



Portland General Electric
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March 20, 2020

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

RE: Advice No. 20-06, Revisions to Rule C on Emergency Curtailment & Updating the Short-Term Emergency Curtailment Plan

Portland General Electric Company (PGE) submits this filing with accompanying testimony to the Public Utility Commission of Oregon (Commission) pursuant to Oregon Revised Statutes 757.205 and 757.210, and Oregon Administrative Rules (OAR) 860-022-0025 for filing proposed tariff sheets associated with Tariff P.U.C. No. 18 with a requested effective of **April 21, 2020**.

First Revision of Sheet No. 689-2
First Revision of Sheet No. 689-6
First Revision of Sheet No. 689-8
First Revision of Sheet No. C-2

Enclosed for filing is the following Testimony of:

- Bob Frost and Michael O'Brien (PGE / 100)

Attachments A and B support this Advice Filing are attached and provide the following:

- Attachment A -Short Term Emergency Curtailment Plan in support of Rule C
- Attachment B- Courtesy redline of Schedule 689 and Rule C

PGE is filing tariff updates that includes revisions to Rule C, Section B regarding Emergency Curtailment of electric service in PGE's service territory. PGE is also filing an updated version of its Short Term Emergency Curtailment Plan, described in Rule C, Section B of PGE's tariff.

Based on the updates to Rule C, Section B, PGE is filing an update to Schedule 689 New Large Load Cost-of Service Opt-Out Special Conditions that reflect the updated changes to PGE's Emergency Curtailment Plan. Customers who select this schedule are on an interruptible schedule and subject to emergency curtailment. Additionally, two

housekeeping items related to Schedule 689 that clarify: (1) the calculation of average megawatts (MWa), and (2) the amount of time a customer has to sign a New Load Direct Access (NLDA) service agreement are included.

In UE 358 Order No. 20-002, the Commission invited PGE to file interim curtailment protocols for consideration which would describe when and how New Load Direct Access (NLDA) Customers would be curtailed in specific scenarios, so that cost-of-service customers are less likely to face cost shifts when Electricity Service Suppliers (ESSs) supplying NLDA customers fail to perform. Order No. 20-002 recognized that currently customers on Direct Access are not contributing to Resource Adequacy the same as Cost of Service customers. PGE looks forward to working with the Commission and stakeholders on a more permanent solution to address all customers fairly contributing to Resource Adequacy as part of Docket No. UM 2024.

There are two Commission approved curtailment plans in PGE's tariff: the Regional Curtailment Plan in Rule N which is triggered by state authorities during regional energy shortages, and the Short Term Emergency Curtailment Plan described in Rule C. PGE activates its Short Term Emergency Curtailment Plan under the circumstances that would alert the Company to a system emergency, events that threaten the performance, integrity, reliability or stability of PGE's electrical system. This filing does not affect PGE's Regional Curtailment Plan.

In addition to responding to the Commission's invitation directed at NLDA customers, PGE proposes updates to Rule C to reflect the applicable regional standards to which the Company adheres to maintain system reliability. PGE adheres to the North American Reliability Corporation (NERC) reliability standards and Western Electricity Coordinating Council (WECC) regional standards, and no longer adheres to the Willamette Valley/Southwest Washington Area (WILSWA) regional standards. PGE is also substituting the term "operating procedures" with "plan" to more accurately reflect the nature of the document that is periodically filed with the Commission.

The Short Term Emergency Curtailment Plan, included as Attachment A, provides a high-level overview of PGE's operating procedures and event reporting responsibilities when system conditions require curtailment of electric service in PGE's service territory. While PGE periodically files updates to its curtailment plan with the Commission, detailed operating procedures are more frequently updated internally to reflect changes in personnel, critical customer accounts, and critical feeders.

The Short Term Emergency Curtailment Plan contains several updates since its previous filing with the Commission, including the requirement to adhere to NERC reliability standards. These standards dictate how PGE responds to emergencies, documents actions taken to preserve reliability, and coordinates with PGE's Reliability Coordinator and other utilities.

In addition to the update and in response to the Commission's invitation, the attached Short Term Emergency Curtailment Plan describes the interim NLDA Curtailment Process. In brief, PGE will notify NLDA customers if feasible if PGE's Reliability Coordinator enters the Company into an Energy Emergency Alert (EEA) 1 which means an energy deficiency is anticipated in PGE's Balancing Authority Area. Should PGE enter into an EEA 2, which means load obligations cannot be met and interruptible non-firm load is shed, PGE will prioritize curtailing NLDA customers as a block. PGE will notify NLDA customers as time permits if curtailment is anticipated. However, as EEA levels are not always declared sequentially (i.e. PGE could immediately enter into EEA 2), such advance notification may not be feasible.

Several sections of the Short Term Emergency Curtailment Plan have been removed since the previous filing that included a detailed description of PGE's load shedding procedures. PGE is removing this section to keep the plan more high-level and concise.

Attachment A, the Short Term Emergency Curtailment Plan appendices include:

- Appendix A, Capacity Emergency Levels – details the merchant and NERC compliance requirements.
- Appendix B, Critical Load Feeder Criteria provides the critical load feeder criteria. This document informs, but is not reflective of, PGE's operational procedures for load shedding. The criteria for critical customers are provided, including hospitals, 911 call centers, police and fire stations, water and sewage treatment plants. This appendix was referred to as "Exempted Customer Criteria" in the previous version of the Plan. There are currently no NLDA Customers that meet the critical customer criteria.

Attachment B – As a courtesy, PGE is including a redline of Schedule 689 and Rule C.

PGE requests that the Commission issue an order that finds the revised tariff sheets and Short Term Emergency Curtailment Plan satisfy applicable statutes and administrative rules, including ORS 757.720. This plan is particularly designed to ensure that basic human needs are given priority in the allocation of energy resources. See ORS 469.010(2) (c). PGE will periodically update its Short Term Emergency Curtailment Plan. PGE will take an additional 30 days to operationalize the plan after its Emergency Curtailment Plan is allowed into effect.

To satisfy the requirements of OAR 860-022-0025, PGE responds as follows:

This change does not increase, decrease, otherwise change existing rates, or impact revenues.

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Please direct any questions regarding this filing to Chris Pleasant at (503) 464-2555.
Please direct your communications related to this filing to the following email address:
pge.opuc.filings@pgn.com.

Sincerely,

\s\ Robert Macfarlane

Robert Macfarlane
Manager, Pricing & Tariffs

Enclosures

Cc: UE 358 and UM 2024 service lists

SCHEDULE 689 (Continued)

APPLICABLE (Continued)

The expected load for each Customer will always be captured and counted toward the cap limit for the first 60 months of service. Following 60 months of service on Schedule 689, the customer's actual load factor (LF) will be applied to the contracted demand (MW) to calculate a customer's MWA to be captured and counted toward the New Large Load Program cap and the total amount of load under the limit will be adjusted at such time of inquiry, in accordance with actual loads.

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MONTHLY RATE

The Monthly Rate will be the sum of the following charges at the applicable Delivery Voltage per Service Point (SP)*:

	Delivery Voltage		
	<u>Secondary</u>	<u>Primary</u>	<u>Subtransmission</u>
<u>Basic Charge</u>	\$3,340.00	\$1,890.00	\$3,970.00
<u>Distribution Charges**</u>			
The sum of the following:			
per kW of Facility Capacity			
First 4,000 kW	\$1.53	\$1.49	\$1.49
Over 4,000 kW	\$1.22	\$1.18	\$1.18
per kW of monthly On-Peak Demand	\$2.61	\$2.53	\$1.27
<u>System Usage Charge</u>			
per kWh	(0.024) ¢	(0.025) ¢	(0.025) ¢
<u>Administrative Fee</u>	\$0.00	\$0.00	\$0.00

* See Schedule 100 for applicable adjustments.

** The Customer's load, as reflected in the opt-out agreement executed between the Customer and PGE, may be higher than that reflected in a minimum load agreement for purposes of calculating the minimum monthly Facility Capacity and monthly Demand for the SP, for any Customer with dedicated substation capacity and/or redundant distribution facilities.

SCHEDULE 689 (Continued)

The Existing Load Shortage Transition Adjustment for the first 60 months is equal to 75 percent of fixed generation costs plus net variable power cost transition adjustments during the first 60 months after enrollment in this rate schedule. The Existing Load Shortage Transition Adjustment after 60 months of service on this rate schedule is equal to 100 percent of fixed generation costs plus net variable power cost transition adjustments.

The Customer may be exempted from the Existing Load Transition Adjustment if the Customer can demonstrate that the change in load in question is not due to load shifting activity described in OAR 860-038-0740. The Company will provide written notification to the Customer at least 30 days prior to charging the Existing Load Shortage Transition Adjustment. The Customer must demonstrate the change in load by providing a written request for exemption that includes explanation for the change in load and support from available documentation. The Company will approve or deny the request of the Customer within 90 days and will not charge the Existing Load Transition Adjustment within this time period.

ENROLLMENT

The Customer must notify the Company of its intent to enroll in this Schedule and execute an opt out agreement at the earlier of one year prior to the expected energization date of the new meter or upon entering a written and binding service agreement for distribution service with the Company. The date of energization date will be agreed upon between the Customer and the Company within a written and binding agreement for service under this Schedule provided by the Company to the Customer. Upon energization, the customer will begin service on PGE daily market energy option until the Customer's chosen ESS commences service. Customer enrollment may be contingent upon additional agreements between the Company and the Customer, including but not limited to Minimum Load Agreements. The Company will not accept applications for service that exceed the current program cap, or load remaining under the enrolled cap. Customer applications with expectations of load to grow beyond the program cap will require separate application and approval by the Commission. (T)

A customer will have ten (10) business days to sign the NLDA service agreement once tendered by PGE. If a Customer executes an opt out agreement for Direct Access Service under this schedule, acceptance of an Enrollment Direct Access Service Request (DASR) is required by the Company. The Company will notify the ESS when to send the enrollment DASR. Prerequisites and notification requirements are as contained in Rule K. (C)
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Applicants that do not meet the conditions above, or that are found in breach of the opt out agreement between the Customer and the Company are not eligible for enrollment/continued enrollment under this rate schedule. If the Customer or the Customer's selected ESS cannot demonstrate creditworthiness, the Customer will not be eligible for service under this Rate Schedule and will be enrolled in an applicable cost-of-service based rate.

SCHEDULE 689 (Concluded)

SPECIAL CONDITIONS

1. The rate the Customer pays for Electricity may be higher or lower than the rates charged by the Company to similar Customers not taking service under this schedule, including competitors to the Customer.
2. Neither the Company, its employees and agents, the Commission nor any other agency of the State of Oregon has made any representation to the Customer regarding future Electricity prices that will result from the Customer's election of service under this schedule.
3. The Customer is selecting this schedule based solely upon its own analysis of the benefits of this schedule. The Customer has available to it energy experts that assisted in making this decision.
4. If the Customer is served at either primary or subtransmission voltage, the Customer will provide, install, and maintain on the Customer's premises all necessary transformers to which the Company's service is directly or indirectly connected. The Customer also will provide, install, and maintain the necessary switches, cutouts, protection equipment, and in addition, the necessary wiring on both sides of the transformers. If the distribution equipment serving the customer requires retrofitting to enable emergency curtailment, the customer is responsible for all incremental costs the company incurs to support the customer's emergency curtailment on this schedule. All transformers, equipment, and wiring will be of types and characteristics approved by the Company, and arrangement and operation of such equipment will be subject to the approval of the Company.
5. Customers selecting service under this Schedule will be limited to a Company/ESS Split Bill.
6. Customers under this schedule are put on notice through Commission Order No. 20-002, that the Commission intends that all system participants including NLDA customers, will be required to support resource adequacy. Should a change be justified in the future, it may be imposed on all NLDA customers. Further, when the Commission considers any future proposed changes or requirements, the Commission stated that it intends to disfavor grandfathering.
7. Customers selecting this service are on an interruptible schedule and subject to Emergency Curtailment should PGE's Reliability Coordinator declare PGE is in an Energy Emergency Alert 2, which is when the Company will begin shedding interruptible load. In the event of curtailment, PGE will notify customers as time permits; however, such advance notification may not be feasible. Being subject to Emergency Curtailment is intended to be an interim solution, pending the Oregon Public Utility Commission's decision on the contribution to resource adequacy by all customers as noted in Commission Order No. 20-002.

