failure preventing continued participation.
  - Following this, CLEAResult, Enbala, and PGE worked together to mitigate future risk, including the removal of Schedule 25 from the Symphony portfolio with schedule 26.
  - A separate February 2020 event had issues with the newly implemented Ecobee thermostats.

- AMI data at the time of events have sometimes differed from update AMI data at a later time. This necessitates changes to incentive data.
    - PGE approved using Guidehouse, formerly Navigant's calculation, in one instance.

- CLEAResult finds there have been delays in starting calculations, including receiving calculation method approval from PGE. Delays have also taken place in processing the checks due to site resource constraints and getting signed copies of W9 forms as contributors to this challenge.
    - CLEAResult has signed W9 forms for 99% of participants in Schedule 26 and now includes obtaining a signed W9 in the site-enablement process to mitigate future challenges.
    - CLEAResult has W9 forms for 80% of customers already enrolled in Schedule 25. Installers are also to obtain a signed W9 at the time of Schedule 25 site enablement or flag the account to the Program Coordinator for follow-up. This should reduce the risks of delayed settlement distribution in the Summer 2020 season.

Incentive Levels

- To date, no changes to incentive levels are planned. Further, no differences in incentive levels between Test Bed and general population participants are planned. Therefore, PGE does not intend to adjust the broader population's incentive levels given Test Bed findings at this time.
    - PGE is prepared to discuss greater flexibility with incentive levels to enroll harder-to-reach Schedule 26 prospects and indicated addressing incentives on a case-by-case issue in the future.
    - PGE believes that some Test Bed participants will likely require higher incentives than what the Energy Partner program offers to enroll in the program (as these Test Bed participants are not great candidates for DR and would need higher incentives than other customers). PGE has allocated funding for potential additional incentives within the Test Bed, but it looks as though only a percentage of this funding will be required.

Program Rules

- No concrete plans to adjust program rules in the Summer 2020 and Winter 2020-20201 season exist at this time.
- Energy Partner is expected to transition from Program Operations to Power Operations group within PGE as the program scales up, which could lead to alterations in some program characteristics (e.g., Power Operations could call events more frequently). However, when and what changes will take place remain uncertain.
- A potential change could be the allowance of Direct Access customers to participate in Schedule 26. Participation by these customers could count toward the 27 MW goal. However, it remains uncertain whether and when this could materialize.

Customer Communications/Satisfaction

Schedule 26

- Customers like ongoing communication with CLEAResult and satisfaction levels are high.
    - KCM engagement and outreach have been progressing very well and will continue this year.
    - Customers especially appreciate the advance notification regarding event likelihood.
- CLEAResult plans to undertake seasonal baseline reviews of existing customers and communicate with them on the nomination amount and whether they would like any adjustments. CLEAResult will remain available if they need assistance in changing nominations but notes customers can adjust nomination in the portal. Additionally, CLEAResult is working with new customers on selecting the nomination amount.

Schedule 25

- Schedule 25 communication effectiveness is relatively difficult to assess as the program is still in the early stages:
    - PGE notes that customers in the program have received notices regarding start and end of season, along with event notifications.
    - CLEAResult notes that customers in this program may have post-install questions, but that the company responds right away.
    - CLEAResult also notes that lead generation from PGE's Energy Efficiency Outreach team on ETO's programs may be leading to some confusion, where customers do not understand the differences between the ETO programs and Energy Partner.
- Incentive's communication and payout to customers experienced some challenges in the past, primarily due to data difficulties and inconsistencies for determining incentives, which have since been addressed. Additionally, W-9s are required to provide payment to Schedule 25 participants, and collecting these has proven challenging, which led to further delays. This has been addressed,
    - Going forward, CLEAResult plans to establish two customer touchpoints per season (mid-season and end-of-season), to communicate whether and when they would get the incentives.
- The Test Bed should provide more lessons about communication, particularly once Schedule 25 enrollment resumes, and more customers participate in the program.

Program Goals & Wrap Up

- There is a consensus that the program was progressing well and on track to meet the target of 27 MW of nominated capacity by January 2021.

- COVID-19 and the associated halt of marketing and installation of technology, especially for Schedule 25, perceived to be the greatest barrier to achieving the program targets at this time. Schedule 26 is not as much affected since program enrollments took place mostly at the beginning of the year and sites can be enabled remotely.

- An additional challenge to meeting the 27 MW target is consensus that the program has enrolled the largest interested and eligible customers (low hanging fruit has already been picked). Thus, recruitment needs to focus on enrolling a larger number of relatively smaller sized customers, which is harder to achieve. This will require outreach to unmanaged customers for Schedule 26 and significantly scaling up enrollment of Schedule 25 customers.

- PGE notes three major considerations in transitioning Energy Partner from a pilot to a program: the source of program funding, determining program cost-effectiveness, and transition of event calling to the Power Operations group.

A.3 Customer Interviews Summary Memo – Summer 2020

Guidehouse is conducting a process evaluation of Portland General Electric's (PGE) Energy Partner Non-Residential Demand Response (DR) Program (Schedule 26). This memo summarizes the main findings from interviews with participants in the medium and large customer Schedule 26 program for the Winter 2019-20 and Summer 2020 seasons. All interviews summarized in this memo were conducted in October and November 2020.

Table 7-3 provides an overview of the customer groups interviewed, the number of completes, and the interview objectives for each group.

Table 7-3. Customer Groups Interviewed and Interview Objectives

Customer Group	# of Completes	Objectives
New & Existing	9	• Better understand level of customer satisfaction with all aspects of the program • Identify the value proposition to the customer to help PGE maintain and enhance such value • Identify participation challenges and opportunities for improved program design
Exited Customers	2	• Understand what led to the decision to drop out of the program • Assess barriers to participation and opportunities for improved program design
Non-Participant (Decline)	1	• Assess barriers to participation and opportunities for improved program design • Identify the value proposition to the customer for participation and how that value proposition can be enhanced

Source: Guidehouse

Guidehouse's interviews with the abovementioned customer groups highlights program strengths as of the close of the Summer 2020 season. Program strengths consist of areas of continued positive experience by customers, and areas where customers have noted improvements since the 2019 season. One recommendation is made about program marketing to continue to bolster program strengths.

Interview findings also indicate program challenges, which present opportunities for continued improvement. Three program recommendations are provided to engage more customers in automated curtailment, where applicable, and to improve the customer-facing website for more seamless use.

Additional detail on all facets of the program, including customer quotes, can be found in the Appendix of this memo. The topics covered in this memo are as follows:

- **Program Strengths Overview**
    - Findings Related to Program Strengths
    - Recommendations Building on Program Strengths
- **Program Challenges Overview**
    - Findings Related to Program Challenges
    - Recommendations to Address Program Challenges
- **Appendix: Detailed Interview Findings**

A.3.1 Program Strengths Overview

This section details findings and recommendation associated with program strengths. Each finding or recommendation is tied to a specific facet of the program including program awareness, participation drivers, program rules, incentive levels, and customer satisfaction. A recommendation to amplify the successes of program strengths is shared below the 'findings.'

Table 7-4 summarizes findings and a recommendation as they relate to current program strengths.

Table 7-4. Summary of Program Strengths and Associated Recommendation

Program Area	Findings
Program Awareness	Relative to Summer 2019, more customers cite "public relations/green images" as a motivation for participating in Energy Partner.
Participation Drivers & Perceived Participation Barriers	COVID-19 did not pose a major challenge to event participation for most customers.
Program Rules & Event Experience	Customers are happy with program-related communications and supportive of the relationship between PGE and CLEAResult.

Incentive Levels	Customers found extra income helpful given COVID-19 and appreciate the absence of penalty for non-performance.
Customer Satisfaction	Customer satisfaction remains high with a score of 9.5 out of 10.
Program Area	**Recommendation**
Program Awareness	PGE should engage interested participants in bolstering messages of Energy Partner's benefits to support its marketing message moving forward.

Source: Guidehouse

Guidehouse details findings, followed by recommendations, regarding Schedule 26 program strengths below.

Findings Related to Program Strengths

The following findings emphasize program successes over the Winter 2019-2020 and Summer 2020 seasons:

Program Awareness

Following the Summer 2020 season, "public relations/green image," "helping the environment," and "achieving sustainability objectives," prove to be program participation drivers for seven out of nine existing participants. Three existing participants stated that participation helps PGE or "strengthens their relationship with PGE," or boosts the program's success, and helps to keep energy costs low. Four participants actively market their participation in the program, and five have explained the benefits of the program to peer companies.

Participation Drivers

The COVID-19 pandemic did not prove to be a major hindrance for most customers' participation. Six out of nine interviewed participants did not feel the effects of COVID-19 as it related to their Energy Partner experience; of the three customers that did, only one attempted to reduce their nomination during the pandemic. The one customer who attempted to reduce their nomination was initially unsuccessful, noting that their nomination was not recorded in the system correctly at first.

Program Rules & Event Experience

Existing participants expressed a high degree of satisfaction with pre-event communication (9.6) followed by post-event communication and options for flexible participation (both 9.3). Exited participants interviewed have not left the program due to poor event experience nor challenges with event participation, but due to site closure. Should such participants still have an eligible facility in PGE's territory, they would continue participation in the program.

Aligning with Summer 2019 findings, the relationship between PGE and CLEAResult continues to appear successful; participants would not recommend any changes at this time.

Incentive Levels

Two participants found the incentives to be of added benefit this season, as other parts of their business suffered financially due to COVID-19. An additional participant appreciated the program's overall generosity and the absence of financial penalty, noting that though his company only participated in about 25% of the events, they still received approximately $600 in incentive payments.

Customer Satisfaction

In general, the participants are very satisfied with the current program. Interview participants responded with an average score of 9.5 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?” This represents a 0.3-point decrease over the average score of 9.8 in 2019, and a 0.5-point increase over the average score of 9.0 in 2018. Four existing participants and one exited gave the program a satisfaction rating of 10. This is generally consistent with these same customers’ ranking of specific program elements, including options for program participation and pre-event and post-event communications.

Recommendation Building on Program Strengths

Recommendations to further bolster programs strengths and generate higher Schedule 26 program value are tied to the marketing of the program following the Summer 2020 season. Recommendations associated with strengths in program awareness include:

Program Awareness

PGE should engage interested participants in bolstering this message to support its marketing message moving forward. Program outreach should continue to emphasize “benefits for all” ratepayers by lowering costs through control of peak energy demand.

PGE should continue to find means of involving existing participants in recruitment efforts for new participants, particularly where participants do not have a dedicated key customer manager (KCM) to support awareness and enrollment efforts.

A.3.2 Program Challenges Overview

Despite high overall satisfaction with program performance, interviewees identify areas for improvement regarding individual facets of the program. Major challenges that affected scores of independent program components appear to be site specific, but opportunities to strengthen participants' perceptions of the program persist.

Table 7-5 summarizes findings and recommendations as they relate to areas for improvement.

Table 7-5. Summary of Program Challenges and Associated Recommendations

Program Area	Findings
Program Rules	Declined participants do not feel the program rules meet their current needs.
Event Experience	Participants do not fully understand the benefits and drawbacks of automation.
Customer-facing Website	Customers cite various areas for improvement regarding the program portal.
Program Area	**Recommendations**
Program Rules	PGE should take customers broader strategic energy management and potential corporate sustainability targets in mind when recommending program options related to nomination amount, participation automation, and customer portal use.
Event Experience	PGE should educate customers on the specifics of automated curtailment.
Customer-facing Website	PGE should work with customers to address portal related concerns and corrections and implement general portal suggestions.

Source: Guidehouse

Guidehouse details findings, followed by recommendations, regarding Schedule 26 program challenges below.

Findings Related to Program Challenges

Based on the results of these interviews, Guidehouse identified a few findings for the program implementation team with regard to current program challenges:

Program Rules

The non-participant, who has declined to rejoin the program for several years, cites that lack of flexible options caused them to leave the program under EnerNOC. This customer does not

believe that the flexible options provided by CLEAResult in 2020 significantly adjust the program, and still find that Energy Partner is unable to meet their company's needs.

For those participants currently in the program, when asked if they would consider the pursuit of semi-automatic or automatic curtailment, three manually curtailing customers cited the need to have the ability to override an event if it would too heavily disrupt the facility's primary functions. Customers who utilize process load as part of their participation, specifically, fear that their company's core competency will be put at risk during an Energy Partner event due to unforeseen, automated curtailment.

Event Experience

Given the abovementioned concerns related to automation, customers with manual curtailment continue to think it is the best option for their business. Existing participants without automatic or semi-automatic curtailment need support to better understand the benefits and drawbacks of automation for their business. Automation may help customers secure greater savings within customer-determined parameters.

Upon learning the basic details of automated curtailment, two customers with manual curtailment expressed interest in learning more about automation options for their facility. One customer with semi-automatic curtailment expressed interest in full automation. Participants who have semi-automatic or automatic curtailment report no problems with the solution and are pleased with the result.

Customer-Facing Website

More customers are relying on the program portal to assess their event performance, track program participation, and share data with broader members of their team. Improving their ability to access these features will increase program satisfaction. Increased use of the customer portal is one area of improvement over recent evaluations; however, the customer data portal continues to present opportunities for improvements, with the lowest score of any single facet of the program of 8.3 by existing participants. This score represents a 0.5-point increase from the Summer 2019 process evaluation score.

The greatest opportunities for enhancing customer satisfaction relate to ensuring frictionless portal navigation and functionality. With an average satisfaction score of 8.6, customer experience with the online portal has improved since the Summer 2019 evaluation. While requests for improved navigation appeared in multiple interviews last year, only one customer mentioned a cleaner portal interface following this Summer 2020 season.

Challenges were prevalent across existing participant interviews, though appear to be site-specific. One customer noted that the portal does not update following events and can take multiple days to do so. Another customer pointed out that the portal does not reflect their down-adjusted nomination due to COVID-19, and thus they continue to put in extra effort to hit their previous commitment, assuming that their nomination decrease attempt was never processed.

Participants have several more general suggestions for improvement including year-over-year data displays, sustainability metrics (i.e., GHG reductions), and more granular data insights, where reasonable.

Recommendations to Address Program Challenges

Guidehouse provides the following recommendations related to areas for improvement:

Program Rules

PGE should take customers broader strategic energy management and potential corporate sustainability targets in mind when recommending program options related to nomination amount, participation automation, and customer portal use.

Customers participating in the Energy Partner Program may be working with other entities, such as the Energy Trust of Oregon (ETO) or enrolled in the Energy Tracker program. PGE should guide customers, where feasible, through participation option selection considering broader site-wide or corporate energy and sustainability targets.

As PGE considers the expansion of the Energy Partner program to secure more customers or take advantage of technologies such as battery storage, recognizing current and prospective participants' SEM efforts will help to increase total enrolled MW while boosting customer satisfaction.

