

**PUBLIC UTILITY COMMISSION OF OREGON
STAFF REPORT
PUBLIC MEETING DATE: March 31, 2020**

REGULAR CONSENT EFFECTIVE DATE April 1, 2020

DATE: March 23, 2020

TO: Public Utility Commission

FROM: Nick Sayen

THROUGH: Bryan Conway, Michael Dougherty, JP Batmale, and Sarah Hall **SIGNED**

SUBJECT: PORTLAND GENERAL ELECTRIC:
(Docket No. ADV 1097/Advice No. 20-05)
Requests an extension through September 30, 2020, of the multifamily water heater demand response pilot which expires March 31, 2020; does not make programmatic changes to the pilot.

STAFF RECOMMENDATION:

Approve Portland General Electric Company's (PGE or Company) Advice No. 20-05 requesting an extension through September 30, 2020, of the multifamily water heater demand response pilot, effective with service on and after April 1, 2020.

DISCUSSION:

Issue

Whether the Commission should approve PGE's Advice No. 20-05 requesting an extension through September 30, 2020, of the multifamily water heater demand response pilot that expires March 31, 2020, though makes no programmatic changes to the pilot.

Applicable Rule or Law

Under ORS 757.205(1):

Every public utility shall file with the Public Utility Commission, within a time to be fixed by the commission, schedules which shall be open to public inspection, showing all rates, tolls and charges which it has established and which are in force at the time for any service performed by it within the state, or for any

service in connection therewith or performed by any public utility controlled or operated by it.

The Commission may approve tariff changes if they are deemed to be fair, just, and reasonable. ORS 757.210. Tariff revisions may be made by filing revised sheets with the information required under the Commission's administrative rules, including OAR 860-022-0025. OAR 860-022-0025(2) specifically requires that each energy utility changing existing tariffs or schedules must include in its filing a statement plainly indicating the increase, decrease, or other change made with the filing, the number of customers affected by the proposed change and the resulting change in annual revenue; and the reasons or grounds relied upon in support of the proposed change.

Filings that propose any change in rates, tolls, charges, rules, or regulations must be filed with the Commission at least 30 days before the effective date of the change. ORS 757.220; OAR 860-022-0015. Tariff filings to be effective on less than 30 days following notice of the change may be authorized with a waiver of less than statutory notice pursuant to ORS 757.220 and OAR 860-022-0020.

Analysis

Advice No. 20-05 does not request any programmatic changes to the pilot (no additional budget, no additional participants), though it does extend the pilot timeframe to allow for additional pilot operation, and for presumable performance improvements. A summary of the pilot's background, as well as recent updates, follows.

Background

In June 2017, the Commission approved the original deferral filing, and related advice filing establishing Schedule 4, for PGE's multifamily water heater demand response pilot.¹ The pilot retrofits existing water heaters in multifamily residences with demand response technology. PGE encountered challenges implementing the pilot including technical difficulties and participant enrollment that went more slowly than expected, amongst other issues. As a result the pilot's first demand response season was not until winter 2018-19 (November through February), approximately 16 months after it initially launched.² PGE filed the preliminary evaluation of the pilot, which covered the winter 2018-19 season, on November 1, 2019.³ The evaluation yielded a handful of key process-oriented takeaways, and one key impact takeaway: a lack of events from the

¹ See UM 1827, Order 17-224, June 27, 2017, <https://apps.puc.state.or.us/orders/2017ords/17-224.pdf>

² See ADV 1067, Staff Report, December 17, 2019, <https://edocs.puc.state.or.us/efdocs/HAU/adv1067hau11122.pdf>, for a full discussion of difficulties the pilot faced.

³ See UM 1827, Navigant Final Evaluation of PGE's Multifamily Water Heater Pilot, November 1, 2019, <https://edocs.puc.state.or.us/efdocs/HAH/um1827hah16189.pdf>

winter 2018-19 season that produced statistically significant demand reductions.⁴ With the pilot set to expire on December 31, 2019, after approximately two and a half years, this lack of demonstrable results was discouraging and caused Staff to call into question whether the pilot ought to be allowed to expire.

During November and December 2019, Staff and PGE discussed a prudent path forward for the pilot. In this discussion, PGE indicated several critical obstacles identified in the preliminary evaluation had largely been subsequently resolved. These included a much improved connectivity rate for participating water heaters, and updated event calling procedures such that events started and stopped in alignment with AMI data timelines.⁵ Critically, a forthcoming evaluation of the summer 2019 demand response season (June through September) would demonstrate these improvements.

As a result of this discussion, PGE requested a 90-day extension of the pilot on November 25, 2019.⁶ Staff recommended approving PGE's request,⁷ and in December 2019, the Commission approved Advice No. 19-33 modifying Schedule 4 to this end.⁸ In making this recommendation, Staff noted the upcoming summer 2019 season evaluation would be expected to calculate impact analysis results and provide more, and higher quality, data upon which to judge the pilot's performance. With this data, Staff anticipated returning to the Commission with a recommendation on the future of the pilot.