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B. Short Term Emergency Curtailment

During short term curtailment emergencies, the Company may find it necessary or prudent to protect the performance, integrity, reliability, or stability of the Company's electrical system or any electrical system with which it is interconnected by initiating an Emergency Curtailment. A system emergency includes, but is not limited to, events caused by extreme weather, the temporary loss of a major generating plant or transmission facilities, or conditions that violate the North American Reliability Corporation (NERC) standards, or conditions that violate the operating requirements set forth by the Company's Reliability Coordinator. , The Company will contact the Commission prior to an Emergency Curtailment unless circumstances deem prior notice impracticable. Upon the instigation of an Emergency Curtailment, the Company will begin complying with its Curtailment Operating Plan to restore system stability.

The Company's Curtailment Plan and underlying operating procedures include, but are not limited to, steps for implementing rotating outages. During rotating outages the Company would discontinue Electricity Service to a specific number of circuits for approximately one-hour periods. If, after the first hour, system integrity were still in jeopardy, the circuits initially curtailed would have service restored while a second block of circuits would simultaneously have service discontinued. This cycle would continue until the Company determined that system emergency conditions no longer existed. Facilities deemed necessary to public health, safety and welfare are excluded from the rotating outage, as well as feeders serving Customers participating in the Schedule 88, Load Reduction Program.

During system emergencies, Customers having their own generation facilities or access to Electricity from non-utility power sources may choose to use energy from those other sources.

The Company will not initiate its Curtailment Plan to avoid the purchase of high priced power. The Curtailment Plan is periodically updated and submitted to the Commission.

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I. Introduction

1 **Q. Please state your names and positions with Portland General Electric (“PGE”).**

2 A. My name is Bob Frost. I am the Manager of Grid Engineering and Compliance for Portland
3 General Electric Company (PGE).

4 My name is Michael O’Brien. I am a Regulatory Consultant in Rates and Regulatory
5 Affairs at PGE.

6 Our qualifications are included at the end of this testimony.

Purpose and Background

7 **Q. What is the purpose of your testimony?**

8 A. The purpose of this testimony is to support Portland General Electric Company’s (PGE)
9 Advice No. 20-002 which updates PGE’s Rule C, Section B regarding Emergency
10 Curtailment of electric service and PGE’s Short-Term Emergency Curtailment Plan, also
11 described in Rule C, Section B. The changes are twofold: 1) several “housekeeping” changes
12 incorporate the current applicable regional standards governing the Company’s practices to
13 maintain system reliability and 2) PGE’s interim curtailment protocols are updated to describe
14 when and how New Load Direct Access (NLDA) Customers would be curtailed in specific
15 scenarios, in accordance with the Commission’s Order No. 20-002 (UE 358).

16 **Q. Please provide more background on the Commission’s Order No. 20-002 and curtailing
17 NLDA customers?**

18 A. The Order concluded a contested docket investigating PGE’s proposed NLDA tariff. Among
19 the contested issues in UE 358, was whether NLDA customers fairly contributed to reliability
20 and resource adequacy. In its Order, the Commission decided to address the issue of resource
21 adequacy and fair contribution to system reliability, among other issues, in a general

1 investigation on direct access (UM 2024). Additionally, in its Order No 20-002 (UE 358) the
2 Commission invited PGE to file revised curtailment protocols for NLDA customers that
3 would apply pending the outcome of UM 2024. Finally in its Order the Commission put all
4 NLDA and LTDA customers on notice “that it is our intention to ensure that all system
5 participants contribute tangibly to BA RA, and that one way or another...will be required to
6 support RA.” Consistent with the Commission’s Order, PGE’s is submitting its revised
7 curtailment protocols to mitigate the risk of curtailment to PGE’s cost of service customers
8 with the intent to make it less likely that cost-of-service customers would face cost shifts when
9 Electricity Service Suppliers (ESSs) supplying NLDA customers fail to perform through
10 insufficient contribution to resource adequacy.

11 **Q. Where does this filing fit in the larger context of PGE’s strategy and Oregon’s policy**
12 **direction?**

13 A. PGE’s strategy is to decarbonize, electrify and perform—while being guided by values that
14 include reliability and affordability. In this filing PGE is addressing a fundamental fairness
15 issue associated with NLDA. Specifically, the reliability benefits NLDA customers receive
16 while not adequately contributing resource adequacy and the associated costs. Currently, the
17 Commission and stakeholders are engaged in UM 2024 with the objective of achieving a
18 longer run solution to the question of how all system participants, including direct access
19 customers, contribute to resource adequacy. PGE is actively participating in that docket and
20 believes that it should be allowed to run its course so the Commission can fully consider the
21 matters at hand. In the interim, PGE’s curtailment proposal will prevent NLDA customers
22 from shifting risks and costs onto cost-of-service customers. PGE is ultimately responsible for
23 maintaining its balancing authority area and serves as the reliability provider for all customers

1 regardless of their energy supplier. This is becoming increasingly challenging as coal plants
2 are retiring and replacement resources are not being developed at a sufficient pace, if at all, to
3 replace these plants. Additionally, PGE must also be concerned about keeping customer prices
4 affordable through fair allocation. Affordability requires making sure all customers contribute
5 to reliability, resource adequacy and programs that benefit them and that no one group of
6 customers is disproportionately burdened. Excluding NLDA customers from the costs of, or
7 contributions to, resource adequacy shifts reliability risks from them to PGE's cost-of service
8 customers. Until the Commission addresses RA, how it is provided, and who has what
9 obligations, these curtailment protocols are important to prevent a disproportionate burden
10 from being placed on PGE's cost-of service customers.

11 **Q. Is PGE's curtailment proposal a permanent solution to its concerns over NLDA**
12 **customers contributing to resource adequacy?**

13 A. No. Per the Commission's direction that it would address all system participants (ESSs and
14 customers) contributing to reliability and resource adequacy in UM 2024, this is an interim
15 measure. If our revised curtailment protocols are approved, they would only be in effect until
16 the Commission resolves these issues in UM 2024, after which the appropriate changes would
17 be implemented.

18 **Q. Does PGE intend for its curtailment protocols to lead to meaningful RA contributions**
19 **or solve RA?**

20 A. No. We recognize that curtailment does not provide RA or solve the current RA issues at hand.
21 Generally, curtailment is an emergency procedure and should be reserved for emergencies.
22 These revised curtailment protocols are important to have in place, pending a longer-term
23 solution expected from UM 2024. While no planned curtailment is optimal, this proposed

1 interim protocol is the best solution for right now and has been developed to fit within the
2 many regulatory requirements from various jurisdictions (Federal Energy Regulatory
3 Commission (FERC), North American Electric Reliability Corporation (NERC), and the
4 Oregon Public Utilities Commission (OPUC)) that impose requirements on PGE as reliability
5 provider and balancing authority, as well as meet PGE operational concerns. When NLDA
6 customers are paying or contributing their fair share to resource adequacy, then PGE will
7 revise these curtailment protocols accordingly. PGE’s advocacy in UM 2024 will continue to
8 encourage ESSs, direct access customers and PGE work together for our RA planning needs
9 and ensure enough resources are in place ahead of time so curtailment does not become
10 necessary.

Design Considerations

11 **Q. How did PGE go about designing the revised curtailment protocols? What standards**
12 **apply?**

13 A. Curtailment is a complex operational issue and requires consideration of several federal and
14 state standards and requirements that are in place to maintain the safety and reliability of the
15 bulk electrical system. To design the revised curtailment protocols, we considered the
16 following: the NERC standards and requirements, the FERC jurisdiction including PGE’s
17 Open Access Transmission Tariff (OATT) which is approved by FERC, PUC jurisdiction
18 which has oversight of PGE’s operating tariff and PGE’s own operating procedures. To
19 design curtailment protocols that effectively navigated this complex set of standards and
20 considerations, PGE sought the expertise of several subject matter experts in the Company’s
21 Substation and Grid Engineering, Grid Asset Operations, Distribution Engineering, Business

1 Customer Group, Rates and Regulatory Affairs, Transmission Services and Legal
2 departments.

3 **Q. Please describe how the NERC standards applied to the design of the revised protocols?**

4 A. The first task in designing curtailment protocols for NLDA, is determining what would
5 circumstances would require PGE to take a curtailment action. NERC Standard EOP-011-1 –
6 Emergency Operations informs these curtailment protocols by defining the proposed triggers
7 for curtailment, Energy Emergency Alerts (EEAs). EEAs are a series of alerts that indicate
8 electric system conditions that may require the use of emergency procedures. They are
9 designed to protect the reliability of the electric system as a whole and prevent an uncontrolled
10 system-wide outage. NERC Standard EOP-011-1 Attachment 1 defines the Energy
11 Emergency Alert (EEA) levels that a Balancing Authority’s Reliability Coordinator (RC)
12 might declare. The RC is a NERC-designated function and has the highest level of authority,
13 responsible for the reliable operation of the Bulk Electric System in its area, including the
14 authority to prevent or mitigate emergency operating situations. PGE receives RC services
15 from RC West. PGE designed an approach in its curtailment protocols that is in line with
16 EOP-011-1 Requirement 2, which includes “Use of Interruptible Load, curtailable Load and
17 demand response” as possible processes that Balancing Authorities should include in their
18 emergency operating plan(s) to mitigate capacity and energy emergencies. EOP-011-1 also
19 lists Demand-Side Management as a resource that a Balancing Authority would be expected
20 to make use of prior to requesting the highest level of Energy Emergency Alert, Level 3 (EEA
21 3). PGE describes EEAs in greater detail later in this testimony. Additionally, PGE
22 considered NERC Standard IRO-001-4 – Reliability Coordination – Responsibilities, which
23 requires the RC to act to address the reliability of its area, and which obligates Balancing

1 Authorities to comply with any instructions they receive from their RC. In designing the
2 protocol, the Company was careful to ensure the design fit within the NERC and IRO
3 standards.

4 **Q. Why does PGE’s proposed curtailment protocol not rely on ESS submitted schedules**
5 **(NERC electronic tags)?**

6 A In Order No. 20-002 the Commission opined that an issue related to the ESS scheduling
7 accuracy should be addressed through an update filing to PGE’s OATT with FERC. Thus, in
8 considering revised curtailment protocols, PGE avoided a design that would take into effect,
9 the scheduling and delivery practices of the ESS, as the Commission has already taken the
10 position that such a matter should first be brought to FERC.

11 **Q. Does the proposed curtailment protocol impact any other aspects of PGE’s OATT?**

12 A. No. FERC and the OPUC require ESSs to purchase or provide the ancillary services detailed
13 in the OATT.¹ These services include contingency reserves, which are available in limited
14 circumstances as defined by the NERC BAL-002 Standard, regulation, and voltage support.
15 PGE’s proposed curtailment protocol does not modify or replace these required services and
16 ESSs will continue to be required to procure or provide these ancillary services consistent
17 with the OATT. Additionally, while these required ancillary services are important to the real-
18 time operation of the grid, they are not substitutes for RA and should not be considered as
19 such by the Commission. We understand this issue is further being addressed in UM 2024.