Event Experience

PGE should continue to educate customers on the specifics of automated curtailment and ensure customers understand that automation does not remove their ability to override an event.

Customer-facing Website

PGE should note customers' more general suggestions for portal improvement include recommendations for PGE to implement annual trend data, season or year-end data, and granular insights, may be implemented to boost portal satisfaction.

PGE should ensure customers receive necessary IT support as it relates to the program portal and associated inputs and should work with customers to address their site-specific portal concerns.

A.3.3 Appendix: Detailed Interview Findings

Guidehouse interviewed 12 Schedule 26 customers who participated in the program through the Winter 2019-20 and Summer 2020 seasons. Nine are existing participants who have been members of the program since 2018 at the earliest. Two interviewees recently left the program, but both cited facility closures as the reason behind this decision. The one non-participant who has declined to participate in recent years did participate in the program with EnerNOC, departing before CLEAResult was the implementer. This participant has rejected offers to join under CLEAResult's implementation. Five of these existing participants and one exiting participant also participated in the Summer 2019 process evaluation; the remaining six participants were new participants in the process evaluation.

The following pages detail findings across all three Schedule 26 interview groups. Findings are grouped by topic area and include customer anecdotes and quotes where they may provide greater insight to PGE.

A. Program Awareness

A1. All nine existing participants have been participating in the program for multiple seasons, with the most recent citing their decision to participate in late 2018. Compared to last year**, fewer companies reference EnerNOC as their initial point of contact, and more companies reference continued work with CLEAResult.** However, two of the existing participants have recently inherited the program and thus may be more familiar with CLEAResult as the program implementer.

A2. **When existing participants not interviewed in previous years were explicitly asked about enrollment in the program, three of the four cite initial contact from PGE.** One does not remember, but references working closely with Scott Sands throughout the process. Only one of the new interviewees does not work with a KCM at PGE and thus relies more heavily on CLEAResult for support.

A3. **Interviewees are often the decision-maker regarding both enrollment and continued participation in the program**. Where they do not unanimously make the decision, interviewees make the recommendation for participation to their supervisors**.** This indicates that appropriate interviewees participated in the process evaluation.

B. Participation Drivers and Perceived Participation Barriers

Participation Drivers:

B1. Following the Summer 2020 season, **five existing participants noted financial incentives or reduced energy costs as the most important driver** for program participation. This contrasts with last year, where 7 out of 10 participants cited incentives as the leading reason for participation. **Three participants cite sustainability as their lead driver for participation.**

B2. **Five participants cite "public relations/green image" as important, although it is no customers' leading driver. Four of these existing participants do publicize or**

plan to publicize their enrollment in the program.[17] Advertisement of Energy Partner participation ranges from passive email listing of participation in their website to actively recruiting others to the program. One company referenced hanging a plaque from PGE at their facility, and another is supporting PGE recruitment by donating supplies to its Energy Partner recruitment gift box.

B3. **Three participants stated, "helping PGE," "strengthening the program,"** and **"improving their relationship with PGE" as a main driver of program participation**. This is up from similar references made by only one interviewee following the Summer 2019 season.

Perceived participation barriers:

B4. A majority of **existing participants consider their business more "flexible" than their peers,** demonstrating an understanding that decreasing energy consumption might not work well for similar companies. Many existing participants also suggested that **perceived barriers may be greater than actual barriers** once enrolled in the program.

a. One existing participant stated, "the value in getting support with our programming has been critical. I don't know that companies know that CLEAResult will assist with that."

B5. The **two recently exited participants noted that there were no strong barriers to their operations**. They left the program due to facility closure in the PGE service territory but would otherwise have continued participation.

B6. The declined non-participant noted that due to the older management systems and manual nature of his facility, his experience with the EnerNOC program was not economical. Major costs were the operations staff required to be onsite during an event, challenges with bounce backs post-event, and necessary CapEx upgrades. While **the declined non-participant has been approached by CLEAResult and notes an understanding of the flexible participation options, these do not assuage his concerns regarding previous participation hardships.**

C. Program Rules and Event Experience

C1. All 12 interviewees are aware of the Energy Partner program flexibility (e.g., notification time, event duration, timeframe of events). One customer stated this is a "big part of their decision" to participate in the program. **The average score on participant satisfaction concerning program rules was 9.3.**

a. The participant noting the lowest score of 6 noted that their score was based upon a clerical error that failed to reduce their nomination this year and that the program rules currently hold them to their previously nominated amount.

[17] Guidehouse notes that customers who participate in the Process Evaluation may not be representative of all Schedule 26 customers; the relative proportion of participants interested in helping to market the program may be lower than indicated here.

C2. **Participants cited the notification windows (18-hr. and 4-hr.) as particularly helpful** in supporting their nomination. Another customer cited the absence of penalty for not participating as a benefit.

C3. **Customers could not think of areas for improvement by CLEAResult or PGE regarding program rules.** The flexible rules are doing, "what [they are] supposed to do," to support enrollment.

C4. Exited customers also appreciated the flexibility, noting the same general support as existing participants. **The declining participant noted that the flexible participation options do not support the company's manual setpoint adjustment and need to pay out additional labor before, during, and after events.**

C5. **Six out of nine existing participants said the COVID-19 pandemic did not affect their ability to participate in Energy Partner.** Of the three existing customers who were affected, they noted lower staffing levels at facilities and reduced baselines. Only one customer explicitly tried to reduce their nomination in response to COVID-19, but this decrease has not successfully registered in the system.

C6. **All customers are aware of the ability to change their nomination, and six of nine existing participants also noted a change in nomination throughout their participation in the program.** Adjustments were always made with the support of CLEAResult; customers with a more recent change in nomination note the need to see how the new nomination fits their business before adjusting in the future.

C7. **Participants' experience is generally neutral to positive during events;** two customers cited that their customers notice a temperature change but that such an observation is not a major hindrance. One company cited such temperature change as a concern before their first events but notes no complaints have been made.

C8. **Regardless of curtailment automation or lack thereof, several customers note their presumed ability to curtail more load.** One customer note that CLEAResult, "has explained the reasons for their suggested nomination a couple of times, but I only understand about half of what [they] say. We're always above our nomination, and I don't see why we wouldn't raise it." Another customer creates their "own events" to secure additional energy savings throughout the year; however, they recognize such energy use reductions are not tied to Energy Partner. This customer requested a decreased nomination but continues to curtail to their previous nomination amount (citing clerical error).

C9. **Customers who curtail automatically or semi-automatically were split on desires to learn more about automated curtailment.** One customer noted they have, "no barriers to automation at this time," while three others cited slight concerns with their ability to call off events in a fully automated scenario.

D. Ongoing Customer Communications and Technical Support

D1. Participants report **high satisfaction with the level of support provided by CLEAResult** and did not have any suggestions for improvements.

D2. Participant satisfaction levels with both pre- and post-event communication are very high. **Average participation satisfaction on pre-event communication was 9.5 out of 10, and on post-event communication was 9.3 out of 10.**

a. One participant gave a score of 7 on pre-event communication noting that there is redundancy in the number of calls he gets at the start of an event. The same participant scored post-event communication a 7 for the same reason.

b. Another customer scored the post-event communication as 8. This customer notes while it is clear the event is over, there is a substantial delay before the portal updates with event information.

E. Incentive Levels

E1. **Responses on the value of incentives were split following the Summer 2020 season.**

a. Five participants noted that incentives help their bottom line, two said incentives are beneficial but do not have a material impact on budget. Only one customer noted incentives are not particularly meaningful, and one noted incentive value varies with broader economic conditions. This participant was one of two who cited that incentives this summer season aided in ameliorating other budget strain due to COVID-19.

E2. **Only one participant noted that they do not receive their incentive check in a timely manner.** This individual stated, “this feels similar to the Winter season. I don’t know how soon I should expect something. I would appreciate some indication of where we ended up after the season.”

a. **No recipients requested support from CLEAResult in understanding the incentive structure.** Most who are not entirely clear on the process note they simply need to invest their own time in understanding the process.

E3. **Customers are pleased with how new program rules allow them to earn incentives more flexibly.** One customer stated that their company participated in, “maybe 25% of the events,” but did receive a $600 check. While this amount is lower than historical, the participant was pleased not to have to pay out for low participation levels.

F. Customer-facing Website

F1. **Participant-reported use of the portal has increased since the Summer of 2019.** Seven existing customers noted that the portal works well; one customer rarely uses it; one customer has never used it. This compares to only three customers regularly using the portal in the Summer of 2019.

F2. **Customer satisfaction with the portal has increased since 2019, with an average score of 8.6 (vs. 7.8).** Several factors affecting the score include the absence of a score from one existing participant who has yet to visit the website, a score of 5, and a score of 6. No scores were provided by the exited participants, as they had not used the portal. Requests for improvements from lower-scoring participants include:

a. the need for year-over-year trends and

b. a lack of company-specific tailoring of portal features and additional troubleshooting support.

F3. **Participants who were highly satisfied with the portal also suggested additional improvements.** Four existing participants state that the portal has everything they need. Additionally, those customers highly satisfied with the portal suggested bolstering its data offering to include:

a. CSR impacts (carbon reduction, general sustainability data)

b. energy reduction and usage trends

c. more granular energy and event data

d. data presentation that reduces the need to navigate across different portal pages

G. Customer Satisfaction

G1. **The average program satisfaction score was 9.5 across all interviewed participants.** This compares to a 9.8 in 2019. No participant scored their satisfaction below a 9 out of 10.

G2. **No customers would change factors relating to CLEAResult's implementation of the program.** Two customers said explicitly that their KCM's provide sufficient program support, though customers note working more with CLEAResult specifically on Energy Partner-related matters.

G3. **No participants would change how PGE offers the program with CLEAResult as the implementer**. Customers generally believe the relationship between PGE and CLEAResult is working very well.

G4. **Exited participants had similar impressions to existing participants**. They noted a strong relationship with CLEAResult and PGE KCMs and appreciated their support throughout the program and exiting process.

G5. **The declined participant had previously participated under EnerNOC; this customer does not perceive the flexible options made available by CLEAResult to support their renewed participation in the program.** Specifically, adjusted event notification and times do not help this customer with reducing operations costs or process-related planning that would be required with the manual participation they perceive necessary for the facility.

G6. **Suggestions for program improvement appear to be site-specific,** with one customer requesting a repaired portal, another requesting confirmation of their updated nomination. All other participants noted that the program meets their needs.

H. Looking Ahead

H1. **All nine existing participants plan to continue their participation.** Interviewees either decide to continue participation or make a recommendation to continue participation to their superiors.

a. The two exited participants noted the only reason they did not continue participation was due to facility closure.

b. The declined participant, who had participated in Energy Partner under EnerNOC, does not plan to participate in the future.

H2. **Several participants noted that participating in Energy Partner is a "no brainer."** More explicit reasons for continuing participation mimic customers' initial reasons for signing up. Specifically, customers note:

a. "Easy to do, makes sense, no cost to us."

b. Energy Partner has a "continued positive effect in the community, and we get rewarded for it."

c. "The incentives relative to the amount of effort required; decent incentives for relatively little effort, it doesn't make sense to quit."

H3. **Some companies have shared Energy Partner with peer or sister companies; others have not.** Specifically, five companies note that they have explicitly shared the program. Four companies have not shared Energy Partner with others.

a. Only one participant noted supporting the summer 2020 gift box marketing program (unprompted).

Appendix B. Impact Evaluation

This appendix contains Guidehouse's (formerly Navigant) memos summarizing the impact evaluation findings from the following evaluation seasons:

- Impact Evaluation Summary Memo – Summer 2019
- Impact Evaluation Summary Memo – Winter 2019-2020
- Impact Evaluation Summary Memo – Summer 2020
- Impact Evaluation Summary Memo – Winter 2020-2021

B.1 Impact Evaluation Summary Memo – Summer 2019

Navigant conducted an impact evaluation of Portland General Electric's (PGE) Energy Partners program for three events called during the Summer 2019 season. The goal of Navigant's impact evaluation was to replicate and validate the impact calculations for settlement payment performed by CLEAResult, PGE's implementation contractor. This memo summarizes the findings and issues encountered while validating CLEAResult's impact results for Schedule 26 customers (medium / large customers).

In comparison to CLEAResult's calculated impacts, Navigant identified discrepancies in results for 14 out of 50 customers; however, only one customer's incentive level is affected. Specifically, Navigant calculated that B26-AGR-1000034 attained 100% of their nomination for the June 12th event and should have received an incentive payment, whereas CLEAResult calculated that they attained 57%. PGE has provided this customer their incentive payment. Details on the root causes are discussed further in the **Error! Reference source not found.** section, below.

To mitigate data issues for future impact evaluation cycles, Navigant recommends continuing to enhance quality assurance processes for the data transfer processes. In particular, Navigant will confer with PGE and CLEAResult in early 2020 to determine if there are potential process improvements for ensuring the same AMI data are provided to CLEAResult and Navigant, given that this has been an issue in past evaluation cycles.

Approach and Data Sources

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 was not available or complete, Navigant supplemented specific gaps with Pelican data provided by CLEAResult. Note that Navigant filled the gaps such that a set of baseline days for an event will have a combination of Pelican and AMI data. This is in contrast to CLEAResult's approach of using one data source for each set of baseline days for an event.[18]

Navigant used PGE's Customer Baseline Load (CBL) methodology to calculate the impact for the Summer 2019 demand response (DR) events.

The CBL calculation started with a participant's interval data for ten non-event days preceding the event day. A non-event day is a business day in which an event was not called and does not fall on a holiday.

Navigant calculated the average load for each non-event day during the same hours as the event hours. Navigant selected baseline days as the five non-event days with the highest average loads. The average load across the five baseline days for each hour of the event period represented the Unadjusted Baseline.

To calculate the Adjusted Baseline, an additive adjustment was first calculated based on an adjustment period. The adjustment period is the two-hour period beginning six hours before the

[18] For example, if a customer was missing Pelican data for *only one* of the baseline days for the June 12th event, CLEAResult would use AMI data for *all* of the baseline days for the June 12th event for this particular customer. With Navigant's approach, only the one missing baseline day would be supplemented with the other data source.

event start time and ending four hours before the event start time. Navigant calculated the average load during the adjustment period on the event day and baseline days, which are the event day adjustment load and baseline adjustment load, respectively. The additive adjustment is the event day adjustment load minus the baseline adjustment load. Navigant calculated the Adjusted Baseline as the sum of the Unadjusted Baseline and additive adjustment.

Additive adjustments are calculated for participants, unless:

- the participant received an 18-hour advance notification,
- the participant was setup to only use the Unadjusted Baseline[19], or
- the event occurred during a winter morning.

