Portland General Electric Company
121 SW Salmon Street • Portland, Oregon 97204
503-464-7772 • Facsimile 503-464-2222

Larry Bekkedahl
Vice President
Transmission & Distribution

September 27, 2016

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

RE: UM 814; RE-61; PGE Response to 2015 SQM R-4 CAIDI[1] and Penalty Threshold set by Commission Order 15-007

PGE is submitting this letter in response to a request from OPUC Safety Staff, to address the issues contributing to PGE's Customer Average Interruption Duration Index (CAIDI) performance in 2015. PGE's CAIDI exceeded the PUC penalty threshold by six minutes, as noted in a reliability report we submitted earlier this year. Given the drivers of our CAIDI results in 2015 and actions taken to address those challenges and hopefully improve CAIDI performance, PGE respectfully requests that the Commission not issue the discretionary penalty.

Background

In April 2016, PGE submitted a report detailing its performance under revised Service Quality Measures (SQMs) adopted by the PUC in 2011. SQMs relate to customer service, safety and reliability. One of the measures that started in 2011, R4, is the Annual Service Restoration Index, using an industry standard called CAIDI.

Included in the SQM stipulation approved by the Commission in 2011, is the authority of the Commission to impose revenue requirement reductions for noncompliance with certain SQMs, including R4, based on the goal and penalty threshold levels set by the Commission. Annually, PGE works with Safety Staff to recommend, for the following year, a goal for the SQM performance along with threshold levels that may trigger a penalty in the form of a revenue requirement reduction. Then, also annually, PGE reports its performance on each SQM to the Commission. Assessing a penalty is discretionary with the Commission.

The SQM R4 goal for the year 2015 was set at 2.0 hours per outage and the penalty threshold levels at 2.5 hours and 3.0 hours respectively. At the 2.5 hour threshold, the Commission may assess a $100,000 revenue requirement reduction. In its report for

[1] CAIDI is one of several reliability measurements defined by the Institute of Electrical and Electronic Engineers (IEEE). CAIDI is the Customer Average Interruption Duration Index and measures the average outage duration that a customer would experience; it is also viewed as the average time to restoration.

2015 performance, PGE reported that its CAIDI, at 156 minutes, slightly exceeded the 2.5 hour threshold for that year, just barely edging the Company into the discretionary penalty zone. In considering whether to impose the penalty, the Commission considers extenuating circumstances and whether PGE violated PUC statutes or any accepted utility practices.

Following receipt of notification by Staff that PGE's 2015 CAIDI exceeded the threshold, PGE met with Safety Staff July 19, 2016. At the conclusion of the meeting, Safety Staff requested that PGE prepare a written response. This letter serves as PGE's response and explanation. The purpose of this response is to: 1) explain the underlying issues that contributed to PGE's 2015 R-4 CAIDI level, and 2) discuss efforts being undertaken to address many of those contributing factors, which PGE expects will help to improve its future performance on the R-4 CAIDI metric.

Primary Contributing Issue: Weather

1) In 2015, PGE experienced a high volume of smaller storms that did not quite meet the criteria to be excluded from reliability indicators reach the level of major storms, which are excluded from the CAIDI performance.[2] These storms were primarily high intensity, short duration wind events which caused damage to remote areas of PGE's distribution system. The fact that many of these storms were in remote locations, was a contributing factor to an increase in CAIDI, as outages in remote areas are more difficult to access and restore.

Secondary Issues

2) Technology—At the time that PGE worked with Staff on recommended thresholds for 2015 (in 2014), there was great optimism that PGE could continue to leverage our AMI (Advanced Metering Infrastructure) system to determine outages more quickly and deploy restoration crews more accurately. That is occurring and we are still analyzing the impact on CAIDI and other reliability metrics due to more accurate outage reporting achieved by our new Outage Management System (OMS) system, installed in August 2015. In addition, the new OMS system was highly integrated with the new Maximo Mobile and Scheduling (MMS) for work management and resource deployment and utilizing our new Geospatial Information System (GIS) systems. As we integrate these systems, and employees are adapting to and implementing the multiple changes associated with these new technologies, it has been difficult and some initial inefficiencies in outage response have resulted.

[2] See IEEE Standard 1366 on distribution reliability indices generally.

3) Service territory vehicle traffic--While we have not quantified the impact, we note that traffic in our service territory has significantly increased, compounding the time required for our crews to travel to the outage before they can begin restoration work. In a recent report, the City of Portland noted that Portland traffic increased as the economy became stronger, and is back to levels exceeding those seen prior to the Great Recession in 2008.[3] Similarly, the Oregon Department of Transportation noted, in August 2015, that highways are reaching and exceeding capacity. Traffic jams are seen not just during rush hours but all days, weekends and in areas not normally thought congested.[4] The increased traffic was also noted in the Governor's State of the State speech in April 2016.[5]

   Not only is it taking longer to travel to outages, as a result of the increased traffic congestion, the City of Portland is requiring PGE to perform more work during the night time hours as the City is not allowing lane closures during the day on many major roads. This requires PGE to perform more planned work at night, increasing the overall overtime per employee and reducing the number of employees available to take outage calls.