20 **Q. Please describe the operational and OPUC tariff considerations?**

¹ See PGE’s Pro Forma Open Access Transmission Tariff, Attachment N

1 A. Throughout our investigation into curtailing NLDA customers we considered what was
2 practical, what would have limited impact to both NLDA and cost-of-service customers but
3 still support reliability requirements, and what was technologically feasible, while cost
4 effective. PGE considered tariff Rule C, Section B which states that the Company will not
5 initiate its Curtailment Operating Plan to avoid the purchase of high-priced power. In fact,
6 purchasing high priced energy is among the steps PGE would take, and has taken, to avoid an
7 Emergency Energy Alert. We rejected a design that took into account initiating curtailment
8 if the Locational Average Price market prices were to exceed a certain threshold.

PGE's Proposed Curtailment Design

9 **Q. Given the above design considerations and limitations, please explain PGE's proposed**
10 **interim curtailment solution.**

11 A. PGE's proposal is to implement NLDA curtailment if the Company is moved to an EEA 2 or
12 higher. If the Company were operating under normal conditions and was anticipating an EEA
13 1 for any reason it would provide notice to NLDA customers that the curtailment protocol is
14 active and NLDA customers may be curtailed. If the RC moved PGE beyond EEA 1, PGE
15 would implement the NLDA curtailment and use best efforts to provide customers with notice
16 that a curtailment is imminent.

17 **Q. Please describe the Energy Emergency Alert levels and how the Reliability Coordinator**
18 **enters the company into an EEA?**

19 A. EEAs are a series of alerts that indicate electric system conditions may require the use of
20 emergency procedures. They are designed to protect the reliability of the electric system as a
21 whole and prevent an uncontrolled system-wide outage and could be invoked for either
22 capacity or energy emergencies. The following describes the levels of Energy Emergency

1 Alerts. Levels. The RC can institute EEAs in whatever order is necessary; there is no
2 requirement for it to be sequential:

3 • **EEA 1** indicates that all available generation resources are in use. The circumstances in
4 which an EEA 1 could be called, are: 1) a Balancing Authority is experiencing
5 conditions where all available generation resources are committed to meet firm Load,
6 firm transactions, and reserve commitments, and the Balancing Authority is concerned
7 about sustaining its required Contingency Reserves, and 2) non-firm wholesale energy
8 sales (other than those that are recallable to meet reserve requirements) have been
9 curtailed.

10 • **EEA 2** indicates that load management procedures are in effect. The circumstances are:
11 1) a Balancing Authority is no longer able to provide its expected energy requirements
12 and is an energy deficient Balancing Authority, 2) an energy deficient Balancing
13 Authority has implemented its Operating Plan(s) to mitigate Emergencies, and 3) an
14 energy deficient Balancing Authority is still able to maintain minimum Contingency
15 Reserve requirements.

16 • **EEA 3** indicates that firm load interruption is imminent or in progress. This may be
17 declared when the energy deficient Balancing Authority is unable to meet minimum
18 Contingency Reserve requirements. RC West procedures dictate that, before
19 requesting an EEA 3, the energy-deficient BA must make use of all available resources;
20 this includes, but is not limited to: Ensuring all available generation units are online
21 and all generation capable of being on line within the time frame of the Emergency is
22 on line. Activating Demand-Side Management within provisions of any applicable
23 agreements.

Calling and Preventing an Energy Emergency

1 **Q. Please describe when PGE's RC, RC West, would initiate an Energy Emergency Alert**
2 **for PGE?**

3 A. RC West would initiate an Energy Emergency Alert for PGE either at the request of PGE's
4 Balancing Authority or when deemed necessary by the RC Operator. The RC may declare
5 whatever alert level is necessary and need not proceed through the alerts sequentially. The
6 RC must determine that the circumstances of each level listed above have been met in order
7 to declare that EEA level. After an EEA has been declared, if PGE's Balancing Authority is
8 subsequently able to meet its load and operating reserve requirements, it will request that the
9 RC terminate the EEA.

10 **Q. What efforts does PGE take to prevent an EEA from occurring or from progressing into**
11 **a more serious EEA?**

12 A. If PGE anticipates deficiencies, PGE's System Control Center (SCC) Operators can take
13 several near-term actions such as requesting that PGE's real-time power operations team
14 attempt to purchase power in the real-time market, calling on reserve sharing resources from
15 the Northwest Power Pool, or requesting that any offline PGE generation that may be available
16 or set aside to handle load excursions be brought online. Once in an EEA, PGE will implement
17 provisions of its Emergency Operations Plan to prevent entry into an EEA 3. These efforts
18 may include, public appeals to reduce demand, voltage reduction, emergency interruption of
19 non-firm end-use loads in accordance with PGE Schedule 88 contract tariffs and demand-side
20 management. Attachment A, Capacity and Emergency Levels, which is included in this filing,
21 details the protocols PGE follows for EEA's.

Operations Plan to Carry out NLDA Curtailment

1 **Q. Please explain how PGE is proposing to carry out curtailment of a NLDA customer's**
2 **Load if put into an EEA?**

3 A. PGE's proposal is to curtail all NLDA customer load in the event of an EEA 2 or EEA 3.
4 PGE will curtail all NLDA customers as a single "load block" in PGE's Energy Management
5 System (EMS). The following details how curtailment would occur:

6 If PGE is entered into an EEA 2, SCC operators would de-energize the NLDA load block and
7 leave it de-energized until the RC terminated the EEA. Curtailing the NLDA customer load
8 has the potential to reduce the length of time PGE is in an EEA and could prevent PGE from
9 moving into an EEA 3 and impacting its non-NLDA customers. If PGE is entered into an EEA
10 3, SCC operators would de-energize the NLDA load block prior to implementing rotating
11 outages of cost-of-service customers and would leave the block de-energized until RC
12 terminated the EEA. Curtailing the NLDA customer load may prevent PGE from having to
13 shed firm cost-of-service customer load.

14 **Q. Why did PGE decide to curtail NLDA customers only beginning at an EEA 2 or higher?**

15 A PGE did consider curtailing NLDA customers in EEA 1 situations but decided against it
16 because, as stated previously, PGE would still be able to provide service to all customers even
17 though all generating resources would be committed to meet firm load, firm transactions and
18 reserve commitments.

19 **Q. Prior to the emergency curtailment of NLDA customer loads, would PGE provide notice**
20 **to those customers?**

21 A. If PGE were to enter into an EEA 1 and time permitted, it would make efforts to notify NLDA
22 customers that curtailment is anticipated. However, as noted above, an EEA 1 would not

1 always precede an EEA 2 or EEA 3 and advance notification of curtailment may not be
2 practicable.

3 **Q Will PGE compensate the NLDA customer for curtailment?**

4 A. No. The customer will be taking service subject to the PUC's orders and PGE's tariff. Upon
5 the Commission's acceptance of PGE's revised curtailment protocols, PGE will submit as a
6 compliance filing, its updated Schedule 689 for NLDA adding the curtailment and
7 interruptible schedule language. We will also communicate with customers who have
8 notified PGE of their intent to participate in NLDA of these changes.

9 **Q. Will PGE compensate an ESS for curtailing a NLDA customer?**

10 A. It is important to note that PGE will curtail the NLDA customer, not the ESS. However,
11 depending on how much energy the ESS has scheduled to serve all their customers on Direct
12 Access, not just NLDA, in the hour that PGE is put into an EEA, the ESS will be settled based
13 on Schedule 4R in PGE's OATT filed with FERC at the hourly LAP for any energy imbalance
14 between PGE and the ESS. This could result in a credit or a charge to the ESS.

15 **Q. Why didn't PGE consider whether the ESS's delivery of energy was sufficient to meet
16 its customers' loads at the precise time of an Energy Emergency Alert, as the basis for
17 emergency curtailment?**

18 A. As mentioned previously in this testimony, the Commission stated in the UE 358 order that
19 ESS scheduling is an issue best suited for FERC. Moreover, the ESSs scheduled delivery and
20 total load forecast are the same. At present, ESSs do not provide a separate load forecast. Their
21 NERC e-tag serves as both their forecast and scheduled delivery. This means PGE would have
22 no way of knowing if the ESS delivery is insufficient.

1 **Q. How many times, in the last 10 years, has PGE been put into an EEA? And what**
2 **triggered them?**

3 A. PGE has had two EEAs declared in the past 10 years. The first event, on July 21, 2016, was
4 an EEA 1. This event was triggered by two Colstrip units tripping offline, curtailment by
5 BPA of a schedule into PGE’s BAA due to transmission issues, and the unexpected
6 unavailability of the Boardman plant. The EEA 1 lasted approximately three hours and 40
7 minutes.

8 The second event, on December 8, 2016, was an EEA 2 and was triggered by two of PGE’s
9 generation units tripping offline, the reduction of a wind schedule from BPA, and the
10 unwillingness of some counterparties to sell in-hour due to their EIM participation. The
11 Reliability Coordinator initially declared an EEA 1 but adjusted that to an EEA 2 five minutes
12 later. The EEA lasted approximately 38 minutes.

13 **Q. So, given the explanation of two EEAs in ten years, would PGE agree that this is a rare**
14 **occurrence?**

15 A. Not necessarily. The region and the broader WECC footprint is transitioning to a time of
16 resource deficiency due to the announced retirement of significant amounts of firm capacity
17 across the footprint.² At the same time, states, utilities, and other entities are pursuing
18 aggressive decarbonization or renewable policies to combat the climate change, thus
19 furthering the structural shift in the regional resource mix. While these variable or energy
20 limited resources do contribute to the capacity needs of the region, they are not a direct
21 substitute for the traditionally “baseload” resources that will be exiting the system over the
22 next decade. The Company believes it is reasonable to expect that historically infrequent

² Table 6-6, EIA Electric Power Monthly Report, January 2020 edition

1 events, such as EEAs, have the potential to be more likely in the future. In addition, there are
2 periodic transmission constraints and little regional investment in transmission. For example,
3 The California Independent System Operator (CAISO), now the RC for a large part of the
4 WECC footprint, reported to its Board of Governors at the September 2019 meeting that recent
5 summer peak conditions had resulted in situations where the CAISO “had only 114MW of
6 capacity remaining before deploying reserves...” and actions were needed to address looming
7 2020 and 2021 resource shortages on the order of 2,000 MW to 4,000MW, respectively.^{3,4}
8 There are encouraging resource adequacy efforts occurring at both the regional level (The
9 Northwest Power Pool) and the state level (OPUC Docket No. UM 2024) and the Company
10 is actively participating in both, but these efforts will require significant time to development
11 and implement before their resource adequacy related benefits can be realized.

12 **Q. Please explain any additional costs customers who elect to go NLDA may incur as a result**
13 **of PGE’s proposed curtailment protocol?**

14 **A.** If the NLDA customer’s load is not on a dedicated feeder, meaning PGE cannot curtail the
15 customer’s load without affecting other customer loads on the same feeder, then retrofitting
16 is required. The customer will be responsible for any incremental equipment and other costs
17 the Company incurs to support the customer’s election to participate in NLDA before a long
18 -term solution is determined by the PUC on RA contribution by all customers. PGE’s
19 interpretation of Order 20-002 allows for customers who select this service to be on an
20 interruptible schedule and subject to emergency curtailment in the interim until a more
21 permanent solution to support RA is developed as part of the UM 2024 investigation.

³ CEO Report, CAISO September 2019 Board of Governors Meeting

⁴ Briefing on Post 2020 Grid Operational Outlook, CAISO September 2019 Board of Governors Meeting

1 **Q. Mr. Frost, please state your educational background and qualifications.**

2 A. I received a Bachelor of Science degree in Applied Physics with a minor in Mathematics from
3 Linfield College in 1988. Prior to my current position, I was the manager of PGE's Balancing
4 Authority for eight years after having worked as an SCC operator for eleven years. I have
5 worked in PGE's System Control Center for a total of 22 years.