In such cases, a participant's Unadjusted Baseline is the basis for their payment settlement. For this analysis, the Unadjusted Baseline applied to 8 out of 10 participants in June, and 10 out of 50 participants in August.[20]

Each participant's system impact was calculated as the difference between their Adjusted (or Unadjusted) Baseline and average load during the event day. A positive system impact denotes that a participant's demand is higher than their baseline, thus, no DR was delivered. A negative system impact indicates that a participant delivered DR.

Impact Summary

The impact of the events that occurred during the Summer 2019 season is summarized in Table 7-6. Navigant calculated that PGE's Energy Partner program achieved up to 13.8 MW of demand reduction per event from CBL customers. This year, CBL customers delivered 2.0 MW more demand reduction than PGE's previous high point of 11.8 MW in Summer 2018. Forty-two of 50 CBL customers consistently delivered reductions over the course of the season, with a maximum event realization rate of 91%. Note that the Winter 2017-18 event, Summer 2018, and Winter 2018-19 events had maximum realization rates of 66.5%, 159%, and 68%, respectively.

The 15 MW of nominated DR load from Schedule 26 CBL customers in Summer 2019 contributed nearly 56% of the 2020 year-end target of 27 MW, which is comprised of:

- nominated DR load from Schedule 26
- nominated DR load from Fixed Service Level (FSL) customers, and
- estimated Schedule 25 (smart thermostats) participation rates and kW reductions.

Navigant identified 14 CBL customers where the discrepancy between Navigant and CLEAResult's calculated impacts differed by 5% or greater, and the discrepancy was greater than 5% of the customer's nomination. For each event, the demand reduction discrepancies

[19] For some CBL customers the Unadjusted baseline more accurately reflects their load profile.

[20] Incentives are based on Unadjusted Baselines for the following participant remote IDs: B26-AGR-1000006, B26-AGR-1000009, B26- AGR-1000019, B26-AGR-1000046, B26-AGR-1000048, B26-AGR-1000049, B26-AGR-1000055, B26-AGR-1000058, B26-AGR-1000060, and B26-AGR-1000063.

between Navigant and CLEAResult's ranged from -2.5% to 3.7%. These customers are further discussed in **Error! Reference source not found.** section, below.

Table 7-6. Summary of Summer 2019 Events[21]

Event Date	6/12/2019	8/5/2019	8/28/2019
Event Time	5pm to 7pm	4pm to 6pm	4pm to 7pm
CBL Customers Called in Event	48	50	50
Navigant Calculated Total Reduction - CBL Customers (kW)	13,788	12,141	11,170
CLEAResult Calculated Total Reduction - CBL Customers (kW)	14,146	11,702	11,510
Difference (kW)	-358	439	-340
Difference (%)	-2.5%	3.7%	-3.0%
Total Nomination – CBL Customers (kW)	15,070	15,220	15,220
CBL Customers That Delivered DR	42	42	42
Realization Rate[22]	91%	80%	73%

Source: Guidehouse

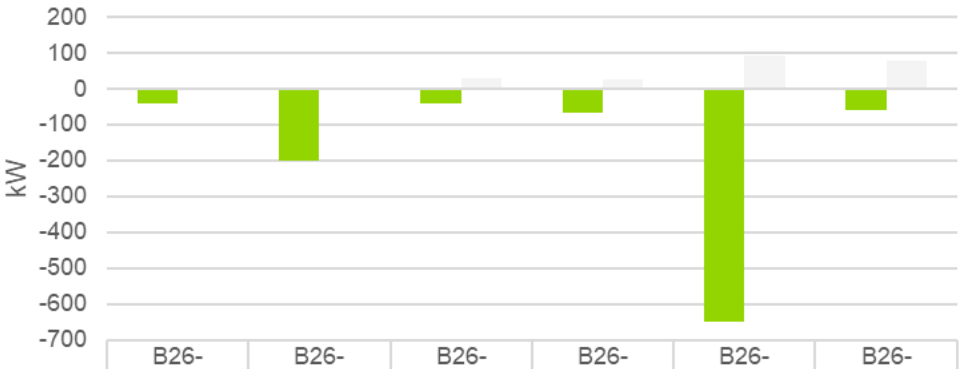
Customers Not Delivering Demand Response

Fifteen CBL customer sites did not deliver any DR during at least one of the Summer 2019 events. Figure 7-1through Figure 7-3list these customers and compare their nomination and system impact.

[21] Reflects only CBL customers. Evaluation of Firm Service Load customers is out of scope. The Navigant Calculated Total Reduction and the Total Nomination represent the demand reduction across all hours of the curtailment window for all CBL participants. The Navigant Calculated Total Reduction is based only on CBL 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 Total Reduction.

[22] Total curtailment divided by total nomination.

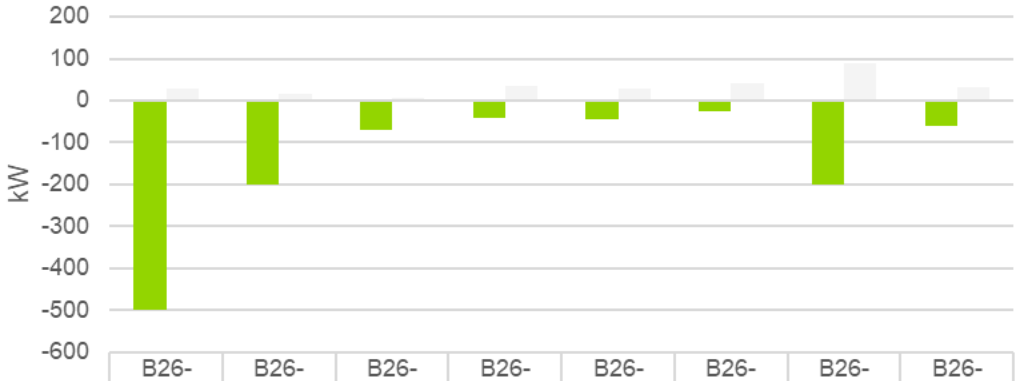
Figure 7-1. CBL Customers Not Delivering DR for June 12, 2019



	B26-AGR-1000013	B26-AGR-1000052	B26-AGR-1000016	B26-AGR-1000027	B26-AGR-1000018	B26-AGR-1000009
Nomination (kW)	-40	-200	-40	-65	-650	-60
System Impact (kW)	5.2	1.1	30.1	25.0	91.6	79.9

Source: Guidehouse

Figure 7-2. CBL Customers Not Delivering DR for August 5, 2019



	B26-AGR-1000049	B26-AGR-1000029	B26-AGR-1000060	B26-AGR-1000013	B26-AGR-1000043	B26-AGR-1000063	B26-AGR-1000040	B26-AGR-1000009
Nomination (kW)	-500	-200	-70	-40	-45	-25	-200	-60
System Impact (kW)	28.3	16.9	4.8	36.4	28.4	40.2	89.8	31.6

Source: Guidehouse

Figure 7-3. CBL Customers Not Delivering DR for August 28, 2019

Source: Guidehouse

Table 7-7 summarizes the event dates in which 15 CBL customers did not deliver DR. Most of these customers show an increase in their load during the event compared to their baseline. Each participant's system impact was calculated as the difference between their Unadjusted or Adjusted CBL and average load during the event hours. Note that a positive system impact indicates that a participant's demand is higher than their baseline, thus, no DR was delivered. A negative system impact indicates that a participant delivered DR.

As part of the analysis, Navigant evaluated the event impacts based on both the Unadjusted CBL and Adjusted CBL. For these customers, either both the Unadjusted and Adjusted system impacts were positive, or there was a small difference between the two, which suggests that switching the customer's CBL type would not necessarily result in a negative system impact.

Table 7-7. CBL Customers Not Delivering DR by Event Date

Customer Site	CBL Type	2019-06-12	2019-08-05	2019-08-28
1. B26-AGR-1000009	**Unadjusted**	✓	✓	✓
2. B26-AGR-1000012	**Adjusted**			✓
3. B26-AGR-1000013	**Adjusted**	✓	✓	✓
4. B26-AGR-1000016	**Adjusted**	✓		

5.	B26-AGR-1000018	**Adjusted**	✓		
6.	B26-AGR-1000027	**Adjusted**	✓		
7.	B26-AGR-1000029	**Adjusted**		✓	
8.	B26-AGR-1000040	**Adjusted**		✓	✓
9.	B26-AGR-1000042	**Adjusted**			✓
10.	B26-AGR-1000043	**Adjusted**		✓	
11.	B26-AGR-1000049	**Unadjusted**		✓	
12.	B26-AGR-1000052	**Adjusted**	✓		✓
13.	B26-AGR-1000059	**Adjusted**			✓
14.	B26-AGR-1000060	**Unadjusted**		✓	
15.	B26-AGR-1000063	**Unadjusted**		✓	✓

Source: Guidehouse

Impact Results Discrepancies

Navigant compared its impact results with CLEAResult's and identified 14 out of the 50 CBL customers where the discrepancy of calculated impacts differed by 5% or greater, and the discrepancy was greater than 5% of the customer's nomination. Navigant and CLEAResult further investigated these customers to determine root causes for these discrepancies and how customer incentive payments are affected. The discrepancies across these 14 customers are driven by one of the following four main reasons:

- Minor differences between Pelican and AMI hourly data, which propagates 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. Part of this may be due to differences in the AMI data provided to CLEAResult versus Navigant. CLEAResult has reviewed the customer sites and made scalar adjustments to better align Pelican and AMI readings.
- Minor pulse sync errors (which CLEAResult subsequently addressed to the extent possible).
- Mismatch in customer SPID and meter code / serial number, which has been corrected since the analysis.

Of the 14 customers, only one customer's incentive payment is affected by the discrepancies. In contrast to CLEAResult, Navigant's calculated impact for customer B26-AGR-1000034 reached 100% of their nomination and, thus, this customer was provided an incentive payment.

Table 7-8 provides details by customer on the percentage and absolute difference between Navigant and CLEAResult's calculated impacts, along with impact on incentive payments and root causes for the difference.

Table 7-8. Summary of Impact Result Discrepancies

Customer Site	Impacts Percentage Difference[23]	Absolute Difference (kW)	Impact Difference as a Percent of Nomination	Events with Discrepancies[24]			Notes
				2019-06-12	2019-08-05	2019-08-28	
B26-AGR-1000045	9% to 20%	100.9 to 326.4	7% to 31%	✓	✓	✓	• There are significant differences in Pelican and AMI data for SPID 7530897823 for the three events. CLEAResult identified scalar issues for this customer that has been resolved since. • AMI data sent to CLEAResult and Navigant have differences for SPID 7530897823. • Customer's system impact is above 70% of their nomination in analysis of all three events, thus, the resulting difference does not impact their incentive payments.
B26-AGR-1000033	8%	23.0	8%	✓			• There are minor differences in Pelican and AMI data. As a result, some of the baseline days differ between the analyses. CLEAResult identified scalar issues for this customer that have been resolved since this analysis. • Customer's system impact is above 70% of their nomination in analysis for the first event, thus, the resulting difference does not impact their incentive payments.
B26-AGR-1000034	41% to 74%	19.3 to 25.5	32% to 42%	✓	✓		• There are significant differences in Pelican and AMI data resulting in differences between selected baseline days in each analysis. For

[23] Positive denotes Navigant calculated impact is higher than CLEAResult's and vice versa

[24] Checkmarks denote events in which there were discrepancies between CLEAResult and Navigant's system impact results.

Customer Site	Impacts Percentage Difference[23]	Absolute Difference (kW)	Impact Difference as a Percent of Nomination	Events with Discrepancies[24] 2019-06-12	2019-08-05	2019-08-28	Notes
							the first event, CLEAResult notes that communications were down for this site. • For the first event, CLEAResult's calculations with Pelican results in an impact that is 57% of their nomination. Navigant's calculations with AMI data results in 100% of their nominated load, exceeding the 70% threshold, thus, this customer was paid their incentive. • For the subsequent events, the customer's system impact is above 70% of their nomination in both CLEAResult and Navigant's analyses, thus, the resulting difference does not impact their incentive payments. • CLEAResult to review scalars and syncing to better align Pelican and AMI data.
B26-AGR-1000035	-42% to 27%	19.8 to 95.7	14% to 68%	✓	✓	✓	• There are minor differences in Pelican and AMI data. As a result, some of the baseline days differ between the analyses. • For the first event, CLEAResult highlighted that the AMI and Pelican data are generally close, but there is a slight 5-min pulse syncing error. • Customer's system impact is above 70% of their nomination in all analysis of all three events, thus, the resulting difference does not impact their incentive payments. • CLEAResult to review scalars and syncing to better align Pelican and AMI data.

Customer Site	Impacts Percentage Difference[23]	Absolute Difference (kW)	Impact Difference as a Percent of Nomination	Events with Discrepancies[24] 2019-06-12	2019-08-05	2019-08-28	Notes
B26-AGR-1000036	-6% to 8%	8.4 to 13.5	6% to 9%	✓	✓		• There are minor differences in Pelican and AMI data. • For the second event, Navigant used Pelican data for one baseline day where AMI data was missing. • Customer's system impact is above 70% of their nomination in all analysis of all three events, thus, the resulting difference does not impact their incentive payments. • CLEAResult to review scalars and syncing to better align Pelican and AMI data.
B26-AGR-1000037	-32% to 22%	10.8 to 23.3	11% to 23%	✓	✓	✓	• There are minor differences in Pelican and AMI data. As a result, some of the baseline days differ between the analyses. • Customer's system impact is below 70% of their nomination in both analysis of the first event, and above 70% for the subsequent events, thus, the resulting difference does not impact their incentive payments. • CLEAResult to review scalars and syncing to better align Pelican and AMI data.
B26-AGR-1000038	-9% to -12%	3.8 to 5.9	6% to 10%	✓	✓		• There are minor differences in Pelican and AMI data. • Customer's system impact is below 70% of their nomination in both analysis of the first event, and above 70% for the subsequent event, thus, the resulting difference does not impact their incentive payments.

Customer Site	Impacts Percentage Difference[23]	Absolute Difference (kW)	Impact Difference as a Percent of Nomination	Events with Discrepancies[24] 2019-06-12	2019-08-05	2019-08-28	Notes
							• CLEAResult to review scalars and syncing to better align Pelican and AMI data.
B26-AGR-1000031	-9%	22.7 to 29.5	5% to 7%	✓		✓	• There are minor differences in Pelican and AMI data. • CLEAResult highlighted a scalar issue for this customer with Pelican data being consistently higher than AMI. • Customer's system impact is below 70% of their nomination in both analysis of the first event, and above 70% for the subsequent event, thus, the resulting difference does not impact their incentive payments.
B26-AGR-1000023	-39% to -60%	152.7 to 630.0	61% to 252%	✓	✓	✓	• For the first event, CLEAResult notes that communications were down for this site. Due to this, there is not enough Pelican data to use in calculations. CLEAResult therefore recommends using Navigant's AMI calculations for this customer. • For the second event, there are significant differences in Pelican and AMI data. Navigant's analysis indicates that this customer did not meet 70% of their nomination. Given that CLEAResult has already issued an incentive to this customer, no adjustment is recommended. • For the first and third events, the customer's system impact is above 70% of their nomination in both analyses, thus, the resulting difference does not impact their incentive payments. • AMI data sent to CLEAResult and Navigant have significant differences for SPID 8200353172.