4) Line Crew Overtime - In 2015, PGE continued to see a trend of increased overtime worked by line crews. A 23 percent increase in new customer connects, combined with the increased storm activity, were key drivers of the increase in line crew outage overtime worked. This impacted availability of line crews to respond to the larger number of outages in 2015.

Targeted Improvements

- Starting in 2015 and continuing in 2016, in response to increased customer connects and capital work, PGE is increasing staffing. We have added 12 contract line crews to supplement PGE resources. Eventually, the increased staffing for the higher workloads will help distribute overtime demands across more employees and have more line crew personnel available to respond to outages, which should improve CAIDI.

- PGE is continuing to optimize the operation of new integrated software systems and provide ongoing training to operations employees. Better understanding and

[3] https://www.portlandoregon.gov/transportation/article/563991. In 2016, PGE provided data in support of the Portland Metro Commercial Travel Study. The data collected will be used throughout the metro area to assist in future commercial vehicle travel demands and assist in transportation investments and to better understand and influence planning for future commercial vehicle travel needs across the region. The study is being funded by ODOT on behalf of METRO.

[4] http://katu.com/news/local/portland-traffic-increased-6-percent-since-last-year

[5] http://portlandtribune.com/pt/9-news/301711-179210-state-agrees-portland-traffic-stalls-economy

use of the software systems should lead to improvement in CAIDI by increasing visibility and status of field crew resources in real-time. The new systems are capable of showing when a crew is assigned to an outage, enroute, and on-site. Crews are also able to electronically transmit damage assessment information into our dispatch centers. PGE upgraded the integration between the OMS and AMI systems in May, 2016. Prior to this date, meters were manually "pinged" to see if customers were without power. Outage notifications are now automatically sent to the OMS without the need of a manual process or waiting for customer calls. This new integration is also allowing PGE to leverage AMI data to audit outage events and capture more accurate customer outage events and durations, thus more accurately providing system performance metrics.

- Based on 2015 full year data, PGE is evaluating current practices for the management of customer outage events. We recently solicited Oracle to evaluate our performance and provide input from industry leaders to identify means to improve PGE's CAIDI performance. This includes evaluations of current systems/tools and staffing strategies for response and restoration to outage events

- In June 2016, PGE modified the ARCOS automated call out system software to reduce the time it takes to assemble crews for outage response. We continue to fine tune the automated system, and more line crew members are being called in a shorter time. These changes were a result of recent Labor/Management meetings directed at improving outage restorations.

<u>Longer Term actions</u>

- PGE is installing 'covered conductors' and tree wire in targeted locations to help mitigate weather, vegetation, and wildlife-related outages. The 'covered conductor' reduces faults related to tree limbs on lines--one of the major causes of outages during a wind storm. Past installations have proven effective in reducing the number of outages in areas where the covered conductor is installed, and help prevent some outages in heavily treed, weather exposed, and remote areas where outages tend to have longer durations. The tree wire is used on primary and secondary overhead distribution lines in heavily forested rights of way with historic outage interruptions. It is installed as an uninsulated conductor; its covering is effective in preventing direct shorts and instantaneous flashovers should tree limbs or other objects come in contact with the conductors.

- PGE is evaluating the use of distribution automation systems and their associated effects on reducing outage extent and duration. These systems may lead to a lower CAIDI value by automatically locating, isolating, and restoring service to unaffected sections of PGE's distribution system.

In closing, it is important to mention that SAIDI[6] and SAIFI[7] are the overarching metrics by which a utility's performance is measured at the national level. The CAIDI metric is calculated by dividing SAIDI by SAIFI (SAIDI/SAIFI=CAIDI). In 2015, PGE's SAIDI and SAIFI exceeded the OPUC's set performance goals with SAIDI at 75 minutes (goal 90; first penalty 105) and SAIFI at 0.48 occurrences (goal 1.0; first penalty 1.2).

Given our strong performance on these other customer centric reliability indicators, our commitment to continue our efforts discussed above, and the fact that we only slightly exceeded the threshold, PGE respectfully asks that the Commission not issue a penalty.

Should you have any questions regarding this filing, please contact George Jones at (503) 570-4554.

Please direct all formal correspondence and requests to the following email address pge.opuc.filings@pgn.com

Sincerely,

Larry Bekkedahl
Vice President, Transmission, and Distribution

[6] SAIDI is the sum of all customer interruption durations; it is the IEEE reliability indicator for a sustained service interruption that measures the system average interruption duration. It measures the total duration of a service interruption for the average customer during the specified time period. It is measured in minutes or hours and is calculated by taking the total of all customer interruption durations (total customer minutes of service interruption) divided by the total number of customers.

[7] SAIFI is the total number of customer interruptions; it is the IEEE reliability indicator that measures system average interruption frequency or the average number of times that a customer experiences an outage during the year. It is calculated by taking the total number of customers interrupted and dividing it by the total number of customers served.