6 **Q. Mr. O'Brien, please state your educational background and qualifications.**

7 A. I hold a Ph.D. in Physics from the University of Birmingham, in the United Kingdom, which
8 included an MSc in the Physics and Technology of Nuclear Reactors. I also hold a BSc(Hons)
9 in Physics from the University of Birmingham. After post-doctoral research with the United
10 Kingdom Atomic Energy Authority, I completed an MPhil in Technology Policy at the
11 University of Cambridge. Following Cambridge, I worked for the UK Parliamentary Office
12 of Science and Technology as Energy Advisor, and then for the House of Commons Energy
13 and Climate Change Select Committee as Committee Specialist. On moving to the United
14 States in June 2012, I worked at Renewable Northwest, leaving as Regulatory Director in
15 October 2019. Since January 2020, I have worked as a Regulatory Consultant in the Strategy
16 and Policy section of Rates and Regulatory Affairs at PGE.

17 **Q. Does this conclude your testimony?**

18 A. Yes.

PGE Advice No. 20-06
Attachment A
Short Term Emergency Curtailment Plan in support of Rule C

APPENDIX A

APPENDIX A – Capacity & Energy Emergency Levels

PGE Merchant and System Control Center Operators rely on both an internal process for defining and addressing energy deficiencies as well as NERC-defined Energy Emergency Alert Levels and actions. When any of these alert levels are met, PGEM and/or System Control Center emergency procedures are activated. System Control Center Operators have the responsibility and authority to take and direct real-time actions to protect and maintain the reliability and integrity of the electrical system.

PGE Merchant Capacity and Energy Alert Levels

The following is a summary of the internal PGE alert levels:

Blue Alert:

Declared by PGE Real Time Pre-Schedule Merchant or Real Time Merchant. PGE has some concern about meeting current electricity demand. Includes 1 or more of the following conditions, 1 or more days in advance:

- A forecasted capacity deficit greater than 10% of forecasted peak load exists, **AND**
- Pre-Schedule markets lack liquidity to provide sufficient energy to cover forecasted peak Balancing Authority (including ESS) load, **AND**
- Real Time markets are anticipated to have insufficient energy to meet forecasted peak loads.

Yellow Alert:

Declared by PGE Real Time Merchant. PGE has some concern about meeting current electricity demand. Includes the following conditions:

- No offline generation is available.
- A forecasted capacity deficit greater than 10% of peak load remains unfilled from preschedule or by loss of generation, **AND**
- Real Time markets lack liquidity to provide sufficient energy to cover forecasted peak Balancing Authority (including ESS) load.

Orange Alert:

Declared by PGE Real Time Merchant or Balancing Authority. PGE's energy situation has escalated to a higher probability of an energy shortage occurring. All the conditions of a Yellow Alert continue to exist with any of the following conditions, unless otherwise foreseen and not correctable:

- Concerned about maintaining firm transactions and sustaining PGE required operating reserves.
- Insufficient response from the Merchant Alert Protocol (MAP) issued by PGEM.

- PGE is receiving notice of regional transactions being curtailed.
- Inability to meet CPS and DCS standards – consider entry into the appropriate NERC Emergency Energy Alert (EEA) level. Entry into NERC EEA levels should be considered. EEA declarations are made by the Reliability Coordinator on behalf of PGE.

Red Alert:

Despite taking all available actions by PGE's Merchant, or the Balancing Authority through the Reserve Sharing Group (Northwest Power Pool [NWPP]), if the Balancing Authority foresees or is experiencing conditions where all available resources are committed to meet PGE's firm load, firm transactions, and reserve commitments, and all PGE's curtailable wholesale sales have been curtailed, concern still exists about sustaining PGE's required operating reserves. Actions by the Balancing Authority are imminent.

NERC Energy Emergency Alert Levels

The following Energy Emergency Alert Levels are defined by NERC in Reliability Standard EOP-011:

ENERGY EMERGENCY ALERT 1 – All Available Resources in Use

Circumstances:

- PGE's Balancing Authority is experiencing conditions where all available generation resources are committed to meet firm Load, firm transactions, and reserve commitments, and is concerned about sustaining its required Contingency Reserves, **AND**
- Non-firm wholesale energy sales (other than those that are recallable to meet reserve requirements) have been curtailed.

ENERGY EMERGENCY ALERT 2 – Load Management Procedures in Effect

Circumstances:

- PGE Balancing Authority is no longer able to provide its expected energy requirements, and is an energy deficient Balancing Authority.
- PGE Balancing Authority foresees or has implemented provisions of its Emergency Operations Plan up to, but excluding, interruption of firm load commitments. Time permitting, these efforts may include:
 - Public appeals to reduce demand.
 - Voltage reduction.
 - Emergency interruption of non-firm end use loads in accordance with PGE Schedule 88 contract tariffs.
 - Demand-side management (all activities or programs undertaken by PGE or its customers to influence the amount or timing of electricity they use).
 - PGE Balancing Authority is still able to maintain minimum Contingency Reserve



requirements.

ENERGY EMERGENCY ALERT 3 – Firm Load Interruption Imminent or in Progress

Circumstances:

- PGE Balancing Authority is unable to meet minimum Contingency Reserve requirements.

PGE's Response to Energy Deficient Declaration by Another Balancing Authority

The PGE merchant (PGEM) with available resources shall immediately contact the Energy Deficient Entity. This should include the possibility of selling non-firm (recallable) energy out of available Operating Reserves.

PGE Balancing Authority shall approve emergency e-Tags provided the Generation and Transmission capabilities are available.

Appendix B
Categories of Facilities Considered for Exclusion from Rotating Outage Curtailment

Category of Facility	Definition
Hospitals	All hospitals with 24/7 admittance and emergency care
911 Centers	Facilities operated on a 24-hour basis, which receive 911 calls and dispatch emergency response services, or transfer or relay 911 calls to other public safety agencies
Emergency Media	Radio and TV broadcast services that provide emergency notification
Emergency Operations Centers	County, city, special district, agency, critical infrastructure key responder, state and federal emergency operations centers
Police/Fire Stations	Police and fire stations
Detention Centers	County, state and federal correctional facilities housing inmates on a 24/7 basis
Water Supply	Water supply intakes, water treatment plants and water supply facilities housing command and control staff, SCADA controls, data centers, pump stations required to maintain water for fire suppression
Waste Water	Waste water treatment facilities and other waste water facilities housing command and control staff, SCADA controls, data centers, etc.
Transportation	All Level II airports (as defined by the FAA), aviation control facilities, TriMet lightrail system, drawbridges, and traffic control
Communications Facilities	Communications facilities and infrastructure critical to emergency response and keeping the telephone network operating
Electric Infrastructure	Electricity industry facilities housing critical operations. Includes critical generation, transmission and distribution infrastructure. (includes PGE service center facilities)
Metropolitan Network Electrical Service	All feeders in the Portland and Salem area that provide network service

PGE Advice No. 20-06
Attachment B
Courtesy redline of Schedule 689 and Rule C

SCHEDULE 689 (Continued)

APPLICABLE (Continued)

The expected load for each Customer will always be captured and counted toward the cap limit for the first 60 months of service. Following 60 months of service on Schedule 689, the customer's actual load of the customer factor (LF) will always be applied to the contracted demand (MW) to calculate a customer's MWA to be captured and counted toward the New Large Load Program cap and the total amount of load under the limit will be adjusted at such time of inquiry, in accordance with actual loads.

MONTHLY RATE

The Monthly Rate will be the sum of the following charges at the applicable Delivery Voltage per Service Point (SP)*:

	Delivery Voltage		
	<u>Secondary</u>	<u>Primary</u>	<u>Subtransmission</u>
<u>Basic Charge</u>	\$3,340.00	\$1,890.00	\$3,970.00
<u>Distribution Charges**</u>			
The sum of the following:			
per kW of Facility Capacity			
First 4,000 kW	\$1.53	\$1.49	\$1.49
Over 4,000 kW	\$1.22	\$1.18	\$1.18
per kW of monthly On-Peak Demand	\$2.61	\$2.53	\$1.27
<u>System Usage Charge</u>			
per kWh	(0.024) ¢	(0.025) ¢	(0.025) ¢
<u>Administrative Fee</u>	\$0.00	\$0.00	\$0.00

* See Schedule 100 for applicable adjustments.

** The Customer's load, as reflected in the opt-out agreement executed between the Customer and PGE, may be higher than that reflected in a minimum load agreement for purposes of calculating the minimum monthly Facility Capacity and monthly Demand for the SP, for any Customer with dedicated substation capacity and/or redundant distribution facilities.

SCHEDULE 689 (Continued)

The Existing Load Shortage Transition Adjustment for the first 60 months is equal to 75 percent of fixed generation costs plus net variable power cost transition adjustments during the first 60 months after enrollment in this rate schedule. The Existing Load Shortage Transition Adjustment after 60 months of service on this rate schedule is equal to 100 percent of fixed generation costs plus net variable power cost transition adjustments.

The Customer may be exempted from the Existing Load Transition Adjustment if the Customer can demonstrate that the change in load in question is not due to load shifting activity described in OAR 860-038-0740. The Company will provide written notification to the Customer at least 30 days prior to charging the Existing Load Shortage Transition Adjustment. The Customer must demonstrate the change in load by providing a written request for exemption that includes explanation for the change in load and support from available documentation. The Company will approve or deny the request of the Customer within 90 days and will not charge the Existing Load Transition Adjustment within this time period.

ENROLLMENT

The Customer must notify the Company of its intent to enroll in this Schedule and execute an opt out agreement at the earlier of one year prior to the expected energization date of the new meter or upon entering a written and binding service agreement for distribution service with the Company. The date of energization date will be agreed upon between the Customer and the Company within a written and binding agreement for service under this Schedule provided by the Company to the Customer. Upon energization, the customer will begin service on PGE daily market energy option until the Customer's chosen ESS commences service. Customer enrollment may be contingent upon additional agreements between the Company and the Customer, including but not limited to Minimum Load Agreements. The Company will not accept applications for service that exceed ~~to~~ the current program cap, or load remaining under the enrolled cap. Customer applications with expectations of load to grow beyond the program cap will require separate application and approval by the Commission.

A customer will have ten (10) business days to sign the NLDA service agreement once tendered by PGE. If a Customer executes an opt out agreement for Direct Access Service under this schedule, acceptance of an Enrollment Direct Access Service Request (DASR) is required by the Company. The Company will notify the ESS when to send the enrollment DASR. Prerequisites and notification requirements are as contained in Rule K.

Applicants that do not meet the conditions above, or that are found in breach of the opt out agreement between the Customer and the Company are not eligible for enrollment/continued enrollment under this rate schedule. If the Customer or the Customer's selected ESS cannot demonstrate creditworthiness, the Customer will not be eligible for service under this Rate Schedule and will be enrolled in an applicable cost-of-service based rate.