Customer Site	Impacts Percentage Difference[23]	Absolute Difference (kW)	Impact Difference as a Percent of Nomination	Events with Discrepancies[24] 2019-06-12	2019-08-05	2019-08-28	Notes
B26-AGR-1000055	-19% to -74%	8.7 to 78.0	7% to 65%	✓		✓	• For the first and third event, there is misalignment between Pelican and AMI data due to SPID 6210651022. CLEAResult identified they were missing AMI data for SPID 6210651022. • For the first event, the customer's system impact is below 70% of their nomination in both analyses, thus, the resulting difference does not impact their incentive payments. • For the third event, Navigant's analysis indicates that this customer did not meet 70% of their nomination. Given that CLEAResult has already issued an incentive to this customer, no adjustment is recommended.
B26-AGR-1000022	-5%	20.3	9%	✓			• There are no differences in Pelican and AMI data for this customer for each event, however, there are discrepancies in the calculations for the first event. CLEAResult notes that a one-time dip in Pelican data during the adjustment hours for one baseline day caused issues. CLEAResult investigated the Pelican data, but no major issue was found for this site. • Customer's system impact is above 70% of their nomination, thus, the resulting difference does not impact their incentive payments.
B26-AGR-1000040	-16% to -90%	16.7 to 39.7	8% to 20%	✓	✓		• There are significant differences in Pelican and AMI data. As a result, some of the baseline days differ between the analyses. CLEAResult to investigate the large spikes in AMI. • For the first event, CLEAResult notes that the Pelican serial numbers and SPIDs were switched. Subsequent events were done correctly.

Customer Site	Impacts Percentage Difference[23]	Absolute Difference (kW)	Impact Difference as a Percent of Nomination	Events with Discrepancies[24] 2019-06-12	2019-08-05	2019-08-28	Notes
							• Customer's system impact is below 70% of their nomination in both analysis of the first and second events, thus, the resulting difference does not impact their incentive payments.
B26-AGR-1000063	-184%	13.2	53%			✓	• For the third event, there are significant differences in AMI data. Both Navigant and CLEAResult used AMI data for this customer for this event. • Customer's system impact is below 70% of their nomination in both analyses of the third event, thus, the resulting difference does not impact their incentive payments.
B26-AGR-1000001	-19%	6.7	7%			✓	• For the third event, there are significant differences in between Pelican and AMI data. • Customer's system impact is below 70% of their nomination in both analyses of the third event, thus, the resulting difference does not impact their incentive payments.

Source: Guidehouse

Navigant calculated that PGE's Energy Partner program achieved up to 13.8 MW of demand reduction from CBL customers per event, representing about 51% of the 27 MW of the DR capacity target by year-end 2020, with a maximum realization rate of 91% over the course of the season. For each event, the demand reduction discrepancies between Navigant and CLEAResult's ranged from -2.5% to 3.7%. However, only one customer's incentive level was affected, and PGE has provided this customer their incentive payment.

Root causes for the discrepancies in CLEAResult and Navigant's results include 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.

Finally, Navigant recommends continuing to enhance quality assurance processes for the data transfer processes to ensure the same AMI data is provided to CLEAResult and Navigant. This may help mitigate the scalar factor issues for future evaluation.

B.2 Impact Evaluation Summary Memo – Winter 2019-2020

B.2.1 Introduction and Summary

Guidehouse conducted an impact evaluation of Portland General Electric's (PGE) Energy Partner Schedule 26 program for the one event called during the Winter 2019-20 season. The goal of Guidehouse's impact evaluation was to replicate and validate the impact calculations for settlement payment performed by CLEAResult, PGE's implementation contractor. This memo summarizes the findings and issues encountered while validating CLEAResult's impact results for medium / large customers.

In comparison to CLEAResult's calculated impacts, Guidehouse identified discrepancies in results for 11 out of 61 customers[25]. However, only one customer's incentive level is affected—specifically, B26-AGR-1000033 reached over 70% of their nomination (whereas CLEAResult calculated that they reached 0%) and should have received an incentive payment. Guidehouse recommends that PGE provide this customer their incentive payment. Upon receiving up-to-date data, CLEAResult agrees with this recommendation. Details on the root causes are discussed further in the **Error! Reference source not found.** section, below.

To help mitigate data issues for future impact evaluation cycles, Guidehouse recommends continuing to enhance quality assurance processes during the season to ensure CLEAResult has AMI data for identified customers experiencing issues with Pelican data. Given these processes will be changing for the upcoming Summer 2020 season, Guidehouse recommends revisiting discussions with PGE and CLEAResult on this topic at the end of the Summer 2020 season to adjust evaluation processes as needed and accommodate going forward. Finally, as the methodology for calculating scalars for meters with frequent zero readings is being updated by CLEAResult for the Summer 2020 season, Guidehouse recommends an ongoing evaluation of this new methodology to gauge improvements in effectiveness.

B.2.2 Approach and Data Sources

CLEAResult's impact evaluation primarily used Pelican data[26], where it was available. If Pelican data was not available or complete, CLEAResult used in-season AMI data from their daily feed. Since CLEAResult performs post-event analysis in season, they are limited to use either Pelican data or in-season AMI data. Since their AMI feed is sometimes delayed for some sites, Pelican data is used primarily. In contrast, Guidehouse used primarily AMI data provided by PGE. If AMI data was not available or complete, Guidehouse supplemented the gaps with Pelican data provided by CLEAResult. Guidehouse primarily uses historically corrected post-season AMI data since it is the system of record. Note that in previous evaluation cycles before Winter 2018-19, Guidehouse and CLEAResult used identical data sources, which were mainly AMI interval data supplemented by Pelican.

Guidehouse used PGE's Customer Baseline Load (CBL) methodology to calculate the impact for the Winter 2019-20 demand response (DR) event. The CBL calculation starts with a

[25] 61 customers reflect CBL customers only and do not include Firm Service Load customers. There were five Firm Service load customers this season, for a total of 66 participants.

[26] Pelican data are real-time usage data from CLEAResult's Pelican devices.

participant's interval data for ten non-event days preceding the event day. A non-event day is a business day in which an event was not called and does not fall on a holiday.

Guidehouse calculated the average load for each non-event day during the same hours as the event hours. Guidehouse selected baseline days as the five non-event days with the highest average loads. The average load across the five baseline days for each hour of the event period represented the Unadjusted Baseline.

To calculate the Adjusted Baseline, an additive adjustment was first calculated based on an adjustment period. The adjustment period is the two-hour period beginning six hours before the event start time and ending four hours before the end start time. Guidehouse calculated the average load during the adjustment period on the event day and baseline days, which are the event day adjustment load and baseline adjustment load, respectively. The additive adjustment is the event day adjustment load minus the baseline adjustment load. Guidehouse calculated the Adjusted Baseline as the sum of the Unadjusted Baseline and additive adjustment.

Additive adjustments are calculated for all participants with the following exceptions: the participant receives an 18-hour advance notification, the event occurred during a winter morning, or CLEAResult has determined that a non-adjusted baseline is a better measure for onsite operations. In such cases identified by CLEAResult, a participant's Unadjusted Baseline is the basis for their payment settlement. For this analysis, the Unadjusted Baseline applied to 31 out of 61 participants.

Each participant's system impact was calculated as the difference between their Adjusted or Non-Adjusted Baseline and average load during the event day. A positive system impact denotes that a participant's demand is higher than their baseline, thus, no DR was delivered. A negative system impact indicates that a participant delivered DR.

B.2.3 Impact Summary

The impact of the one event that occurred during the Winter 2019-20 season is summarized in Table 7-9. Guidehouse estimates a total reduction of 8,515 kW, with a realization rate of 73%. Note that the Winter 2018-19 event and the average of the Summer 2019 events had realization rates of 68% and 82%, respectively.

Guidehouse's estimated total demand reduction is 9.8% higher than CLEAResult's. Guidehouse identified 11 customers where the discrepancy between Guidehouse and CLEAResult's calculated impacts differed by 5% or greater and had an absolute difference of 5 kW or greater. These customers are further discussed in **Error! Reference source not found.** section, below.

Table 7-9. Summary of Winter 2019-20 Event[27]

Event Date	2020-01-15
Event Time	4 - 7 pm
Customers Called in Event	61

[27] Reflects only CBL customers. Evaluation of Firm Service Load customers is out of scope.

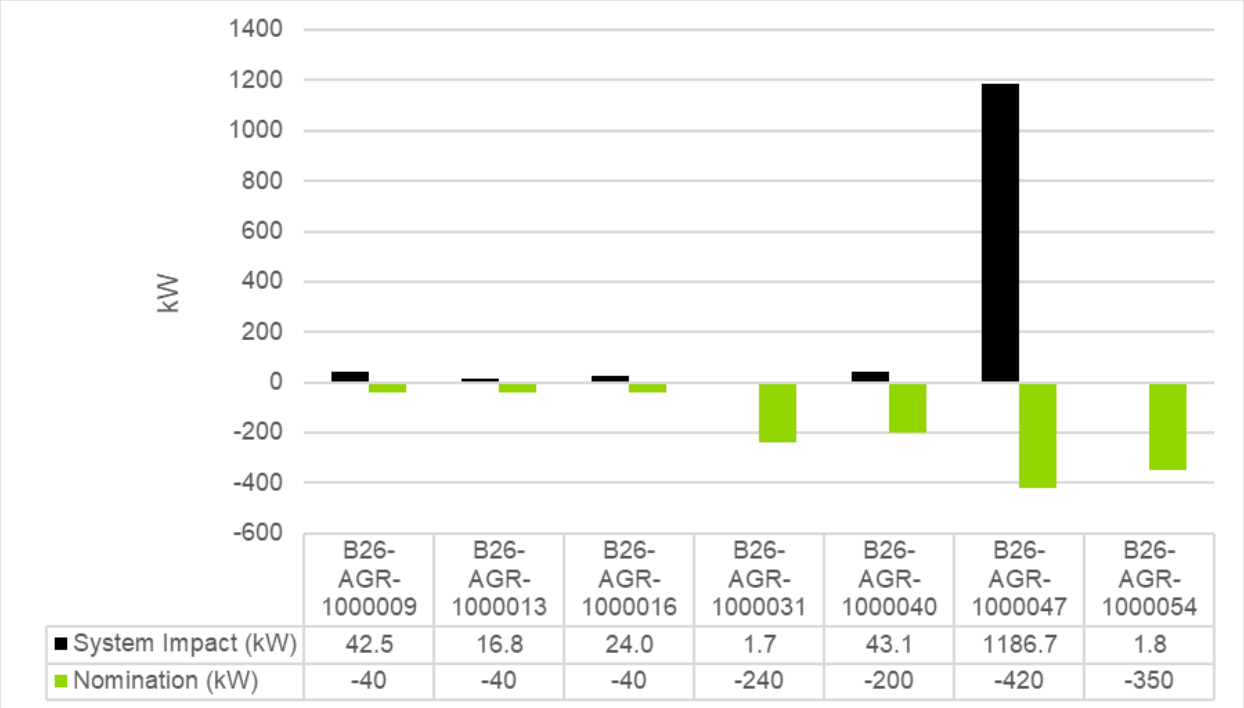
Total Nomination (kW)	11,751
Guidehouse Calculated Total Reduction (kW)	8,515
CLEAResult Calculated Total Reduction (kW)	7,756
Difference (kW)	759
Difference (%)	9.8%
Customers That Delivered DR (Guidehouse Analysis)	54
Guidehouse Realization Rate[28]	73%

Source: Guidehouse

Customers Not Delivering Demand Response

Seven customer sites did not deliver any DR for the one event called during the Winter 2019-20 season. Figure 7-4 lists these customers and compares their nomination and system impact.

Figure 7-4. Customers Not Delivering DR



Source: Guidehouse

[28] Total curtailment divided by total nomination.

Table 7-10 provides details on the CBL analysis results for each customer that did not deliver DR. Most of these customers show an increase in their load during the event compared to their CBL. As part of the analysis, Guidehouse evaluated the system impacts based on both the Unadjusted CBL and Adjusted CBL. Each participant's system impact was calculated as the difference between their CBL and average load during the event day. Note that a positive system impact indicates that a participant's demand was higher than their baseline, thus, no DR was delivered. A negative system impact indicates that a participant delivered DR.

Table 7-10. Detailed Notes on Customers Not Delivering DR

Customer Site	CBL Type Used	Notes **(CLEAResult and Guidehouse both used the same CBL type)**
1. B26-AGR-1000009	Unadjusted CBL	• Both the Unadjusted CBL and Adjusted CBL system impacts were positive, switching their CBL type would not result in a negative system impact. • Overall, this customer did not deliver DR.
2. B26-AGR-1000013	Adjusted CBL	• The day-of-adjustment resulted in a positive average system impact. • The Unadjusted CBL system impacts were negative. Significant differences between the Unadjusted CBL and Adjusted CBL system impacts suggests further investigation into the appropriate CBL type for these customers may be beneficial.
3. B26-AGR-1000016	Adjusted CBL	
4. B26-AGR-1000031	Unadjusted CBL	• Both the Unadjusted CBL and Adjusted CBL system impacts were positive, switching their CBL type would not result in a negative system impact. • Overall, this customer did not deliver DR.
5. B26-AGR-1000040	Adjusted CBL	• Both the Unadjusted CBL and Adjusted CBL system impacts were positive, so switching their CBL type would not result in a negative system impact. • Overall, these customers did not deliver DR.
6. B26-AGR-1000047	Adjusted CBL	

7.	B26-AGR-1000054	Adjusted CBL

Source: Guidehouse

Impact Result Discrepancies

Guidehouse compared impact results with CLEAResult and identified discrepancies greater than or equal to 5% for 11 out of the 45 customers. Guidehouse 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 11 customers are driven by the following main reasons:

- Minor differences between Pelican and AMI hourly data, which propagates 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 due to intermittent meters. An intermittent meter is a meter that reads zero most of the time which makes scalar calculations difficult. CLEAResult will be updating their methodology for calculating scalar values for intermittent meters in the Summer 2020 season.
- Minor differences in AMI hourly data, which are due to historical corrections made to the AMI data after CLEAResult receives it. Thus, AMI data delivered to CLEAResult during the season can have differences when compared to the data pulled for Guidehouse after the season after corrections have been made.