Summer 2019 season evaluation: subsequent progress in performance

PGE filed the summer 2019 season evaluation on February 12, 2020.⁹ In the evaluation cover letter PGE reported:

- Improvements in communicating with participating tenants including:
 - Providing property managers with a one pager to be included in new-tenant paperwork (so that tenants that move in after the initial installation are aware of the pilot).
 - Sending annual program emails to all tenants in partnership with property management.

⁴ Ibid, page 6.

⁵ See ADV 1067, Advice No. 19-33, November 25, 2019, <https://edocs.puc.state.or.us/efdocs/UAA/uaa154254.pdf>, pages 2-3.

⁶ See ADV 1067, Advice No. 19-33, November 25, 2019, <https://edocs.puc.state.or.us/efdocs/UAA/uaa154254.pdf>.

⁷ See ADV 1067, Staff Report, December 17, 2019, <https://edocs.puc.state.or.us/efdocs/HAU/adv1067hau11122.pdf>.

⁸ See ADV 1067, December 17, 2019, <https://edocs.puc.state.or.us/efdocs/UBF/adv1067ubf132640.pdf>

⁹ See UM 1827, Multifamily Residential Demand Response Water Heater Pilot Evaluation for the Summer 2019 Demand Response Season, February 12, 2020, <https://edocs.puc.state.or.us/efdocs/HAH/um1827hah1792.pdf>.

- Improvements in integrating multiple hardware and software vendors, which should minimize technical difficulties of the kind that slowed pilot launch in 2017.
- Implementation of operation and maintenance best practices for Wi-Fi networks to improve water heater connectivity and callability.

The evaluation included the following results:

- Improvement in the connectivity rate for participating water heaters.
 - As well as an improvement in the percentage of *devices controlled* (that is water heaters that are both connected and dispatched as part of an event).
- Improvement in statistically significant events and results:
 - Four out of 58 events were statically significant in the winter 2018-19 season. This improved to 60 out of 70 events for the summer 2019 season.¹⁰

Key results from the summer 2019 season evaluation are in the table below (along with comparison data from the winter 2018-19 season evaluation).

Metric ¹¹	Summer 2019 season average (per event)	Winter 2018-19 season average (per event)
Percent of water heaters connected	75%	64%
Percent of water heaters <i>controlled</i>	46%	36%
Total demand reduction (kW)	106.95	-0.003
Demand reduction per controlled water heater (kW)	0.15	-0.037

As a final point on progress in performance, Staff notes the water heater connectivity improvements identified above are a result of better Wi-Fi connectivity. The pilot began utilizing cell enabled switches (instead of Wi-Fi switches), which PGE reports connect at approximately 90 percent. However, the cell switches were deployed *after* the summer 2019 season, and so the impact of this technology is not reflected in the summer 2019 season evaluation. It is reasonable to assume that pilot connectivity will continue to improve as the cell switches are further deployed.

January 2020 informal update

PGE met with Staff in late January 2020 to present an update on the pilot. This update, while not the equivalent of a more rigorous, third-party evaluation, did present additional information since the summer 2019 season evaluation was completed.

- 6,772 participants had been enrolled through the end of 2019.

¹⁰ Ibid, page 2 of cover letter.

¹¹ Ibid, page 6 of evaluation.

- The Company planned another 1,522 enrollments in the first quarter of 2020; this amount represents the full, planned deployment of the pilot at this time.
- Thus the forecast total number of pilot participants (for March 31) should be 8,294 (this is below the participant cap of 10,000).
 - Of the 8,294 approximately 4,500 are Wi-Fi switches and approximately 3,800 are cell enabled switches.
- Connectivity for the full pilot in December 2019 was approximately 90 percent.
- Installation costs on a per-unit basis dropped approximately 30 percent since pilot launched.
- The pilot actual-spend was forecast to land near the original budget.

Conclusion

Based on the results of the summer 2019 season evaluation, Staff is now comfortable that the multifamily water heater demand response pilot is operating in a functional manner. A third party has reviewed the pilot and found that when a demand response event is called, the software and hardware apparatuses largely work as expected, and the result is demonstrable, statistically significant kW reductions in demand. While the time required to reach this point was much greater than originally anticipated, this is nonetheless an improvement from the last evaluation. A subsequent PGE update suggests this improvement has continued, though Staff thinks the pilot has yet to function optimally. PGE will submit a winter 2019-20 season evaluation at the end of July 2020, and this will provide another critical data point in determining the long-term outcome of the pilot.

Advice No. 20-05 does not request any programmatic changes to the pilot (no additional budget, no additional participants); it does extend the timeframe to allow for additional pilot operation, and for presumable performance improvements. It also allows for the completion and submission of an additional evaluation. For these reasons, Staff recommends approving PGE's requests for an extension of the pilot through September 30, 2020.

PROPOSED COMMISSION MOTION:

Approve PGE's Advice No. 20-05 requesting an extension through September 30, 2020, of the multifamily water heater demand response pilot, effective with service on and after April 1, 2020.