SCHEDULE 689 (Concluded)

SPECIAL CONDITIONS

1. The rate the Customer pays for Electricity may be higher or lower than the rates charged by the Company to similar Customers not taking service under this schedule, including competitors to the Customer.
2. Neither the Company, its employees and agents, the Commission nor any other agency of the State of Oregon has made any representation to the Customer regarding future Electricity prices that will result from the Customer's election of service under this schedule.
3. The Customer is selecting this schedule based solely upon its own analysis of the benefits of this schedule. The Customer has available to it energy experts that assisted in making this decision.
4. If the Customer is served at either primary or subtransmission voltage, the Customer will provide, install, and maintain on the Customer's premises all necessary transformers to which the Company's service is directly or indirectly connected. The Customer also will provide, install, and maintain the necessary switches, cutouts, protection equipment, and in addition, the necessary wiring on both sides of the transformers. If the distribution equipment serving the customer requires retrofitting to enable emergency curtailment, the customer is responsible for all incremental costs the company incurs to support the customer's emergency curtailment on this schedule. All transformers, equipment, and wiring will be of types and characteristics approved by the Company, and arrangement and operation of such equipment will be subject to the approval of the Company.
5. Customers selecting service under this Schedule will be limited to a Company/ESS Split Bill.
6. Customers under this schedule are put on notice through Commission Order No. 20-002, that the Commission intends that all system participants including NLDA customers, will be required to support resource adequacy. Should a change be justified in the future, it may be imposed on all NLDA customers. Further, when the Commission considers any future proposed changes or requirements, the Commission stated that it intends to disfavor grandfathering.
7. Customers selecting this service are on an interruptible schedule and subject to Emergency Curtailment should PGE's Reliability Coordinator declare PGE is in an Energy Emergency Alert 2, which is when the Company will begin shedding interruptible load. In the event of curtailment, PGE will notify customers as time permits; however, such advance notification may not be feasible. Being subject to Emergency Curtailment is intended to be an interim solution, pending the Oregon Public Utility Commission's decision on the contribution to resource adequacy by all customers as noted in Commission Order No. 20-002.

B. **Short Term Emergency Curtailment**

~~During system emergencies, including but not limited to those caused by extremely cold weather, the temporary loss of a major generating plant or transmission facilities, or conditions that violate the Willamette Valley/Southwest Washington Area (WILSWA) or Western Electricity Coordinating Council (WECC) standards~~ During short term curtailment emergencies, the Company may find it necessary or prudent to protect the performance, integrity, reliability, or stability of the Company's electrical system or any electrical system with which it is interconnected by initiating an Emergency Curtailment. A system emergency includes, but is not limited to, events caused by extreme weather, the temporary loss of a major generating plant or transmission facilities, or conditions that violate the North American Reliability Corporation (NERC) standards, or conditions that violate the operating requirements set forth by the Company's Reliability Coordinator. The Company will contact the Commission prior to an Emergency Curtailment unless circumstances deem prior notice ~~impractical~~ impracticable. Upon the instigation of an Emergency Curtailment, the Company will begin complying with its Curtailment Operating ~~Procedures in order~~ Plan to restore system stability.

The Company's Curtailment ~~Operating Procedures~~ Plan and underlying operating procedures include, but are not limited to, steps for implementing rotating outages. During rotating outages the Company would discontinue Electricity Service to a specific number of circuits for approximately one-hour periods. If, after the first hour, system integrity were still in jeopardy, the circuits initially curtailed would have service restored while a second block of circuits would simultaneously have service discontinued. This cycle would continue until the Company determined that system emergency conditions no longer existed. Facilities deemed necessary to public health, safety and welfare are excluded from the rotating outage, as well as feeders serving Customers participating in the Schedule 88, Load Reduction Program.

During system emergencies, Customers having their own generation facilities or access to Electricity from non-utility power sources may choose to use energy from those other sources.

The Company will not initiate its Curtailment ~~Operating Procedures~~ Plan to avoid the purchase of high priced power. The Curtailment ~~Operating Procedures~~

[arePlan is](#) periodically updated and submitted to the Commission.

Advice No. 20-06

Issued March 20, 2020

James F. Lobdell, Senior Vice President

**Effective for service
on and after April 21, 2020**

SCHEDULE 689 (Continued)

APPLICABLE (Continued)

The expected load for each Customer will always be captured and counted toward the cap limit for the first 60 months of service. Following 60 months of service on Schedule 689, the customer's actual load factor (LF) will be applied to the contracted demand (MW) to calculate a customer's MWA to be captured and counted toward the New Large Load Program cap and the total amount of load under the limit will be adjusted at such time of inquiry, in accordance with actual loads.

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MONTHLY RATE

The Monthly Rate will be the sum of the following charges at the applicable Delivery Voltage per Service Point (SP)*:

	Delivery Voltage		
	<u>Secondary</u>	<u>Primary</u>	<u>Subtransmission</u>
<u>Basic Charge</u>	\$3,340.00	\$1,890.00	\$3,970.00
<u>Distribution Charges**</u>			
The sum of the following:			
per kW of Facility Capacity			
First 4,000 kW	\$1.53	\$1.49	\$1.49
Over 4,000 kW	\$1.22	\$1.18	\$1.18
per kW of monthly On-Peak Demand	\$2.61	\$2.53	\$1.27
<u>System Usage Charge</u>			
per kWh	(0.024) ¢	(0.025) ¢	(0.025) ¢
<u>Administrative Fee</u>	\$0.00	\$0.00	\$0.00

* See Schedule 100 for applicable adjustments.

** The Customer's load, as reflected in the opt-out agreement executed between the Customer and PGE, may be higher than that reflected in a minimum load agreement for purposes of calculating the minimum monthly Facility Capacity and monthly Demand for the SP, for any Customer with dedicated substation capacity and/or redundant distribution facilities.

SCHEDULE 689 (Continued)

The Existing Load Shortage Transition Adjustment for the first 60 months is equal to 75 percent of fixed generation costs plus net variable power cost transition adjustments during the first 60 months after enrollment in this rate schedule. The Existing Load Shortage Transition Adjustment after 60 months of service on this rate schedule is equal to 100 percent of fixed generation costs plus net variable power cost transition adjustments.

The Customer may be exempted from the Existing Load Transition Adjustment if the Customer can demonstrate that the change in load in question is not due to load shifting activity described in OAR 860-038-0740. The Company will provide written notification to the Customer at least 30 days prior to charging the Existing Load Shortage Transition Adjustment. The Customer must demonstrate the change in load by providing a written request for exemption that includes explanation for the change in load and support from available documentation. The Company will approve or deny the request of the Customer within 90 days and will not charge the Existing Load Transition Adjustment within this time period.

ENROLLMENT

The Customer must notify the Company of its intent to enroll in this Schedule and execute an opt out agreement at the earlier of one year prior to the expected energization date of the new meter or upon entering a written and binding service agreement for distribution service with the Company. The date of energization date will be agreed upon between the Customer and the Company within a written and binding agreement for service under this Schedule provided by the Company to the Customer. Upon energization, the customer will begin service on PGE daily market energy option until the Customer's chosen ESS commences service. Customer enrollment may be contingent upon additional agreements between the Company and the Customer, including but not limited to Minimum Load Agreements. The Company will not accept applications for service that exceed the current program cap, or load remaining under the enrolled cap. Customer applications with expectations of load to grow beyond the program cap will require separate application and approval by the Commission. (T)

A customer will have ten (10) business days to sign the NLDA service agreement once tendered by PGE. If a Customer executes an opt out agreement for Direct Access Service under this schedule, acceptance of an Enrollment Direct Access Service Request (DASR) is required by the Company. The Company will notify the ESS when to send the enrollment DASR. Prerequisites and notification requirements are as contained in Rule K. (C)
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Applicants that do not meet the conditions above, or that are found in breach of the opt out agreement between the Customer and the Company are not eligible for enrollment/continued enrollment under this rate schedule. If the Customer or the Customer's selected ESS cannot demonstrate creditworthiness, the Customer will not be eligible for service under this Rate Schedule and will be enrolled in an applicable cost-of-service based rate.

SCHEDULE 689 (Concluded)

SPECIAL CONDITIONS

1. The rate the Customer pays for Electricity may be higher or lower than the rates charged by the Company to similar Customers not taking service under this schedule, including competitors to the Customer.
2. Neither the Company, its employees and agents, the Commission nor any other agency of the State of Oregon has made any representation to the Customer regarding future Electricity prices that will result from the Customer's election of service under this schedule.
3. The Customer is selecting this schedule based solely upon its own analysis of the benefits of this schedule. The Customer has available to it energy experts that assisted in making this decision.
4. If the Customer is served at either primary or subtransmission voltage, the Customer will provide, install, and maintain on the Customer's premises all necessary transformers to which the Company's service is directly or indirectly connected. The Customer also will provide, install, and maintain the necessary switches, cutouts, protection equipment, and in addition, the necessary wiring on both sides of the transformers. If the distribution equipment serving the customer requires retrofitting to enable emergency curtailment, the customer is responsible for all incremental costs the company incurs to support the customer's emergency curtailment on this schedule. All transformers, equipment, and wiring will be of types and characteristics approved by the Company, and arrangement and operation of such equipment will be subject to the approval of the Company.
5. Customers selecting service under this Schedule will be limited to a Company/ESS Split Bill.
6. Customers under this schedule are put on notice through Commission Order No. 20-002, that the Commission intends that all system participants including NLDA customers, will be required to support resource adequacy. Should a change be justified in the future, it may be imposed on all NLDA customers. Further, when the Commission considers any future proposed changes or requirements, the Commission stated that it intends to disfavor grandfathering.
7. Customers selecting this service are on an interruptible schedule and subject to Emergency Curtailment should PGE's Reliability Coordinator declare PGE is in an Energy Emergency Alert 2, which is when the Company will begin shedding interruptible load. In the event of curtailment, PGE will notify customers as time permits; however, such advance notification may not be feasible. Being subject to Emergency Curtailment is intended to be an interim solution, pending the Oregon Public Utility Commission's decision on the contribution to resource adequacy by all customers as noted in Commission Order No. 20-002.

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B. Short Term Emergency Curtailment

During short term curtailment emergencies, the Company may find it necessary or prudent to protect the performance, integrity, reliability, or stability of the Company's electrical system or any electrical system with which it is interconnected by initiating an Emergency Curtailment. A system emergency includes, but is not limited to, events caused by extreme weather, the temporary loss of a major generating plant or transmission facilities, or conditions that violate the North American Reliability Corporation (NERC) standards, or conditions that violate the operating requirements set forth by the Company's Reliability Coordinator. , The Company will contact the Commission prior to an Emergency Curtailment unless circumstances deem prior notice impracticable. Upon the instigation of an Emergency Curtailment, the Company will begin complying with its Curtailment Operating Plan to restore system stability.

The Company's Curtailment Plan and underlying operating procedures include, but are not limited to, steps for implementing rotating outages. During rotating outages the Company would discontinue Electricity Service to a specific number of circuits for approximately one-hour periods. If, after the first hour, system integrity were still in jeopardy, the circuits initially curtailed would have service restored while a second block of circuits would simultaneously have service discontinued. This cycle would continue until the Company determined that system emergency conditions no longer existed. Facilities deemed necessary to public health, safety and welfare are excluded from the rotating outage, as well as feeders serving Customers participating in the Schedule 88, Load Reduction Program.

During system emergencies, Customers having their own generation facilities or access to Electricity from non-utility power sources may choose to use energy from those other sources.

The Company will not initiate its Curtailment Plan to avoid the purchase of high priced power. The Curtailment Plan is periodically updated and submitted to the Commission.

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I. Introduction

1 **Q. Please state your names and positions with Portland General Electric (“PGE”).**

2 A. My name is Bob Frost. I am the Manager of Grid Engineering and Compliance for Portland
3 General Electric Company (PGE).

4 My name is Michael O’Brien. I am a Regulatory Consultant in Rates and Regulatory
5 Affairs at PGE.

6 Our qualifications are included at the end of this testimony.

Purpose and Background

7 **Q. What is the purpose of your testimony?**

8 A. The purpose of this testimony is to support Portland General Electric Company’s (PGE)
9 Advice No. 20-002 which updates PGE’s Rule C, Section B regarding Emergency
10 Curtailment of electric service and PGE’s Short-Term Emergency Curtailment Plan, also
11 described in Rule C, Section B. The changes are twofold: 1) several “housekeeping” changes
12 incorporate the current applicable regional standards governing the Company’s practices to
13 maintain system reliability and 2) PGE’s interim curtailment protocols are updated to describe
14 when and how New Load Direct Access (NLDA) Customers would be curtailed in specific
15 scenarios, in accordance with the Commission’s Order No. 20-002 (UE 358) .