Of the 11 customers, only one customer's incentive payment is affected by the discrepancies. In contrast to CLEAResult, Guidehouse's calculated impact for customer B26-AGR-1000033 reached 202% of their nomination and, thus, this customer should have received an incentive payment.

Table 7-11 provides details by customer on the percentage and absolute difference between Guidehouse and CLEAResult's calculated impacts, along with impact on incentive payments and root causes for the differences.

Table 7-11. Summary of Impact Result Discrepancies

Customer Site	Impacts Percentage Difference[29]	Absolute Difference (kW)	Impact Difference as a Percent of Nomination	Notes
1. B26-AGR-1000022	18%	8.46	6.8%	• There are minor (0-2%) differences in Pelican and AMI data for the event day and baseline days upon examination of individual hours, which propagates to differences in impact results.

[29] Positive denotes Guidehouse calculated impact is higher than CLEAResult's and vice versa

Customer Site	Impacts Percentage Difference[29]	Absolute Difference (kW)	Impact Difference as a Percent of Nomination	Notes
				• Customer's system impact is not close to 70% of their nomination, thus, the resulting difference does not impact their incentive payment.
2. B26-AGR-1000023	79%	380.64	152.3%	• The difference comes directly from the secondary meter readings (SPID 8200353172). CLEAResult's Pelican data showed no load, whereas the AMI data used by Guidehouse showed load averages of approx. 250 kW. Upon further investigation with CLEAResult and PGE for data sources, it was determined that the secondary meter is reading the load correctly in the case of AMI data. • Both analyses resulted in system impacts well above 70% of their nomination, thus, the resulting difference does not impact their incentive payment.
3. B26-AGR-1000025	-11%	31.18	10.2%	• CLEAResult and Guidehouse both used AMI data, however, Guidehouse's AMI data includes all historical corrections occurring after the DR season. There are minor (0-2% typically, with up to 10% in one case) differences between the AMI reads for the event day and baseline days upon examination of individual hours, which propagates to differences in impact results. • Difference between Guidehouse and CLEAResult's impact calculations does not affect customer incentive payments as they have reached full payment threshold in both cases.
4. B26-AGR-1000032	-12%	5.54	1.1%	• There are minor (0-4%) differences in Pelican and AMI data for the event day and baseline days upon examination of individual hours, which propagates to differences in impact results. • Customer's system impact is not close to 70% of their nomination, thus, the result difference does not impact their incentive payments.

Customer Site	Impacts Percentage Difference[29]	Absolute Difference (kW)	Impact Difference as a Percent of Nomination	Notes
5. B26-AGR-1000033	100%	201.68	201.7%	• CLEAResult did not have data for this customer and assumed an impact of 0 kW. Using historically corrected AMI data, Guidehouse showed that this customer did in fact deliver DR. • Guidehouse showed this customer delivered more than 200% of their nomination and should be paid their incentive. PGE then provided CLEAResult with the updated AMI data and CLEAResult agreed that this customer delivered 201.7% of their nomination. This customer will be provided with the appropriate payment.
6. B26-AGR-1000040	43%	12.97	6.5%	• CLEAResult and Guidehouse both used AMI, however CLEAResult notes that the quality of their AMI data was estimated whereas the quality of the AMI data Guidehouse received was good. • There are minor (0-2%) differences in AMI data for the event day and baseline days upon examination of individual hours, which propagates to differences in impact results. • Difference between Guidehouse and CLEAResult's impact calculations does not affect customer incentive payments as they did not deliver DR.
7. B26-AGR-1000045	22%	223.48	18.2%	• CLEAResult and Guidehouse both used AMI data, however, Guidehouse's AMI data includes all historical corrections occurring after the DR season. There are minor (0-2%) differences between the AMI reads for the event day and baseline days upon examination of individual hours, which propagates to differences in impact results. • Difference between Guidehouse and CLEAResult's impact calculations does not affect customer incentive payments as they have reached full payment threshold in both cases.
8. B26-AGR-1000047	-5%	66.83	15.9%	• There are minor (0-2%) differences in Pelican and AMI data for the event day and baseline days upon examination of individual hours, which propagates to differences in impact results. • Incentives are not affected.
9. B26-AGR-1000063	-17%	6.47	25.9%	

Customer Site	Impacts Percentage Difference[29]	Absolute Difference (kW)	Impact Difference as a Percent of Nomination	Notes
10. B26-AGR-1000065	16%	8.70	87.0%	• There are minor (0-2%, and up to 5% in one case) differences in Pelican and AMI data for the event day and baseline days upon examination of individual hours, which propagates to differences in impact results. • Difference between Guidehouse and CLEAResult's impact calculations does not affect customer incentive payments as they have reached full payment threshold in both cases.
11. B26-AGR-1000069	-62%	19.89	22.1%	• Pelican and AMI data are consistently off by a factor of 3 times which indicates a scalar issue with this site. • Difference between Guidehouse and CLEAResult's impact calculations does not affect customer incentive payments as they have not reached the payment threshold in both cases.

Source: Guidehouse

B.2.4 Key Takeaways and Recommendations

Guidehouse estimates a total reduction of 8,515 kW, with a realization rate of 73% for the Winter 2019-20 event. Guidehouse's estimated total demand reduction is 9.8% higher than CLEAResult's due to discrepancies in calculated impact results for 11 out of 61 customers.

Root causes for the discrepancies in CLEAResult and Guidehouse's results include errors in the scalar factors used in the Pelican system to match AMI readings, small differences in Pelican and AMI data, and mismatch in in-season AMI data versus AMI data pulled after historical corrections have been made. For additional details on the data source selection process for CLEAResult and Guidehouse, see Approach and Data Source section above.

Furthermore, one customer did not have any available Pelican or AMI data on the event day; thus, CLEAResult's records did not show any impact for this customer. However, Guidehouse's analysis using the post-season AMI dataset shows that this customer delivered significantly more than their nomination and should have received an incentive payment. Upon the initial finding Guidehouse, CLEAResult and PGE investigated the discrepancy, and all parties concur. PGE indicated that customer (B26-AGR-1000033) will receive the incentive payment previously withheld.

Guidehouse recommends continuing to enhance quality assurance processes during the season to ensure CLEAResult has AMI data for all customers experiencing issues with Pelican data. Given these processes will be changing for the upcoming Summer 2020 season, Guidehouse recommends revisiting discussions with PGE and CLEAResult on this topic at the end of the Summer 2020 season to adjust evaluation processes as needed and accommodate

going forward. Finally, as the methodology for calculating scalars for meters with frequent zero readings is being updated by CLEAResult for the Summer 2020 season, Guidehouse recommends an ongoing evaluation of this new methodology to gauge improvements in effectiveness.

B.3 Impact Evaluation Summary Memo – Summer 2020

B.3.1 Introduction and Summary

Guidehouse conducted an impact evaluation of Portland General Electric's (PGE) Energy Partner Schedule 26 demand response (DR) program for medium / large customers during the Summer 2020 season. The goal of Guidehouse's impact evaluation was to replicate and validate the impact calculations for settlement payment performed by CLEAResult, PGE's implementation contractor. This memo summarizes the findings and issues encountered while validating CLEAResult's impact results for the five events of the Summer 2020 season.

In comparison to CLEAResult's calculated impacts, Guidehouse identified discrepancies[30] in results for 12 out of 61 customers across all events[31]. Two customers' incentive levels were affected—specifically, B26-AGR-1000033 and B26-AGR-1000023 reached or exceeded 70% of their nomination for the three July events and July 20th event, respectively. Guidehouse recommends that PGE provide these customers their incentive payment. Details on the root causes are discussed further in the **Error! Reference source not found.** section, below.

As noted in past evaluation cycles, Guidehouse recommends continuing to enhance quality assurance processes during the season to maximize the completeness of AMI and Pelican data used for both CLEAResult and Guidehouse analyses.

B.3.2 Approach and Data Sources

CLEAResult performs post-event analysis within the season to develop impact calculations. CLEAResult's impact calculations primarily used Pelican data[32], where it was available, since their AMI feed is sometimes delayed for some sites. If Pelican data was not available or complete, CLEAResult then used the AMI data from their daily in-season feed.

In contrast, Guidehouse primarily uses this historically corrected post-season AMI data for the impact evaluation since this data is the system of record. Guidehouse used AMI data provided by PGE at the conclusion of the season, supplemented by Pelican data provided by CLEAResult to fill in gaps, if the AMI data was not available or complete. Note that in previous evaluation cycles before Winter 2018-19, Guidehouse and CLEAResult used identical data sources, which were mainly AMI interval data supplemented by Pelican.

Guidehouse used PGE's Customer Baseline Load (CBL) methodology to calculate the impact for the Summer DR events. The CBL calculation starts with a participant's interval data for ten non-event days preceding the event day. A non-event day is a business day in which an event was not called and does not fall on a holiday.

Guidehouse calculated the average load for each non-event day during the same hours as the event hours. Guidehouse selected baseline days as the five non-event days with the highest

[30] A discrepancy is where Guidehouse calculates a different impact than CLEAResult's calculated impact for a given customer.

[31] 61 customers reflect CBL customers only and do not include Firm Service Load customers. There were four Firm Service Load customers this season, for a total of 65 participants.

[32] Pelican data are real-time usage data from CLEAResult's Pelican devices.

average loads. The average load across the five baseline days for each hour of the event period represented the Unadjusted Baseline.

To calculate the Adjusted Baseline, an additive adjustment was first calculated based on an adjustment period. The adjustment period is the two-hour period beginning six hours before the event start time and ending four hours before the end start time. Guidehouse calculated the average load during the adjustment period on the event day and baseline days, which are the event day adjustment load and baseline adjustment load, respectively. The additive adjustment is the event day adjustment load minus the baseline adjustment load. Guidehouse calculated the Adjusted Baseline as the sum of the Unadjusted Baseline and additive adjustment.

For this analysis, 35 out of 61 participants had an Unadjusted Baseline as the basis for their payment settlement, with an Adjusted Baseline applying to the remainder. An Unadjusted Baseline is used as the basis for a customer's payment settlement if the participant receives an 18-hour advance notification, the event occurred during a winter morning, or CLEAResult has determined that a non-adjusted baseline is a better measure for onsite operations—otherwise, the customer's payment settlement is based on an Adjusted Baseline.

Each participant's system impact was calculated as the difference between their Adjusted or Unadjusted Baseline and average load during the event day. A positive system impact denotes that a participant's demand is higher than their baseline; thus, no DR was delivered. A negative system impact indicates that a participant delivered DR.

B.3.3 Impact Summary

The impact of the five events that occurred during the Summer 2020 season is summarized in Table 7-12 Guidehouse estimates a total reduction of up to 13,539 kW, with a realization rate of up to 96%. Note that the Winter 2019-20 and Summer 2019 events had realization rates of up to 73% and 91%, respectively.

Guidehouse's estimated total demand reduction is up to 2.8% higher and as much as 2.5% lower than CLEAResult's. Guidehouse identified 12 customers where the discrepancy between Guidehouse and CLEAResult's calculated impacts per event differed by 5% or greater of the nomination. These customers are further discussed in **Error! Reference source not found.** section, below.

Table 7-12. Summary of Summer 2020 Events[33]

Event Date	7/20/2020	7/27/2020	7/30/2020	8/17/2021	9/3/2020
Event Time	5pm to 8pm	4pm to 7pm	4pm to 7pm	5pm to 8pm	6pm to 9pm
Customers Called in Event	59	58	58	59	61
Total Nomination (kW)	13,775	13,800	13,875	14,000	14,250

[33] Reflects only CBL customers. Evaluation of Firm Service Load customers is out of scope.

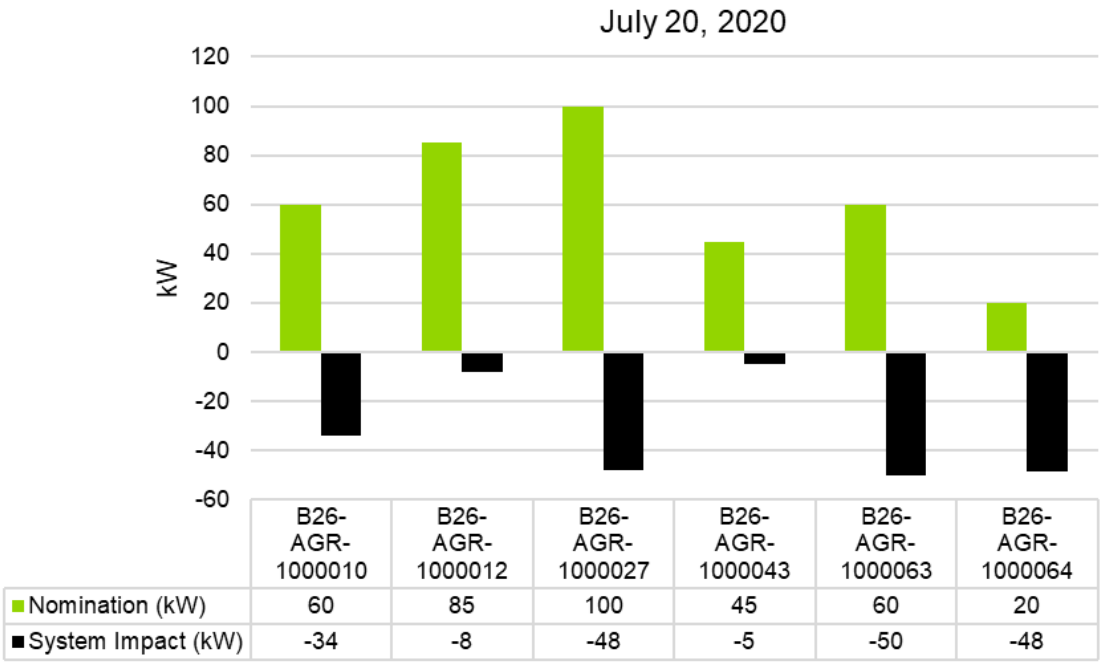
Guidehouse Calculated Total Reduction - CBL Customers (kW)	11,578	13,215	12,678	12,481	13,539
CLEAResult Calculated Total Reduction - CBL Customers (kW)	11,498	13,235	13,007	12,528	13,172
Difference (kW)	80	-20	-329	-46	367
Difference (%)	0.7%	-0.2%	-2.5%	-0.4%	2.8%
Customers That Delivered DR (Guidehouse Analysis)	53	53	56	52	57
Guidehouse Realization Rate[34]	84%	96%	91%	89%	95%

Source: Guidehouse

Customers Not Delivering Demand Response

Fifteen customer sites did not deliver any DR for at least one event called during the Summer 2020 season. Figure 7-5 through Figure 7-9 lists these customers and compare their nomination to system impact for these events.