16 **Q. Please provide more background on the Commission’s Order No. 20-002 and curtailing
17 NLDA customers?**

18 A. The Order concluded a contested docket investigating PGE’s proposed NLDA tariff. Among
19 the contested issues in UE 358, was whether NLDA customers fairly contributed to reliability
20 and resource adequacy. In its Order, the Commission decided to address the issue of resource
21 adequacy and fair contribution to system reliability, among other issues, in a general

1 investigation on direct access (UM 2024). Additionally, in its Order No 20-002 (UE 358) the
2 Commission invited PGE to file revised curtailment protocols for NLDA customers that
3 would apply pending the outcome of UM 2024. Finally in its Order the Commission put all
4 NLDA and LTDA customers on notice “that it is our intention to ensure that all system
5 participants contribute tangibly to BA RA, and that one way or another...will be required to
6 support RA.” Consistent with the Commission’s Order, PGE’s is submitting its revised
7 curtailment protocols to mitigate the risk of curtailment to PGE’s cost of service customers
8 with the intent to make it less likely that cost-of-service customers would face cost shifts when
9 Electricity Service Suppliers (ESSs) supplying NLDA customers fail to perform through
10 insufficient contribution to resource adequacy.

11 **Q. Where does this filing fit in the larger context of PGE’s strategy and Oregon’s policy**
12 **direction?**

13 A. PGE’s strategy is to decarbonize, electrify and perform—while being guided by values that
14 include reliability and affordability. In this filing PGE is addressing a fundamental fairness
15 issue associated with NLDA. Specifically, the reliability benefits NLDA customers receive
16 while not adequately contributing resource adequacy and the associated costs. Currently, the
17 Commission and stakeholders are engaged in UM 2024 with the objective of achieving a
18 longer run solution to the question of how all system participants, including direct access
19 customers, contribute to resource adequacy. PGE is actively participating in that docket and
20 believes that it should be allowed to run its course so the Commission can fully consider the
21 matters at hand. In the interim, PGE’s curtailment proposal will prevent NLDA customers
22 from shifting risks and costs onto cost-of-service customers. PGE is ultimately responsible for
23 maintaining its balancing authority area and serves as the reliability provider for all customers

1 regardless of their energy supplier. This is becoming increasingly challenging as coal plants
2 are retiring and replacement resources are not being developed at a sufficient pace, if at all, to
3 replace these plants. Additionally, PGE must also be concerned about keeping customer prices
4 affordable through fair allocation. Affordability requires making sure all customers contribute
5 to reliability, resource adequacy and programs that benefit them and that no one group of
6 customers is disproportionately burdened. Excluding NLDA customers from the costs of, or
7 contributions to, resource adequacy shifts reliability risks from them to PGE's cost-of service
8 customers. Until the Commission addresses RA, how it is provided, and who has what
9 obligations, these curtailment protocols are important to prevent a disproportionate burden
10 from being placed on PGE's cost-of service customers.

11 **Q. Is PGE's curtailment proposal a permanent solution to its concerns over NLDA**
12 **customers contributing to resource adequacy?**

13 A. No. Per the Commission's direction that it would address all system participants (ESSs and
14 customers) contributing to reliability and resource adequacy in UM 2024, this is an interim
15 measure. If our revised curtailment protocols are approved, they would only be in effect until
16 the Commission resolves these issues in UM 2024, after which the appropriate changes would
17 be implemented.

18 **Q. Does PGE intend for its curtailment protocols to lead to meaningful RA contributions**
19 **or solve RA?**

20 A. No. We recognize that curtailment does not provide RA or solve the current RA issues at hand.
21 Generally, curtailment is an emergency procedure and should be reserved for emergencies.
22 These revised curtailment protocols are important to have in place, pending a longer-term
23 solution expected from UM 2024. While no planned curtailment is optimal, this proposed

1 interim protocol is the best solution for right now and has been developed to fit within the
2 many regulatory requirements from various jurisdictions (Federal Energy Regulatory
3 Commission (FERC), North American Electric Reliability Corporation (NERC), and the
4 Oregon Public Utilities Commission (OPUC)) that impose requirements on PGE as reliability
5 provider and balancing authority, as well as meet PGE operational concerns. When NLDA
6 customers are paying or contributing their fair share to resource adequacy, then PGE will
7 revise these curtailment protocols accordingly. PGE’s advocacy in UM 2024 will continue to
8 encourage ESSs, direct access customers and PGE work together for our RA planning needs
9 and ensure enough resources are in place ahead of time so curtailment does not become
10 necessary.

Design Considerations

11 **Q. How did PGE go about designing the revised curtailment protocols? What standards**
12 **apply?**

13 A. Curtailment is a complex operational issue and requires consideration of several federal and
14 state standards and requirements that are in place to maintain the safety and reliability of the
15 bulk electrical system. To design the revised curtailment protocols, we considered the
16 following: the NERC standards and requirements, the FERC jurisdiction including PGE’s
17 Open Access Transmission Tariff (OATT) which is approved by FERC, PUC jurisdiction
18 which has oversight of PGE’s operating tariff and PGE’s own operating procedures. To
19 design curtailment protocols that effectively navigated this complex set of standards and
20 considerations, PGE sought the expertise of several subject matter experts in the Company’s
21 Substation and Grid Engineering, Grid Asset Operations, Distribution Engineering, Business

1 Customer Group, Rates and Regulatory Affairs, Transmission Services and Legal
2 departments.

3 **Q. Please describe how the NERC standards applied to the design of the revised protocols?**

4 A. The first task in designing curtailment protocols for NLDA, is determining what would
5 circumstances would require PGE to take a curtailment action. NERC Standard EOP-011-1 –
6 Emergency Operations informs these curtailment protocols by defining the proposed triggers
7 for curtailment, Energy Emergency Alerts (EEAs). EEAs are a series of alerts that indicate
8 electric system conditions that may require the use of emergency procedures. They are
9 designed to protect the reliability of the electric system as a whole and prevent an uncontrolled
10 system-wide outage. NERC Standard EOP-011-1 Attachment 1 defines the Energy
11 Emergency Alert (EEA) levels that a Balancing Authority’s Reliability Coordinator (RC)
12 might declare. The RC is a NERC-designated function and has the highest level of authority,
13 responsible for the reliable operation of the Bulk Electric System in its area, including the
14 authority to prevent or mitigate emergency operating situations. PGE receives RC services
15 from RC West. PGE designed an approach in its curtailment protocols that is in line with
16 EOP-011-1 Requirement 2, which includes “Use of Interruptible Load, curtailable Load and
17 demand response” as possible processes that Balancing Authorities should include in their
18 emergency operating plan(s) to mitigate capacity and energy emergencies. EOP-011-1 also
19 lists Demand-Side Management as a resource that a Balancing Authority would be expected
20 to make use of prior to requesting the highest level of Energy Emergency Alert, Level 3 (EEA
21 3). PGE describes EEAs in greater detail later in this testimony. Additionally, PGE
22 considered NERC Standard IRO-001-4 – Reliability Coordination – Responsibilities, which
23 requires the RC to act to address the reliability of its area, and which obligates Balancing

1 Authorities to comply with any instructions they receive from their RC. In designing the
2 protocol, the Company was careful to ensure the design fit within the NERC and IRO
3 standards.

4 **Q. Why does PGE’s proposed curtailment protocol not rely on ESS submitted schedules**
5 **(NERC electronic tags)?**

6 A In Order No. 20-002 the Commission opined that an issue related to the ESS scheduling
7 accuracy should be addressed through an update filing to PGE’s OATT with FERC. Thus, in
8 considering revised curtailment protocols, PGE avoided a design that would take into effect,
9 the scheduling and delivery practices of the ESS, as the Commission has already taken the
10 position that such a matter should first be brought to FERC.

11 **Q. Does the proposed curtailment protocol impact any other aspects of PGE’s OATT?**

12 A. No. FERC and the OPUC require ESSs to purchase or provide the ancillary services detailed
13 in the OATT.¹ These services include contingency reserves, which are available in limited
14 circumstances as defined by the NERC BAL-002 Standard, regulation, and voltage support.
15 PGE’s proposed curtailment protocol does not modify or replace these required services and
16 ESSs will continue to be required to procure or provide these ancillary services consistent
17 with the OATT. Additionally, while these required ancillary services are important to the real-
18 time operation of the grid, they are not substitutes for RA and should not be considered as
19 such by the Commission. We understand this issue is further being addressed in UM 2024.

20 **Q. Please describe the operational and OPUC tariff considerations?**

¹ See PGE’s Pro Forma Open Access Transmission Tariff, Attachment N

1 A. Throughout our investigation into curtailing NLDA customers we considered what was
2 practical, what would have limited impact to both NLDA and cost-of-service customers but
3 still support reliability requirements, and what was technologically feasible, while cost
4 effective. PGE considered tariff Rule C, Section B which states that the Company will not
5 initiate its Curtailment Operating Plan to avoid the purchase of high-priced power. In fact,
6 purchasing high priced energy is among the steps PGE would take, and has taken, to avoid an
7 Emergency Energy Alert. We rejected a design that took into account initiating curtailment
8 if the Locational Average Price market prices were to exceed a certain threshold.

PGE's Proposed Curtailment Design

9 **Q. Given the above design considerations and limitations, please explain PGE's proposed**
10 **interim curtailment solution.**

11 A. PGE's proposal is to implement NLDA curtailment if the Company is moved to an EEA 2 or
12 higher. If the Company were operating under normal conditions and was anticipating an EEA
13 1 for any reason it would provide notice to NLDA customers that the curtailment protocol is
14 active and NLDA customers may be curtailed. If the RC moved PGE beyond EEA 1, PGE
15 would implement the NLDA curtailment and use best efforts to provide customers with notice
16 that a curtailment is imminent.

17 **Q. Please describe the Energy Emergency Alert levels and how the Reliability Coordinator**
18 **enters the company into an EEA?**

19 A. EEAs are a series of alerts that indicate electric system conditions may require the use of
20 emergency procedures. They are designed to protect the reliability of the electric system as a
21 whole and prevent an uncontrolled system-wide outage and could be invoked for either
22 capacity or energy emergencies. The following describes the levels of Energy Emergency

1 Alerts. Levels. The RC can institute EEAs in whatever order is necessary; there is no
2 requirement for it to be sequential:

3 • **EEA 1** indicates that all available generation resources are in use. The circumstances in
4 which an EEA 1 could be called, are: 1) a Balancing Authority is experiencing
5 conditions where all available generation resources are committed to meet firm Load,
6 firm transactions, and reserve commitments, and the Balancing Authority is concerned
7 about sustaining its required Contingency Reserves, and 2) non-firm wholesale energy
8 sales (other than those that are recallable to meet reserve requirements) have been
9 curtailed.

10 • **EEA 2** indicates that load management procedures are in effect. The circumstances are:
11 1) a Balancing Authority is no longer able to provide its expected energy requirements
12 and is an energy deficient Balancing Authority, 2) an energy deficient Balancing
13 Authority has implemented its Operating Plan(s) to mitigate Emergencies, and 3) an
14 energy deficient Balancing Authority is still able to maintain minimum Contingency
15 Reserve requirements.

16 • **EEA 3** indicates that firm load interruption is imminent or in progress. This may be
17 declared when the energy deficient Balancing Authority is unable to meet minimum
18 Contingency Reserve requirements. RC West procedures dictate that, before
19 requesting an EEA 3, the energy-deficient BA must make use of all available resources;
20 this includes, but is not limited to: Ensuring all available generation units are online
21 and all generation capable of being on line within the time frame of the Emergency is
22 on line. Activating Demand-Side Management within provisions of any applicable
23 agreements.

Calling and Preventing an Energy Emergency

1 **Q. Please describe when PGE's RC, RC West, would initiate an Energy Emergency Alert**
2 **for PGE?**

3 A. RC West would initiate an Energy Emergency Alert for PGE either at the request of PGE's
4 Balancing Authority or when deemed necessary by the RC Operator. The RC may declare
5 whatever alert level is necessary and need not proceed through the alerts sequentially. The
6 RC must determine that the circumstances of each level listed above have been met in order
7 to declare that EEA level. After an EEA has been declared, if PGE's Balancing Authority is
8 subsequently able to meet its load and operating reserve requirements, it will request that the
9 RC terminate the EEA.

10 **Q. What efforts does PGE take to prevent an EEA from occurring or from progressing into**
11 **a more serious EEA?**

12 A. If PGE anticipates deficiencies, PGE's System Control Center (SCC) Operators can take
13 several near-term actions such as requesting that PGE's real-time power operations team
14 attempt to purchase power in the real-time market, calling on reserve sharing resources from
15 the Northwest Power Pool, or requesting that any offline PGE generation that may be available
16 or set aside to handle load excursions be brought online. Once in an EEA, PGE will implement
17 provisions of its Emergency Operations Plan to prevent entry into an EEA 3. These efforts
18 may include, public appeals to reduce demand, voltage reduction, emergency interruption of
19 non-firm end-use loads in accordance with PGE Schedule 88 contract tariffs and demand-side
20 management. Attachment A, Capacity and Emergency Levels, which is included in this filing,
21 details the protocols PGE follows for EEA's.

Operations Plan to Carry out NLDA Curtailment

1 **Q. Please explain how PGE is proposing to carry out curtailment of a NLDA customer's**
2 **Load if put into an EEA?**

3 A. PGE's proposal is to curtail all NLDA customer load in the event of an EEA 2 or EEA 3.
4 PGE will curtail all NLDA customers as a single "load block" in PGE's Energy Management
5 System (EMS). The following details how curtailment would occur:

6 If PGE is entered into an EEA 2, SCC operators would de-energize the NLDA load block and
7 leave it de-energized until the RC terminated the EEA. Curtailing the NLDA customer load
8 has the potential to reduce the length of time PGE is in an EEA and could prevent PGE from
9 moving into an EEA 3 and impacting its non-NLDA customers. If PGE is entered into an EEA
10 3, SCC operators would de-energize the NLDA load block prior to implementing rotating
11 outages of cost-of-service customers and would leave the block de-energized until RC
12 terminated the EEA. Curtailing the NLDA customer load may prevent PGE from having to
13 shed firm cost-of-service customer load.

14 **Q. Why did PGE decide to curtail NLDA customers only beginning at an EEA 2 or higher?**

15 A PGE did consider curtailing NLDA customers in EEA 1 situations but decided against it
16 because, as stated previously, PGE would still be able to provide service to all customers even
17 though all generating resources would be committed to meet firm load, firm transactions and
18 reserve commitments.

19 **Q. Prior to the emergency curtailment of NLDA customer loads, would PGE provide notice**
20 **to those customers?**

21 A. If PGE were to enter into an EEA 1 and time permitted, it would make efforts to notify NLDA
22 customers that curtailment is anticipated. However, as noted above, an EEA 1 would not

1 always precede an EEA 2 or EEA 3 and advance notification of curtailment may not be
2 practicable.

3 **Q Will PGE compensate the NLDA customer for curtailment?**

4 A. No. The customer will be taking service subject to the PUC's orders and PGE's tariff. Upon
5 the Commission's acceptance of PGE's revised curtailment protocols, PGE will submit as a
6 compliance filing, its updated Schedule 689 for NLDA adding the curtailment and
7 interruptible schedule language. We will also communicate with customers who have
8 notified PGE of their intent to participate in NLDA of these changes.

9 **Q. Will PGE compensate an ESS for curtailing a NLDA customer?**

10 A. It is important to note that PGE will curtail the NLDA customer, not the ESS. However,
11 depending on how much energy the ESS has scheduled to serve all their customers on Direct
12 Access, not just NLDA, in the hour that PGE is put into an EEA, the ESS will be settled based
13 on Schedule 4R in PGE's OATT filed with FERC at the hourly LAP for any energy imbalance
14 between PGE and the ESS. This could result in a credit or a charge to the ESS.

15 **Q. Why didn't PGE consider whether the ESS's delivery of energy was sufficient to meet
16 its customers' loads at the precise time of an Energy Emergency Alert, as the basis for
17 emergency curtailment?**

18 A. As mentioned previously in this testimony, the Commission stated in the UE 358 order that
19 ESS scheduling is an issue best suited for FERC. Moreover, the ESSs scheduled delivery and
20 total load forecast are the same. At present, ESSs do not provide a separate load forecast. Their
21 NERC e-tag serves as both their forecast and scheduled delivery. This means PGE would have
22 no way of knowing if the ESS delivery is insufficient.

1 **Q. How many times, in the last 10 years, has PGE been put into an EEA? And what**
2 **triggered them?**

3 A. PGE has had two EEAs declared in the past 10 years. The first event, on July 21, 2016, was
4 an EEA 1. This event was triggered by two Colstrip units tripping offline, curtailment by
5 BPA of a schedule into PGE’s BAA due to transmission issues, and the unexpected
6 unavailability of the Boardman plant. The EEA 1 lasted approximately three hours and 40
7 minutes.

8 The second event, on December 8, 2016, was an EEA 2 and was triggered by two of PGE’s
9 generation units tripping offline, the reduction of a wind schedule from BPA, and the
10 unwillingness of some counterparties to sell in-hour due to their EIM participation. The
11 Reliability Coordinator initially declared an EEA 1 but adjusted that to an EEA 2 five minutes
12 later. The EEA lasted approximately 38 minutes.

13 **Q. So, given the explanation of two EEAs in ten years, would PGE agree that this is a rare**
14 **occurrence?**

15 A. Not necessarily. The region and the broader WECC footprint is transitioning to a time of
16 resource deficiency due to the announced retirement of significant amounts of firm capacity
17 across the footprint.² At the same time, states, utilities, and other entities are pursuing
18 aggressive decarbonization or renewable policies to combat the climate change, thus
19 furthering the structural shift in the regional resource mix. While these variable or energy
20 limited resources do contribute to the capacity needs of the region, they are not a direct
21 substitute for the traditionally “baseload” resources that will be exiting the system over the
22 next decade. The Company believes it is reasonable to expect that historically infrequent

² Table 6-6, EIA Electric Power Monthly Report, January 2020 edition

1 events, such as EEAs, have the potential to be more likely in the future. In addition, there are
2 periodic transmission constraints and little regional investment in transmission. For example,
3 The California Independent System Operator (CAISO), now the RC for a large part of the
4 WECC footprint, reported to its Board of Governors at the September 2019 meeting that recent
5 summer peak conditions had resulted in situations where the CAISO “had only 114MW of
6 capacity remaining before deploying reserves...” and actions were needed to address looming
7 2020 and 2021 resource shortages on the order of 2,000 MW to 4,000MW, respectively.^{3,4}
8 There are encouraging resource adequacy efforts occurring at both the regional level (The
9 Northwest Power Pool) and the state level (OPUC Docket No. UM 2024) and the Company
10 is actively participating in both, but these efforts will require significant time to development
11 and implement before their resource adequacy related benefits can be realized.

12 **Q. Please explain any additional costs customers who elect to go NLDA may incur as a result**
13 **of PGE’s proposed curtailment protocol?**

14 **A.** If the NLDA customer’s load is not on a dedicated feeder, meaning PGE cannot curtail the
15 customer’s load without affecting other customer loads on the same feeder, then retrofitting
16 is required. The customer will be responsible for any incremental equipment and other costs
17 the Company incurs to support the customer’s election to participate in NLDA before a long
18 -term solution is determined by the PUC on RA contribution by all customers. PGE’s
19 interpretation of Order 20-002 allows for customers who select this service to be on an
20 interruptible schedule and subject to emergency curtailment in the interim until a more
21 permanent solution to support RA is developed as part of the UM 2024 investigation.

³ CEO Report, CAISO September 2019 Board of Governors Meeting

⁴ Briefing on Post 2020 Grid Operational Outlook, CAISO September 2019 Board of Governors Meeting

1 **Q. Mr. Frost, please state your educational background and qualifications.**

2 A. I received a Bachelor of Science degree in Applied Physics with a minor in Mathematics from
3 Linfield College in 1988. Prior to my current position, I was the manager of PGE’s Balancing
4 Authority for eight years after having worked as an SCC operator for eleven years. I have
5 worked in PGE’s System Control Center for a total of 22 years.

6 **Q. Mr. O’Brien, please state your educational background and qualifications.**

7 A. I hold a Ph.D. in Physics from the University of Birmingham, in the United Kingdom, which
8 included an MSc in the Physics and Technology of Nuclear Reactors. I also hold a BSc(Hons)
9 in Physics from the University of Birmingham. After post-doctoral research with the United
10 Kingdom Atomic Energy Authority, I completed an MPhil in Technology Policy at the
11 University of Cambridge. Following Cambridge, I worked for the UK Parliamentary Office
12 of Science and Technology as Energy Advisor, and then for the House of Commons Energy
13 and Climate Change Select Committee as Committee Specialist. On moving to the United
14 States in June 2012, I worked at Renewable Northwest, leaving as Regulatory Director in
15 October 2019. Since January 2020, I have worked as a Regulatory Consultant in the Strategy
16 and Policy section of Rates and Regulatory Affairs at PGE.

17 **Q. Does this conclude your testimony?**

18 A. Yes.

PGE Advice No. 20-06
Attachment A
Short Term Emergency Curtailment Plan in support of Rule C

APPENDIX A

APPENDIX A – Capacity & Energy Emergency Levels

PGE Merchant and System Control Center Operators rely on both an internal process for defining and addressing energy deficiencies as well as NERC-defined Energy Emergency Alert Levels and actions. When any of these alert levels are met, PGEM and/or System Control Center emergency procedures are activated. System Control Center Operators have the responsibility and authority to take and direct real-time actions to protect and maintain the reliability and integrity of the electrical system.

PGE Merchant Capacity and Energy Alert Levels

The following is a summary of the internal PGE alert levels:

Blue Alert:

Declared by PGE Real Time Pre-Schedule Merchant or Real Time Merchant. PGE has some concern about meeting current electricity demand. Includes 1 or more of the following conditions, 1 or more days in advance:

- A forecasted capacity deficit greater than 10% of forecasted peak load exists, **AND**
- Pre-Schedule markets lack liquidity to provide sufficient energy to cover forecasted peak Balancing Authority (including ESS) load, **AND**
- Real Time markets are anticipated to have insufficient energy to meet forecasted peak loads.

Yellow Alert:

Declared by PGE Real Time Merchant. PGE has some concern about meeting current electricity demand. Includes the following conditions:

- No offline generation is available.
- A forecasted capacity deficit greater than 10% of peak load remains unfilled from preschedule or by loss of generation, **AND**
- Real Time markets lack liquidity to provide sufficient energy to cover forecasted peak Balancing Authority (including ESS) load.

Orange Alert:

Declared by PGE Real Time Merchant or Balancing Authority. PGE's energy situation has escalated to a higher probability of an energy shortage occurring. All the conditions of a Yellow Alert continue to exist with any of the following conditions, unless otherwise foreseen and not correctable:

- Concerned about maintaining firm transactions and sustaining PGE required operating reserves.
- Insufficient response from the Merchant Alert Protocol (MAP) issued by PGEM.

- PGE is receiving notice of regional transactions being curtailed.
- Inability to meet CPS and DCS standards – consider entry into the appropriate NERC Emergency Energy Alert (EEA) level. Entry into NERC EEA levels should be considered. EEA declarations are made by the Reliability Coordinator on behalf of PGE.