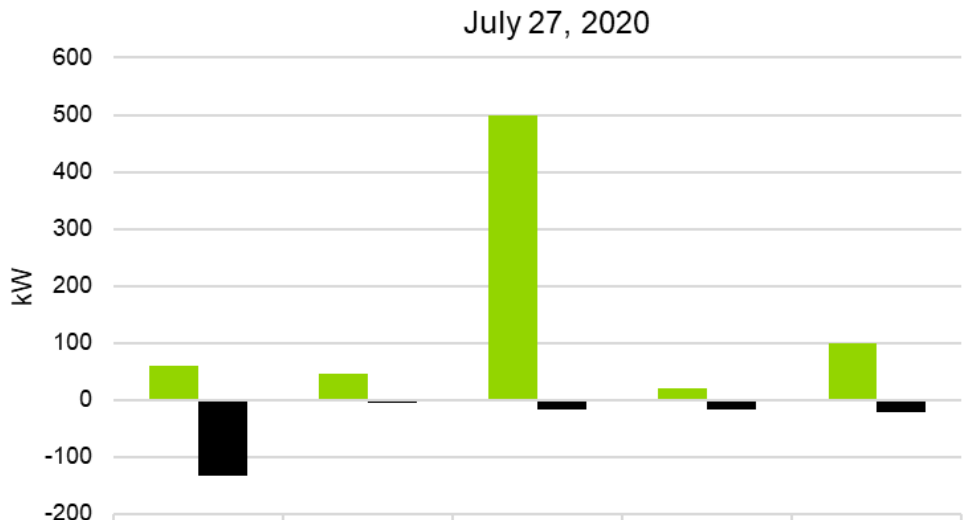
Figure 7-5. Customers Not Delivering DR on July 20, 2020



Source: Guidehouse

[34] Total curtailment divided by total nomination.

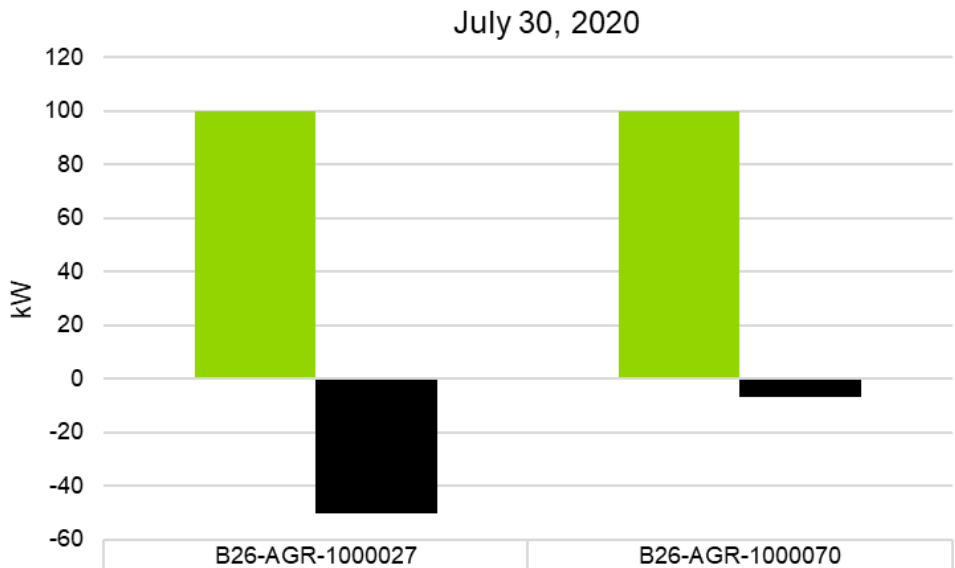
Figure 7-6. Customers Not Delivering DR on July 27, 2020



	B26-AGR-1000010	B26-AGR-1000043	B26-AGR-1000049	B26-AGR-1000064	B26-AGR-1000070
Nomination (kW)	60	45	500	20	100
System Impact (kW)	-133	-5	-17	-17	-22

Source: Guidehouse

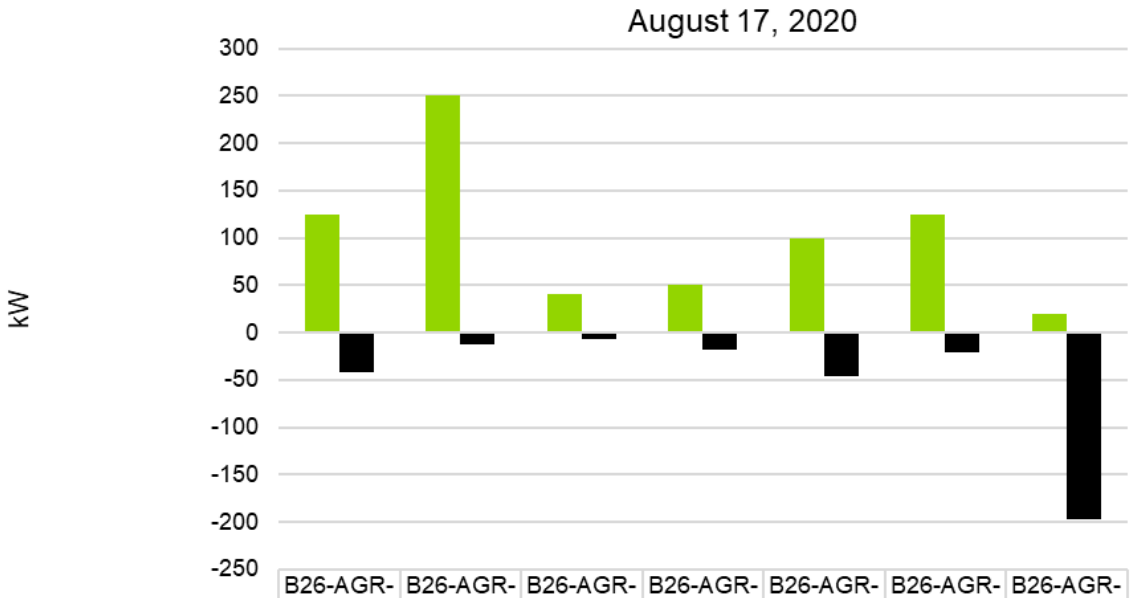
Figure 7-7. Customers Not Delivering DR on July 30, 2020



	B26-AGR-1000027	B26-AGR-1000070
Nomination (kW)	100	100
System Impact (kW)	-50	-7

Source: Guidehouse

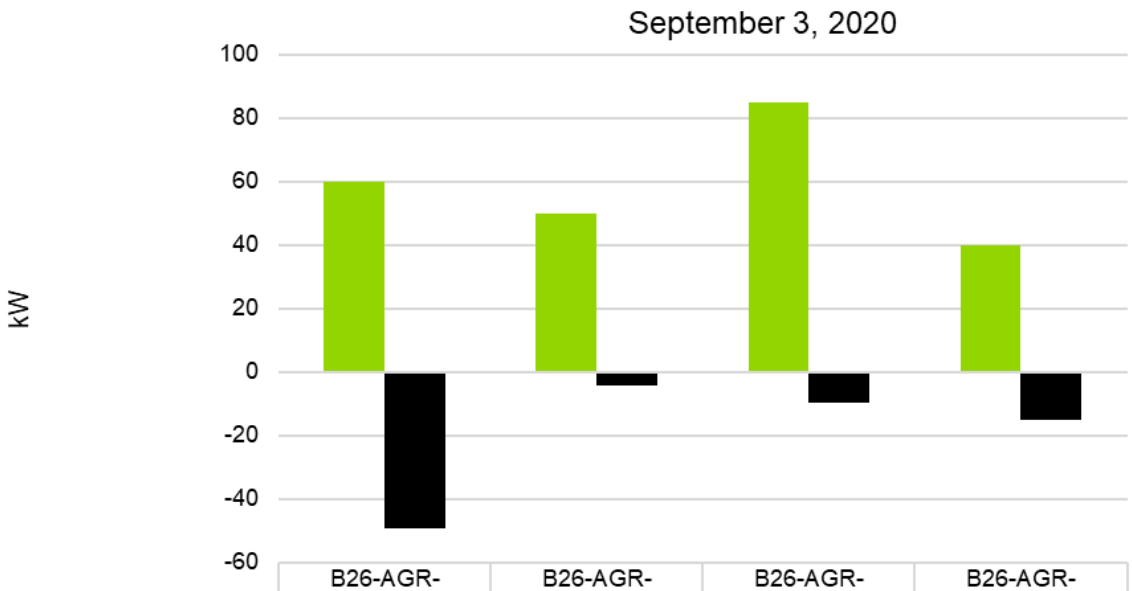
Figure 7-8. Customers Not Delivering DR on August 17, 2020



	B26-AGR-1000005	B26-AGR-1000006	B26-AGR-1000016	B26-AGR-1000026	B26-AGR-1000027	B26-AGR-1000039	B26-AGR-1000064
Nomination (kW)	125	250	40	50	100	125	20
System Impact (kW)	-42	-13	-7	-18	-47	-21	-197

Source: Guidehouse

Figure 7-9. Customers Not Delivering DR on September 3, 2020



	B26-AGR-1000010	B26-AGR-1000039	B26-AGR-1000060	B26-AGR-1000062
Nominations kW	60	50	85	40
System Impact (kW)	-49	-4	-10	-15

Source: Guidehouse

Table 7-13. CBL Customers Not Delivering DR by Event Date summarizes the event dates in which 15 customers did not deliver DR. Most of these customers show an increase in their load during the event compared to their CBL. As with other customers, each participant's system impact was calculated as the difference between their CBL and average load during the event day. A positive system impact indicates that a participant's demand was higher than their baseline; thus, no DR was delivered. A negative system impact indicates that a participant delivered DR.

Guidehouse also evaluated the system impacts for these customers based on both the Unadjusted CBL and Adjusted CBL to assess whether a different CBL type might show that the customer did in fact deliver DR. For most of these customers, the Unadjusted and Adjusted system impacts were both positive or there was a small difference between the two, which suggests that switching the customer's CBL type would not necessarily result in a negative system impact. However, for 6 of the 15 customers that did not deliver DR on one or more events (B26-AGR-1000010, B26-AGR-1000049, B26-AGR-100003, B26-AGR-1000064, and B26-AGR-1000070), there were significant differences between the Unadjusted and Adjusted system impacts. This suggests that switching the customer's CBL type (i.e., from Unadjusted to Adjusted or vice versa) could potentially result in a negative system impact for events that currently show they did not deliver DR.

Table 7-13. CBL Customers Not Delivering DR by Event Date

Unique Remote IDs	CBL Type	7/20/2020	7/27/2020	7/30/2020	8/17/2020	9/3/2020
1. B26-AGR-1000010	Adjusted	✓	✓			✓
2. B26-AGR-1000012	Adjusted	✓				
3. B26-AGR-1000027	Adjusted	✓		✓	✓	
4. B26-AGR-1000043	Adjusted	✓	✓			
5. B26-AGR-1000063	Unadjusted	✓				
6. B26-AGR-1000064	Unadjusted	✓	✓		✓	
7. B26-AGR-1000049	Unadjusted		✓			
8. B26-AGR-1000070	Adjusted		✓	✓		
9. B26-AGR-1000005	Adjusted				✓	
10. B26-AGR-1000006	Unadjusted				✓	
11. B26-AGR-1000016	Adjusted				✓	

12. B26-AGR-1000026	Adjusted	✓	
13. B26-AGR-1000039	Adjusted	✓	✓
14. B26-AGR-1000060	Unadjusted		✓
15. B26-AGR-1000062	Unadjusted		✓

Source: Guidehouse

Impact Result Discrepancies

Guidehouse compared impact results with CLEAResult and identified discrepancies greater than or equal to 5% of the customer's nomination for 12 out of the 61 customers. The discrepancies across these 12 customers are driven by the following main reasons:

- Minor differences between Pelican and AMI hourly data, which propagates to differences in impact results. However, the absolute differences are low and an investigation by CLEAResult did not show evidence of systemic difference between AMI and Pelican.
- Differences between Pelican data used by CLEAResult and Pelican data provided to Guidehouse. Furthermore, CLEAResult identified a misstep in an effort to provide the latest Pelican data to Guidehouse. This has since been addressed and the updated Pelican data provided decreased the discrepancy in results.
- Minor differences in AMI hourly data, which are due to historical corrections made to the AMI data after CLEAResult receives it. Thus, AMI data delivered to CLEAResult during the season can have differences when compared to the data pulled for Guidehouse after the season after corrections have been made.

Of the 12 customers with a discrepancy, two customers' incentive payments are affected. In contrast to CLEAResult, Guidehouse's calculated impact for customer B26-AGR-1000033 reached 70% of their nomination for the three events in July and, thus, this customer should have received an incentive payment. Customer B26-AGR-1000023 also exceeded 70% of their nomination for the July 20th event and should receive an incentive as per Guidehouse's calculation.

Table 7-14 provides details by customer on the percentage and absolute difference between Guidehouse and CLEAResult's calculated impacts for each customer with a discrepancy, along with impact on incentive payments and root causes for the differences. If a discrepancy occurred for more than one event for a given customer, Table 7-14 shows the impact percentages and absolute differences as ranges across the events for that customer.

Table 7-14. Summary of Impact Result Discrepancies

Customer Site	Impacts Percentage Difference[35]	Absolute Difference (kW)	Impact Difference as a Percent of Nomination	Events with Discrepancies[36]					Notes
				7/20/2020	7/27/2020	7/30/2020	8/17/2020	9/3/2020	
B26-AGR-1000001	-6% to 12%	7.9 to 11.9	8% to 12%				✓	✓	• This automated DR customer participated only for 1 hour on 8/17 and 2 hours on 9/3. There are minor differences in Pelican and AMI data for these two events. As a result, the calculated baseline differs slightly for the two events between the analyses. • Customer's system impact is above 70% of their nomination in analysis of the two events, thus, the resulting difference does not impact their incentive payments.
B26-AGR-1000022	-10% to -13%	17.1 to 34.2	8% to 16%		✓		✓		• As in past seasons, there are minor differences in Pelican data provided to Guidehouse versus what CLEAResult used, resulting in different calculated baselines and event day demand. • The resulting differences in the analyses do not impact their incentive payments.
B26-AGR-1000023	29% to 57%	96.6 to 245.9	39% to 98%	✓			✓	✓	• This customer's AMI secondary meter is not a back-up meter and is connected to another load. It does not have a zero read in the AMI data provided to Guidehouse, thus resulting in significant discrepancy compared to the CLEAResult's analysis which shows a zero read. • **For the July 20th event, this customer exceeded 70% of their nomination and should be paid their incentive** as per Guidehouse's calculations.

[35] Positive denotes Guidehouse calculated impact is higher than CLEAResult's and vice versa for a negative impact.

[36] Checkmarks denote events in which there were discrepancies between CLEAResult and Guidehouse's system impact results.

Customer Site	Impacts Percentage Difference[35]	Absolute Difference (kW)	Impact Difference as a Percent of Nomination	Events with Discrepancies[36]					Notes
				7/20/2020	7/27/2020	7/30/2020	8/17/2020	9/3/2020	
									• Customer's system impact is above 70% of their nomination in analysis of the other two events with discrepancies in both Guidehouse and CLEAResult's analyses, thus, the resulting difference does not impact their incentive payments.
B26-AGR-1000024	20%	147.6	42%					✓	• Significant difference in the AMI data used by Guidehouse vs CLEAResult's Pelican data for the last event. The AMI primary meter had zero reads, but the secondary meter had readings, which is the opposite for CLEAResult's Pelican data. • Customer's system impact is above 70% of their nomination in both Guidehouse and CLEAResult's analyses, thus, the resulting difference does not impact their incentive payments.
B26-AGR-1000033	140% to 423%	121.7 to 168.7	41% to 56%	✓	✓	✓			• CLEAResult could not calculate the impact for the first event as Pelican read zero on the event day • Significant difference in the AMI data used by Guidehouse vs CLEAResult's Pelican data • Customer's system impact reached 70% of their nomination in analysis of the July events, thus, **this customer should be paid their incentive.**
B26-AGR-1000036	-98% to -39%	67.5 to 115.3	45% to 77%			✓	✓		• As in past seasons, there is significant difference between the AMI and Pelican data. CLEAResult notes at the time of their analysis that a large percentage of the AMI reads were estimated.

Customer Site	Impacts Percentage Difference[35]	Absolute Difference (kW)	Impact Difference as a Percent of Nomination	Events with Discrepancies[36]					Notes
				7/20/2020	7/27/2020	7/30/2020	8/17/2020	9/3/2020	
									• The AMI data received by Guidehouse did not have the data quality field and it is unclear whether this included estimates or if they were updated. Guidehouse recommends including the data quality field in the AMI dataset for the next evaluation. • Customer's system impact is above 70% of their nomination in Guidehouse and CLEAResult's analyses for the August 17th event, thus, the resulting difference does not impact their incentive payments. • CLEAResult's analysis for July 30th results in the customer's system impact as above 70% of their nomination. In contrast, Guidehouse analysis results in only 2% system impact. However, the customer was already paid their incentive, so no adjustment is needed.
B26-AGR-1000040	8%	6.3	9%				✓		• AMI data was used by both Guidehouse and CLEAResult for the analysis for this customer and specific event. • The slight difference may be a result of post season updates to the AMI data received by Guidehouse vs CLEAResult. • Customer's system impact is above 70% of their nomination in both Guidehouse and CLEAResult's analyses, thus, the resulting difference does not impact their incentive payments.
B26-AGR-1000054	-18%	50.9	25%			✓			• Guidehouse used updated Pelican data for this customer. However, there is still a difference compared to CLEAResult's Pelican data.

Customer Site	Impacts Percentage Difference[35]	Absolute Difference (kW)	Impact Difference as a Percent of Nomination	Events with Discrepancies[36]					Notes
				7/20/2020	7/27/2020	7/30/2020	8/17/2020	9/3/2020	
									• Customer's system impact is above 70% of their nomination in both Guidehouse and CLEAResult's analyses, thus, the resulting difference does not impact their incentive payments.
B26-AGR-1000063	-24% to 26%	4.4 to 11.4	7% to 19%	✓	✓	✓	✓		• Slight differences in AMI and Pelican data, which propagates to differences in impact results. Guidehouse agrees with CLEAResult's recommendation to use Pelican versus AMI since it is higher and puts customer at or above the 70% threshold. • The customer did not deliver DR in the first event but the calculated results from Guidehouse and CLEAResult differ. • The customer reached or exceeded 70% of their nomination for the next three events as per CLEAResult's calculations. The customer already received incentives for these three events, so no adjustments needed.
B26-AGR-1000065	13% to 39%	13.3 to 56.4	8% to 34%	✓	✓		✓	✓	• CLEAResult indicated that AMI data is missing for one or two meters, depending on the event. To account for this, Guidehouse used Pelican data specifically for SPIDs 2390845402 and 9920447247. • Impact results differences do not affect customer incentives on any of the events.
B26-AGR-1000068	-62% to -41%	8.6 to 24.1	12% to 24%	✓	✓	✓	✓	✓	• CLEAResult notes at the time of their analysis that a large percentage of the AMI reads were estimated. • The AMI data received by Guidehouse did not have the data quality field and it is unclear whether this included estimates or if they were updated. Guidehouse

Customer Site	Impacts Percentage Difference[35]	Absolute Difference (kW)	Impact Difference as a Percent of Nomination	Events with Discrepancies[36] 7/20/2020	7/27/2020	7/30/2020	8/17/2020	9/3/2020	Notes
									recommends including the data quality field in the AMI dataset for the next evaluation. • Customer's system impact is below 70% of their nomination in both Guidehouse and CLEAResult's analyses, thus, the resulting difference does not impact their incentive payments.
B26-AGR-1000078	-73% to 50%	43.7 to 245.1	17% to 98%	✓	✓				• CLEAResult notes at the time of their analysis AMI data was missing. • The AMI data received by Guidehouse at the end of the season did not have incomplete or large percentage of zero reads. • Customer's system impact exceeded 70% of their nomination in CLEAResult's analysis for the July 20th event. In contrast, Guidehouse analysis results in only 37% system impact. However, the customer was already paid their incentive, so no adjustment needed. • For the July 27th event, both Guidehouse and CLEAResult analyses resulted in system impacts well below 70% of their nomination. Thus, no incentive adjustment is needed.

Source: Guidehouse

B.3.4 Key Takeaways and Recommendations

Guidehouse estimates a total reduction of up to 13,539 kW, with a realization rate of up to 96% for the Summer 2020 season. Guidehouse's estimated demand reduction was up to 2.8% higher than CLEAResult's due to discrepancies in calculated impact results for 12 out of 61 customers.

Furthermore, the evaluation determined that two customers should receive incentive payments in cases where they had not been paid. One customer did not have any available Pelican or AMI data on the event day; thus, CLEAResult's records did not show any impact for this customer. However, Guidehouse's analysis using the post-season AMI dataset shows that this customer delivered significantly more than their nomination and should have received an incentive payment. Upon the initial finding Guidehouse, CLEAResult and PGE investigated the discrepancy, and all parties concur. PGE indicated that customer (B26-AGR-1000033) will receive the incentive payment previously withheld. For another customer (B26-AGR-1000023), it was determined as part of this evaluation that their secondary meter is used to serve load at the same time as the primary meter, rather than as a back-up meter. Inclusion of the secondary meter reads in the analysis results in this customer exceeding 70% of their nomination for the July 20th event. Thus, for this specific event, this customer will also receive an incentive payment.

Guidehouse recommends continuing to enhance data transfer and quality assurance processes with both PGE and CLEAResult. Some specific recommendations here include:

- Guidehouse recommends adding a data quality field (e.g., to indicate AMI data that is estimated, etc.) in the AMI dataset that PGE provides for the evaluation to help assess the quality of the AMI data relative to the Pelican data.

- Guidehouse and CLEAResult identified minor differences in the Pelican data used by CLEAResult and Guidehouse in the settlement calculations. These differences had no impact on the incentives for the Summer 2020 season. However, Guidehouse recommends further investigating the cause for these differences between CLEAResult and Guidehouse's analyses (e.g., baseline days selected) should this issue persist in next season's evaluation.

- Guidehouse also recommends further investigating whether some of the customers that did not deliver DR would benefit from switching their CBL type (i.e., from Unadjusted to Adjusted or vice versa) since there were significant differences between their Unadjusted and Adjusted system impacts.

Finally, Guidehouse notes that scalar issues were not identified in this evaluation season, compared to past seasons wherein the scalar issues occurred for a few customers.

B.4 Impact Evaluation Summary Memo – Winter 2020-2021

B.4.1 Introduction and Summary

Guidehouse conducted an impact evaluation of Portland General Electric's (PGE) Energy Partner program for the two events called during the Winter 2020-21 season. The goal of Guidehouse's impact evaluation was to replicate and validate the impact calculations for settlement payment performed by CLEAResult, PGE's implementation contractor. This memo summarizes the findings and issues encountered while validating CLEAResult's impact results for medium / large customers.

In comparison to CLEAResult's calculated impacts, Guidehouse identified discrepancies greater than 5% in results for 2 out of 61 customers in the first event on January 26th. However, no customer's incentive levels were affected by discrepancies in this event.

When comparing against CLEAResult's impacts for the second event on February 10th, Guidehouse identified discrepancies greater than 5% for 7 out of 67 customers.37 In this case, three customers' incentives are affected—specifically, B26-AGR-1000029, B26-AGR-1000152, and B26-AGR-1000038. The first two customers reached a respective 110 and 106% of their nomination (whereas CLEAResult calculated that they reached 52 and 42%) and should have received an incentive payment. Guidehouse recommends that PGE provide these customers their incentive payment. Upon receiving up-to-date data, CLEAResult agrees with this recommendation. Separately, Guidehouse estimates that B26-AGR-1000038 reduced their baseline load by 31% of their nomination, compared to CLEAResult's calculation of 91%, which means that the customer performed below the 70% threshold for receiving an incentive and may have received a payment in error. Guidehouse recommends that CLEAResult address this issue going forward but does not recommend any adjustments to this customer's incentive payment. Details of the root causes are discussed further in the Impact Result Discrepancies section, below.

B.4.2 Approach and Data Source

CLEAResult's impact evaluation primarily used Pelican data, where it was available. If Pelican data was not available or complete, CLEAResult used in-season AMI data from their daily feed. Since CLEAResult performs post-event analysis within season for settlement purposes, they are limited to using either Pelican data or in-season AMI data, rather than the historically corrected post-season AMI system of record data. Since their CLEAResult's AMI feed is sometimes delayed for some sites, CLEAResult primarily uses Pelican data. In contrast, Guidehouse primarily used historically corrected post-season AMI data provided by PGE, since it is the system of record. If AMI data was not available or complete, Guidehouse supplemented the gaps with Pelican data provided by CLEAResult.[38]

Guidehouse used PGE's Customer Baseline Load (CBL) methodology to calculate the impact for the Winter 2020-21 demand response (DR) events. The CBL calculation starts with a

[37] 61 customers participated in Event 1, and 67 in Event 2. These numbers reflect CBL customers only and do not include Firm Service Load customers. There were five Firm Service load customers this season, for a total of 66 participants.

[38] Note that in previous evaluation cycles before Winter 2018-19, Guidehouse and CLEAResult used identical data sources, which were mainly AMI interval data supplemented by Pelican.

participant's interval data for ten non-event days preceding the event day. A non-event day is a business day in which an event was not called and does not fall on a holiday.

Guidehouse calculated the average load for each non-event day during the same hours as the event hours. Guidehouse selected baseline days as the five non-event days with the highest average loads. The average load across the five baseline days for each hour of the event period represented the Unadjusted Baseline.

To calculate the Adjusted Baseline, an additive adjustment was first calculated based on an adjustment period. The adjustment period is the two-hour period beginning six hours before the event start time and ending four hours before the end start time. Guidehouse calculated the average load during the adjustment period on the event day and baseline days, which are the event day adjustment load and baseline adjustment load, respectively. The additive adjustment is the event day adjustment load minus the baseline adjustment load.

Guidehouse calculated the Adjusted Baseline as the sum of the Unadjusted Baseline and additive adjustment.

Additive adjustments are calculated for all participants with the following exceptions: the participant receives an 18-hour advance notification, the event occurred during a winter morning, or CLEAResult has determined that a non-adjusted baseline is a better measure for onsite operations. In such cases identified by CLEAResult, a participant's Unadjusted Baseline is the basis for their payment settlement. For this analysis, the Unadjusted Baseline applied to all 61 participants in Event 1 and 37 out of 67 participants in Event 2.

Each participant's system impact was calculated as the difference between their Adjusted or Non- Adjusted Baseline and average load during the event day. A positive system impact denotes that a participant's demand is higher than their baseline, thus, no DR was delivered. A negative system impact indicates that a participant delivered DR.

B.4.3 Impact Summary

The impact of both events of the Winter 2020-21 season is summarized in Table 7-15.

Guidehouse estimates a total reduction of 10,354 kW in the first event, with a realization rate of 96%. Guidehouse estimates the impact of the second event to be a reduction of 10,091 kW at an 86% realization rate. The average realization rate between the two Winter 2020-21 events is 91%. Note that the Winter 2019-20 event and the average of the Summer 2020 events had realization rates of 73% and 91%, respectively.

Guidehouse's estimated total demand reduction for each event is 0.3% and 0.8% lower than CLEAResult's. Guidehouse identified 2 and 7 customers from the 2 events where the discrepancy between Guidehouse and CLEAResult's calculated impacts differed by 5% or greater and had an absolute difference of 5 kW or greater. These customers are further discussed in Impact Result Discrepancies section, below.

Table 7-15. Summary of Winter 2020-21 Events[39]

Event Date	1/26/2021	2/10/2021
Event Time	7 to 10am	5 to 8pm
Customers Called in Event	61	67
Total Nomination (kW)	10,762	11,667
Guidehouse Calculated Total Reduction - CBL Customers (kW)	10,354	10,091
CLEAResult Calculated Total Reduction - CBL Customers (kW)	10,381	10,168
Difference (kW)	-26	-76
Difference (%)	-0.3%	-0.8%
Customers that Delivered DR (Guidehouse Analysis) *	57	59
Customers to Receive Incentive (Guidehouse Analysis)	30	31
% of Total Nomination from Customers that did not deliver DR	3.30%	9.50%
Guidehouse Realization Rate**	96%	86%

* The number of customers in each event who reduced their demand by an amount greater than 0 kW.