Red Alert:

Despite taking all available actions by PGE’s Merchant, or the Balancing Authority through the Reserve Sharing Group (Northwest Power Pool [NWPP]), if the Balancing Authority foresees or is experiencing conditions where all available resources are committed to meet PGE’s firm load, firm transactions, and reserve commitments, and all PGE’s curtailable wholesale sales have been curtailed, concern still exists about sustaining PGE’s required operating reserves. Actions by the Balancing Authority are imminent.

NERC Energy Emergency Alert Levels

The following Energy Emergency Alert Levels are defined by NERC in Reliability Standard EOP-011:

ENERGY EMERGENCY ALERT 1 – All Available Resources in Use

Circumstances:

- PGE’s Balancing Authority is experiencing conditions where all available generation resources are committed to meet firm Load, firm transactions, and reserve commitments, and is concerned about sustaining its required Contingency Reserves, **AND**
- Non-firm wholesale energy sales (other than those that are recallable to meet reserve requirements) have been curtailed.

ENERGY EMERGENCY ALERT 2 – Load Management Procedures in Effect

Circumstances:

- PGE Balancing Authority is no longer able to provide its expected energy requirements, and is an energy deficient Balancing Authority.
- PGE Balancing Authority foresees or has implemented provisions of its Emergency Operations Plan up to, but excluding, interruption of firm load commitments. Time permitting, these efforts may include:
 - Public appeals to reduce demand.
 - Voltage reduction.
 - Emergency interruption of non-firm end use loads in accordance with PGE Schedule 88 contract tariffs.
 - Demand-side management (all activities or programs undertaken by PGE or its customers to influence the amount or timing of electricity they use).
 - PGE Balancing Authority is still able to maintain minimum Contingency Reserve



requirements.

ENERGY EMERGENCY ALERT 3 – Firm Load Interruption Imminent or in Progress

Circumstances:

- PGE Balancing Authority is unable to meet minimum Contingency Reserve requirements.

PGE's Response to Energy Deficient Declaration by Another Balancing Authority

The PGE merchant (PGEM) with available resources shall immediately contact the Energy Deficient Entity. This should include the possibility of selling non-firm (recallable) energy out of available Operating Reserves.

PGE Balancing Authority shall approve emergency e-Tags provided the Generation and Transmission capabilities are available.

Appendix B
Categories of Facilities Considered for Exclusion from Rotating Outage Curtailment

Category of Facility	Definition
Hospitals	All hospitals with 24/7 admittance and emergency care
911 Centers	Facilities operated on a 24-hour basis, which receive 911 calls and dispatch emergency response services, or transfer or relay 911 calls to other public safety agencies
Emergency Media	Radio and TV broadcast services that provide emergency notification
Emergency Operations Centers	County, city, special district, agency, critical infrastructure key responder, state and federal emergency operations centers
Police/Fire Stations	Police and fire stations
Detention Centers	County, state and federal correctional facilities housing inmates on a 24/7 basis
Water Supply	Water supply intakes, water treatment plants and water supply facilities housing command and control staff, SCADA controls, data centers, pump stations required to maintain water for fire suppression
Waste Water	Waste water treatment facilities and other waste water facilities housing command and control staff, SCADA controls, data centers, etc.
Transportation	All Level II airports (as defined by the FAA), aviation control facilities, TriMet lightrail system, drawbridges, and traffic control
Communications Facilities	Communications facilities and infrastructure critical to emergency response and keeping the telephone network operating
Electric Infrastructure	Electricity industry facilities housing critical operations. Includes critical generation, transmission and distribution infrastructure. (includes PGE service center facilities)
Metropolitan Network Electrical Service	All feeders in the Portland and Salem area that provide network service

PGE Advice No. 20-06
Attachment B
Courtesy redline of Schedule 689 and Rule C

SCHEDULE 689 (Continued)

APPLICABLE (Continued)

The expected load for each Customer will always be captured and counted toward the cap limit for the first 60 months of service. Following 60 months of service on Schedule 689, the customer's actual load of the customer factor (LF) will always be applied to the contracted demand (MW) to calculate a customer's MWA to be captured and counted toward the New Large Load Program cap and the total amount of load under the limit will be adjusted at such time of inquiry, in accordance with actual loads.

MONTHLY RATE

The Monthly Rate will be the sum of the following charges at the applicable Delivery Voltage per Service Point (SP)*:

	Delivery Voltage		
	<u>Secondary</u>	<u>Primary</u>	<u>Subtransmission</u>
<u>Basic Charge</u>	\$3,340.00	\$1,890.00	\$3,970.00
<u>Distribution Charges**</u>			
The sum of the following:			
per kW of Facility Capacity			
First 4,000 kW	\$1.53	\$1.49	\$1.49
Over 4,000 kW	\$1.22	\$1.18	\$1.18
per kW of monthly On-Peak Demand	\$2.61	\$2.53	\$1.27
<u>System Usage Charge</u>			
per kWh	(0.024) ¢	(0.025) ¢	(0.025) ¢
<u>Administrative Fee</u>	\$0.00	\$0.00	\$0.00

* See Schedule 100 for applicable adjustments.

** The Customer's load, as reflected in the opt-out agreement executed between the Customer and PGE, may be higher than that reflected in a minimum load agreement for purposes of calculating the minimum monthly Facility Capacity and monthly Demand for the SP, for any Customer with dedicated substation capacity and/or redundant distribution facilities.

SCHEDULE 689 (Continued)

The Existing Load Shortage Transition Adjustment for the first 60 months is equal to 75 percent of fixed generation costs plus net variable power cost transition adjustments during the first 60 months after enrollment in this rate schedule. The Existing Load Shortage Transition Adjustment after 60 months of service on this rate schedule is equal to 100 percent of fixed generation costs plus net variable power cost transition adjustments.

The Customer may be exempted from the Existing Load Transition Adjustment if the Customer can demonstrate that the change in load in question is not due to load shifting activity described in OAR 860-038-0740. The Company will provide written notification to the Customer at least 30 days prior to charging the Existing Load Shortage Transition Adjustment. The Customer must demonstrate the change in load by providing a written request for exemption that includes explanation for the change in load and support from available documentation. The Company will approve or deny the request of the Customer within 90 days and will not charge the Existing Load Transition Adjustment within this time period.

ENROLLMENT

The Customer must notify the Company of its intent to enroll in this Schedule and execute an opt out agreement at the earlier of one year prior to the expected energization date of the new meter or upon entering a written and binding service agreement for distribution service with the Company. The date of energization date will be agreed upon between the Customer and the Company within a written and binding agreement for service under this Schedule provided by the Company to the Customer. Upon energization, the customer will begin service on PGE daily market energy option until the Customer's chosen ESS commences service. Customer enrollment may be contingent upon additional agreements between the Company and the Customer, including but not limited to Minimum Load Agreements. The Company will not accept applications for service that exceed ~~to~~ the current program cap, or load remaining under the enrolled cap. Customer applications with expectations of load to grow beyond the program cap will require separate application and approval by the Commission.

A customer will have ten (10) business days to sign the NLDA service agreement once tendered by PGE. If a Customer executes an opt out agreement for Direct Access Service under this schedule, acceptance of an Enrollment Direct Access Service Request (DASR) is required by the Company. The Company will notify the ESS when to send the enrollment DASR. Prerequisites and notification requirements are as contained in Rule K.

Applicants that do not meet the conditions above, or that are found in breach of the opt out agreement between the Customer and the Company are not eligible for enrollment/continued enrollment under this rate schedule. If the Customer or the Customer's selected ESS cannot demonstrate creditworthiness, the Customer will not be eligible for service under this Rate Schedule and will be enrolled in an applicable cost-of-service based rate.

SCHEDULE 689 (Concluded)

SPECIAL CONDITIONS

1. The rate the Customer pays for Electricity may be higher or lower than the rates charged by the Company to similar Customers not taking service under this schedule, including competitors to the Customer.
2. Neither the Company, its employees and agents, the Commission nor any other agency of the State of Oregon has made any representation to the Customer regarding future Electricity prices that will result from the Customer's election of service under this schedule.
3. The Customer is selecting this schedule based solely upon its own analysis of the benefits of this schedule. The Customer has available to it energy experts that assisted in making this decision.
4. If the Customer is served at either primary or subtransmission voltage, the Customer will provide, install, and maintain on the Customer's premises all necessary transformers to which the Company's service is directly or indirectly connected. The Customer also will provide, install, and maintain the necessary switches, cutouts, protection equipment, and in addition, the necessary wiring on both sides of the transformers. If the distribution equipment serving the customer requires retrofitting to enable emergency curtailment, the customer is responsible for all incremental costs the company incurs to support the customer's emergency curtailment on this schedule. All transformers, equipment, and wiring will be of types and characteristics approved by the Company, and arrangement and operation of such equipment will be subject to the approval of the Company.
5. Customers selecting service under this Schedule will be limited to a Company/ESS Split Bill.
6. Customers under this schedule are put on notice through Commission Order No. 20-002, that the Commission intends that all system participants including NLDA customers, will be required to support resource adequacy. Should a change be justified in the future, it may be imposed on all NLDA customers. Further, when the Commission considers any future proposed changes or requirements, the Commission stated that it intends to disfavor grandfathering.
7. Customers selecting this service are on an interruptible schedule and subject to Emergency Curtailment should PGE's Reliability Coordinator declare PGE is in an Energy Emergency Alert 2, which is when the Company will begin shedding interruptible load. In the event of curtailment, PGE will notify customers as time permits; however, such advance notification may not be feasible. Being subject to Emergency Curtailment is intended to be an interim solution, pending the Oregon Public Utility Commission's decision on the contribution to resource adequacy by all customers as noted in Commission Order No. 20-002.

B. **Short Term Emergency Curtailment**

~~During system emergencies, including but not limited to those caused by extremely cold weather, the temporary loss of a major generating plant or transmission facilities, or conditions that violate the Willamette Valley/Southwest Washington Area (WILSWA) or Western Electricity Coordinating Council (WECC) standards~~ During short term curtailment emergencies, the Company may find it necessary or prudent to protect the performance, integrity, reliability, or stability of the Company's electrical system or any electrical system with which it is interconnected by initiating an Emergency Curtailment. A system emergency includes, but is not limited to, events caused by extreme weather, the temporary loss of a major generating plant or transmission facilities, or conditions that violate the North American Reliability Corporation (NERC) standards, or conditions that violate the operating requirements set forth by the Company's Reliability Coordinator. The Company will contact the Commission prior to an Emergency Curtailment unless circumstances deem prior notice ~~impractical~~ impracticable. Upon the instigation of an Emergency Curtailment, the Company will begin complying with its Curtailment Operating ~~Procedures in order~~ Plan to restore system stability.

The Company's Curtailment ~~Operating Procedures~~ Plan and underlying operating procedures include, but are not limited to, steps for implementing rotating outages. During rotating outages the Company would discontinue Electricity Service to a specific number of circuits for approximately one-hour periods. If, after the first hour, system integrity were still in jeopardy, the circuits initially curtailed would have service restored while a second block of circuits would simultaneously have service discontinued. This cycle would continue until the Company determined that system emergency conditions no longer existed. Facilities deemed necessary to public health, safety and welfare are excluded from the rotating outage, as well as feeders serving Customers participating in the Schedule 88, Load Reduction Program.

During system emergencies, Customers having their own generation facilities or access to Electricity from non-utility power sources may choose to use energy from those other sources.

The Company will not initiate its Curtailment ~~Operating Procedures~~ Plan to avoid the purchase of high priced power. The Curtailment ~~Operating Procedures~~

[arePlan is](#) periodically updated and submitted to the Commission.

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James F. Lobdell, Senior Vice President

**Effective for service
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