** Total curtailment divided by total nomination.

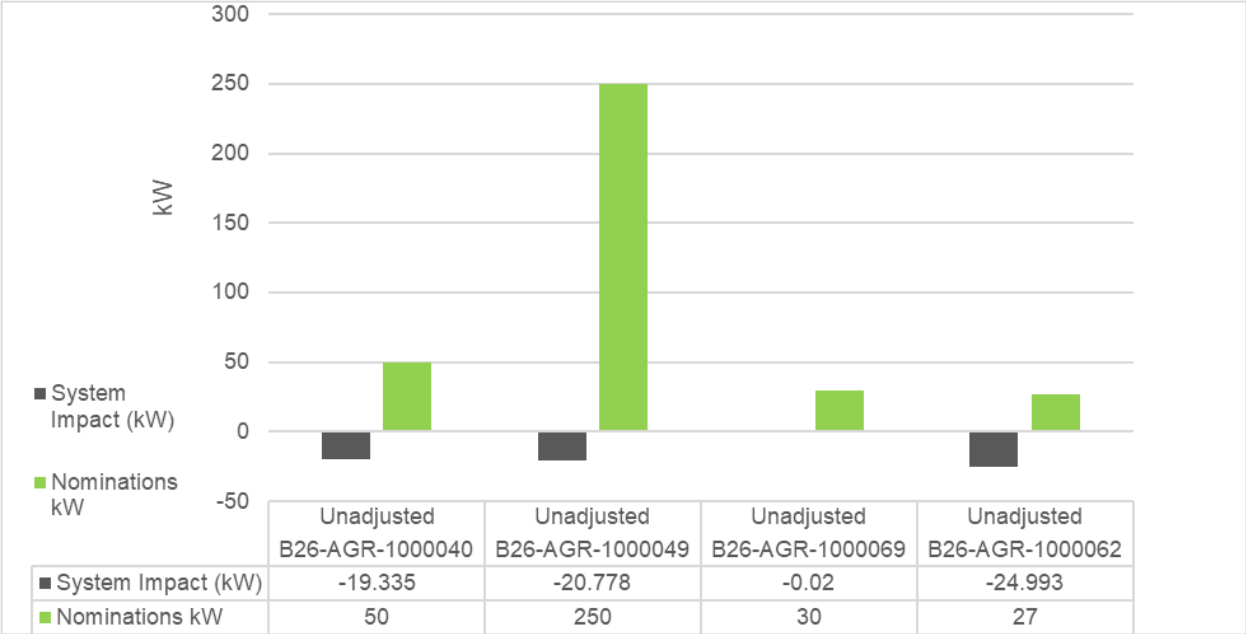
Source: Guidehouse

Customers Not Delivering Demand Response

Four customer sites did not deliver any DR in the first event called during the Winter 2020-21 season on January 26, 2021. Figure 7-10 lists these customers and compares their nomination and system impact.

[39] Reflects only CBL customers. Evaluation of Firm Service Load customers is not in the scope of this evaluation.

Figure 7-10. Customers Not Delivering DR on January 26, 2021

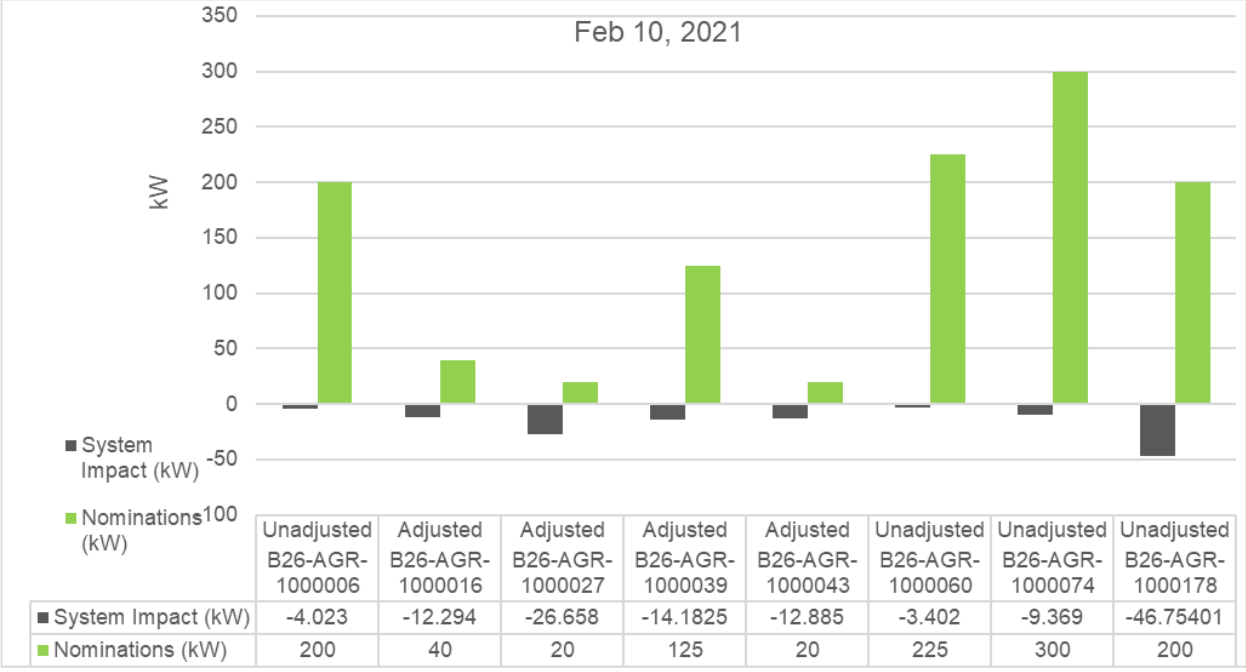


	Unadjusted B26-AGR-1000040	Unadjusted B26-AGR-1000049	Unadjusted B26-AGR-1000069	Unadjusted B26-AGR-1000062
System Impact (kW)	-19.335	-20.778	-0.02	-24.993
Nominations kW	50	250	30	27

Source: Guidehouse

Eight customer sites did not deliver any DR in the second event called during the Winter 2020-21 season on February 10, 2021. Figure 7-11 lists these customers and compares their nomination and system impact.

Figure 7-11. Customers Not Delivering DR on February 10, 2021



	Unadjusted B26-AGR-1000006	Adjusted B26-AGR-1000016	Adjusted B26-AGR-1000027	Adjusted B26-AGR-1000039	Adjusted B26-AGR-1000043	Unadjusted B26-AGR-1000060	Unadjusted B26-AGR-1000074	Unadjusted B26-AGR-1000178
System Impact (kW)	-4.023	-12.294	-26.658	-14.1825	-12.885	-3.402	-9.369	-46.75401
Nominations (kW)	200	40	20	125	20	225	300	200

Source: Guidehouse

Table 7-16 provides details on the CBL analysis results for each customer that did not deliver DR. Most of these customers show an increase in their load during the event compared to their CBL. As part of the analysis, Guidehouse evaluated the system impacts based on both the Unadjusted CBL and Adjusted CBL. Each participant's system impact was calculated as the difference between their CBL and average load during the event. Note that a positive system impact indicates that a participant's demand was higher than their baseline, thus, no DR was delivered. A negative system impact indicates that a participant delivered DR.

Table 7-16. Detailed Notes on Customers Not Delivering DR

Customer Site	**Event Date**	**CBL Type Used**	**Notes** (CLEAResult and Guidehouse both used the same CBL type)
B26-AGR-1000040	1/26/2021	Unadjusted CBL	• Both the Unadjusted CBL and Adjusted CBL system impacts were positive, switching their CBL type would not result in a negative system impact. • In both cases, this customer did not deliver DR
B26-AGR-1000049	1/26/2021	Unadjusted CBL	
B26-AGR-1000062	1/26/2021	Unadjusted CBL	
B26-AGR-1000069	1/26/2021	Unadjusted CBL	
B26-AGR-1000006	2/10/2021	Unadjusted CBL	
B26-AGR-1000016	2/10/2021	Adjusted CBL	• The day-of-adjustment resulted in a positive average system impact. • The Unadjusted CBL system impacts were negative. Significant differences between the Unadjusted CBL and Adjusted CBL system impacts suggests further investigation into the appropriate CBL type for these customers may be beneficial.
B26-AGR-1000027	2/10/2021	Adjusted CBL	
B26-AGR-1000039	2/10/2021	Adjusted CBL	
B26-AGR-1000043	2/10/2021	Adjusted CBL	• Both the Unadjusted CBL and Adjusted CBL system impacts were positive, switching their CBL type would not result in a negative system impact. • In both cases, this customer did not deliver DR.
B26-AGR-1000060	2/10/2021	Unadjusted CBL	

B26-AGR-1000074	2/10/2021	Unadjusted CBL	• Both the Unadjusted CBL and Adjusted CBL system impacts were negative, indicating this customer used more than their baseline energy usage during the event period. • Switching their CBL type would not result in a positive system impact. • In both cases, this customer did not deliver DR.
B26-AGR-1000178	2/10/2021	Unadjusted CBL	• Both the Unadjusted CBL and Adjusted CBL system impacts were positive, switching their CBL type would not result in a negative system impact. • In both cases, this customer did not deliver DR.

Source: Guidehouse

Impact Result Discrepancies

Guidehouse compared impact results with CLEAResult and identified discrepancies greater than or equal to 5% and 5 kW absolute difference for 2 out of the 61 participants in the first event of the season, and 7 out of 67 in the second. Guidehouse 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 9 customers are driven by the following main reasons:

- Minor differences in AMI hourly data, which are due to historical corrections made to the AMI data after CLEAResult receives it. Thus, AMI data delivered to CLEAResult during the season can have differences when compared to the data pulled for Guidehouse after the season after corrections have been made.

- Minor differences between Pelican and AMI hourly data, which propagates 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.

- For some customers, CLEAResult did not have in-season AMI data or had in-season AMI data with estimated reads. CLEAResult uses in-season AMI data to verify the scalars needed to translate raw Pelican data into demand data. Without the correct in-season AMI, the Pelican scalars cannot be checked for accuracy. This has caused problems with verifying the scalar value used to calculate Pelican demand and, in some cases, skewed CLEAResult's in-season CBL calculations.

- One customer has consistently shown zero load across multiple seasons in CLEAResult's Pelican data for a secondary meter. Guidehouse's analysis uses the AMI data for this secondary meter, which shows non-zero load and contributes to discrepancy between CLEAResult and Guidehouse's results.

Of the 9 customers with discrepancies, 3 customers' incentive payments are affected by the discrepancies. In contrast to CLEAResult, Guidehouse's calculated impacts for customers B26-AGR-1000029 and B26-AGR-1000152 reached a respective 110 and 106% of their nomination and, thus, these customers should have received an incentive payment. On the other hand, customer B26-AGR-1000038 only reached 31% of their nominated reduction, and likely received an incentive in error.

Table 7-17 provides details by customer on the percentage and absolute difference between Guidehouse and CLEAResult's calculated impacts, along with impact on incentive payments and root causes for the differences.

Table 7-17. Summary of Impact Result Discrepancies

Customer Site	Event Date	Impacts Percentage Difference[40]	Absolute Difference (kW)	Impact Difference as a Percent of Nomination	Notes
B26-AGR-1000179	1/26/2021	-47%	24.89	-8%	• CR noted in their analysis that they were missing AMI data. GH too was missing AMI data and used Pelican data provided by CR. The impacts are identical for one meter but differ for the other meter. • Both analyses resulted in system impacts well above 70% of their nomination, thus, the resulting difference does not impact their incentive payment.
B26-AGR-1000022	2/10/2021	-33%	17.74	35%	• CR noted in their analysis that AMI was missing a meter. This could help explain the higher baselines seen in CR's analysis. Looking at the AMI hourly load shape, the AMI adjusted CBL does a good job of predicting demand over the event window and estimating a small reduction in load. • Difference between Guidehouse and CLEAResult's impact calculations does not affect incentive payments.
B26-AGR-1000023	2/10/2021	13%	53.75	22%	• GH's analysis includes the secondary meter which was showing zero load in CR's pelican data. The addition of this meter results in ~50kW of added demand reduction. We have seen this issue multiple times for this customer in the past and for both events this season. GH recommends CR troubleshoots the reason for the secondary meter Pelican data consistently showing up. • Difference between Guidehouse and CLEAResult's impact calculations does not affect incentive payments.
B26- AGR-1000023	1/26/2021	-15%	164.99	-66%	• GH's analysis includes the secondary meter which was showing zero load in CR's Pelican data. Since the secondary meter was showing zero load, CR's

[40] Positive denotes Guidehouse calculated impact is higher than CLEAResult's and vice versa.

					impact estimates are inflated. We have seen this issue multiple times in the past for this customer and it occurred for both events this season, however their incentive payment is not affected. GH recommends CR troubleshoots the reason for the secondary meter Pelican data consistently showing up as zero.
B26-AGR-1000029		114%	29.45	59%	• AMI and pelican data reads during the event are consistent, however differences in the baseline days results in larger reduction across all event hours using the AMI data. GH calculations show that this customer should be paid an incentive.
B26-AGR-1000038		-65%	29.64	59%	• CR noted in their analysis that AMI data was missing. This could indicate a scalar issue since the Pelican data could not be compared. • GH calculations show that this customer did not reach 70% of their nomination and should not have been paid an incentive.
B26-AGR-1000054		-99%	130.79	6.5%	• CR's analysis results in a very high baseline. GH's baseline is much lower because this customer has an adjusted baseline and very little demand prior to the event. Thus, when the adjustment factor was applied, the baseline fell close to their actual demand during the event resulting in no impact.
B26-AGR-1000074	2/10/2021	24%	11.29	11%	• CR noted in their analysis that the AMI reads during the event were estimated and that the meter matches the Pelican data well when reads are good quality. GH's calculation using updated AMI values shows a slightly higher impact that does not affect the customer's incentive payment.
B26-AGR-1000152		153%	47.92	64%	• AMI and pelican data reads during the event are consistent, however differences in the baseline days results in larger reduction across all event hours using the AMI data. GH calculations show that this customer should be paid an incentive.

Source: Guidehouse

B.4.4 Key Takeaways and Recommendations

Guidehouse estimates a total reduction of 10,354 kW, with a realization rate of 96% for the first event of the Winter 2020-21 event. Guidehouse estimates that the total reduction of the second event is 10,091 kW at a realization rate of 86%. Guidehouse's estimated total demand reduction is 0.3 and 0.8% lower than CLEAResult's for each respective event, due to discrepancies in calculated impact results for 11 out of 61 customers.

Root causes for the discrepancies in CLEAResult and Guidehouse's results include errors in the scalar factors used in the Pelican system to match AMI readings, small differences in Pelican and AMI data, and mismatch in in-season AMI data versus AMI data pulled after historical corrections have been made. For additional details on the data source selection process for CLEAResult and Guidehouse, see the Approach and Data Source section above.

Guidehouse recommends continuing to enhance quality assurance processes during the season to ensure CLEAResult receives AMI data for all customers, especially those experiencing issues with Pelican data. Finally, Guidehouse recommends reviewing the methodology for calculating scalars for meters with frequent zero-readings with a focus on the secondary meter of B26-AGR-1000023.

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