



Portland General Electric Company

121 SW Salmon Street • Portland, Oregon 97204

PortlandGeneral.com

May 10, 2018

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

**RE: UM 1811 – Portland General Electric Company Filing of TriMet/PGE
Funding Agreement**

Pursuant to the Stipulation, Item No. 015, filed in Commission Order No. 18-054,
Portland General Electric Company submits for filing in OPUC Docket No. 1811:

TriMet/PGE Funding Agreement
Pilot Project to Demonstrate Battery Electric Buses and Charging Infrastructure

Should you have any questions or comments regarding this filing, please contact Kalia
Savage at (503) 464-7432. Please direct all formal correspondence and requests to the
following email address pge.opuc.filings@pgn.com

Sincerely,

A handwritten signature in black ink, appearing to read "Karla Wenzel". The signature is fluid and cursive, written over a white background.

Karla Wenzel
Manager, Pricing and Tariffs

Enclosures

**TriMet/PGE Funding Agreement
Pilot Project to Demonstrate Battery
Electric Buses and Charging Infrastructure**

THIS FUNDING AGREEMENT ("Agreement") is made this _____ day of _____, 2018, by and between the TRI-COUNTY METROPOLITAN TRANSPORTATION DISTRICT OF OREGON, a mass transit district of the state of Oregon, hereinafter referred to as "TriMet", and PORTLAND GENERAL ELECTRIC COMPANY hereinafter referred to as "PGE," an Oregon corporation.

I. RECITALS

1. In March 2016, the Federal Transit Administration published a Notice of Funding Opportunity ("NOFO") for the Low or No Emission Grant Program. Funds provided by this program provide financial assistance to states and eligible public agencies for the purchase or lease of low or no emission vehicles that use advance technologies, or for related equipment and facilities to be used for transit revenue operations.
2. TriMet submitted a grant application for \$7,265,000, and was awarded a grant in the amount of \$3,405,750, with the remaining \$3,859,250 budgeted by TriMet as the local match. In the grant application, TriMet proposed partnering with New Flyer for the purchase of five electric buses and supporting charging infrastructure hardware (one 450 kW high power charger and two 100 kW overnight depot chargers) (the "Pilot Project"). This grant will fund the Pilot Project.
3. TriMet's primary goal for the Pilot Project is to evaluate electric bus performance and the possibility of making electric buses the default choice for bus procurement. The Pilot Project will evaluate distribution system impacts and customer service considerations by studying coincident peak, non-coincident peak, feeder voltage dynamics, charging behaviors, and load profiles.
4. If the Pilot Project determines electric buses are a viable default choice for bus procurement, PGE and TriMet intend to collaborate to address long-term power needs, the installation of additional charging stations, and the opportunities for grid management afforded by each bus.
5. TriMet and PGE intend to work together to implement the Pilot Project through a program being proposed as part of PGE's Transportation Electrification Plan (the "Plan") required under Oregon law (AR-599). PGE pursued Oregon Public Utility Commission ("OPUC") approval of the Plan, including the Electric Mass Transit 2.0 program under which the Pilot Project is proposed. PGE obtained approval from the OPUC on February 16, 2018.
6. PGE will own, operate and maintain the Charging Infrastructure, which is described and set forth in Exhibit B, which is incorporated into this Agreement by this reference. TriMet will bear all costs associated with the Charging Infrastructure operation and maintenance. TriMet will also pay for power dispensed from the chargers (at the applicable standard electric rate). This Agreement will enable TriMet to purchase a fifth

Now, therefore, in consideration of the mutual promises set forth below and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the Parties agree as follows:

II. PARTY RESPONSIBILITIES

A. TriMet Responsibilities:

1. Except for the PGE Contribution (defined below), TriMet will pay all costs of the Pilot Project, including the monitoring, inspection, operation, repair and maintenance of the Charging Infrastructure. These costs include PGE personnel time and expenses utilized to perform the tasks set forth in Section B(2) in accordance with the rates set forth in Exhibit C, the documented amounts PGE paid to a third party to perform the tasks set forth in Section B(2), and the documented amounts paid for parts, equipment, materials and consumables required for PGE to perform the tasks set forth in Section B(2). Prior to commissioning the Charging Infrastructure, PGE shall provide TriMet with an estimated cost ("Budget") that PGE anticipates for it to complete the tasks set forth in Section B(2) for the remainder of the calendar year in which commissioning occurs. TriMet shall review the Budget within fifteen (15) business days of receipt and if TriMet does not provide notice of objection to PGE within such fifteen (15) business day period, the Budget shall be deemed accepted by TriMet. PGE shall use commercially reasonable efforts to perform its tasks set forth in Section B(2) in accordance with the Budget. In the event unanticipated costs arise that will exceed the Budget, PGE shall seek TriMet's approval prior to incurring any additional costs. On or before December 1st of each calendar year, beginning in the year commissioning occurs, PGE shall provide TriMet an updated Budget for the following calendar year. TriMet shall review the updated Budget within fifteen (15) business days of receipt and if TriMet does not provide notice of objection to PGE within such fifteen (15) business day period, the updated Budget shall be deemed accepted by TriMet. In the event TriMet does not approve the Budget or additional expenditures, PGE may suspend its work under this Agreement. In the event such a suspension lasts more than thirty (30) days, either party may terminate this Agreement.
2. TriMet and/or those contracted on TriMet's behalf will design, install and commission all Charging Infrastructure at Sunset Transit Center and Merlo Garage. PGE will take possession of the Charging Infrastructure upon commissioning, if and only if PGE determines that the Charging Infrastructure meets all acceptance criteria described in Exhibit A, which is attached hereto and incorporated herein by this reference ("Acceptance Criteria"). Upon commissioning, TriMet shall assign all manufacturers' warranties associated with the Charging Infrastructure to PGE.
3. TriMet will pay for all power consumed by the Charging Infrastructure at the applicable standard electric rate schedule.
4. TriMet will reimburse PGE for operation and maintenance costs of the Charging Infrastructure on a time and materials basis in accordance with the rates set forth on Exhibit C, which is incorporated into this Agreement by this reference. Payment to PGE will be made within 30 days of TriMet's receipt of a proper invoice.

B. PGE Responsibilities:

1. Title to the Charging Infrastructure shall transfer from TriMet to PGE after PGE determines that all Acceptance Criteria are met.

2. After title to the Charging Infrastructure transfers to PGE, PGE shall operate and maintain the Charging Infrastructure needed to provide electric bus charging services at TriMet's Sunset Transit Center and Merlo Garage for a period of no less than 10 years. PGE may engage one or more third party contractors to complete its obligations under this Agreement. PGE shall complete the following tasks:
 - a. Remote monitoring.
 - i. Monitor the operation of the Charging Infrastructure, including daily remote viewing of equipment performance and diagnostics. If available, PGE shall also have real-time alerts reported to relevant staff via phone, text, or e-mail.
 - ii. If daily viewing or received alerts report equipment malfunction, PGE shall send a request for on-site technical services within one hour of receiving an alert.
 - b. Periodic inspections:
 - i. Inspect the Charging Infrastructure located at Sunset Transit Center for general wear or malfunction on a periodic basis as recommended by the manufacturer or as otherwise mutually agreed upon by TriMet and PGE. Inspection activities may include a visual inspection of all power distribution equipment, charging stations, mechanical poles, pantographs (viewing from ground level only) and visual and electronic observation of electric bus charging sessions.
 - ii. Inspect the Charging Infrastructure located at Merlo Garage for general wear or malfunction as recommended by the manufacturer. Inspection activities may include a visual inspection of all power distribution equipment, charging stations, control modules, cables, and connectors and visual and electronic observation of electric bus charging sessions.
 - iii. If periodic inspections reveal equipment failure, PGE shall request on-site technical services within one hour for inspection, diagnosis, and emergency repair.
 - c. Manufacturer recommended routine maintenance:
 - i. Conduct manufacturer recommended maintenance on the Charging Infrastructure.
 - ii. PGE shall use commercially reasonable efforts to perform the manufacturer's recommended maintenance at such times as to leave TriMet's revenue bus service uninterrupted, to include working evenings and weekends. TriMet shall work with PGE to secure access to the site to allow such off hour schedules.
 - iii. All maintenance shall be performed by qualified technicians.
 - d. Repairs, including emergency repairs:
 - i. Conduct emergency repairs on the Charging Infrastructure on an as needed basis.
 - ii. Requests for emergency repair can be made by TriMet or PGE staff. Requests for repair shall be made via telephone, e-mail, or text message to an agreed upon representative at PGE.
 - iii. PGE shall begin remote diagnostic and troubleshooting activity and PGE shall request a technician within one hour of receiving a request for emergency service.

- iv. All emergency repairs shall be completed by qualified technicians.
 - v. Emergency repair service calls shall begin with inspection of malfunctioning equipment, a diagnosis of the potential issue, and an expected cost and time required for repair.
 - vi. PGE shall use commercially reasonable efforts to repair the equipment in a timely fashion.
 - vii. If Charging Infrastructure cannot be repaired within one hour of the service technician's arrival, TriMet shall be notified and given an estimated time until the equipment is anticipated to be repaired.
- e. Housing of common materials needed for manufacturer recommended maintenance and emergency repairs.
- i. Warehouse materials needed for recommended maintenance and common emergency repairs.
- f. Equipment replacement due to catastrophic failure.
- i. In the case of total equipment failure that is not caused by TriMet and not covered by the manufacturer's warranty, PGE may either replace the necessary equipment at PGE's expense or terminate this Agreement by providing notice to TriMet. In the case of total equipment failure that is caused by TriMet, TriMet may either replace the necessary equipment at TriMet's expense or terminate this Agreement by providing notice to PGE.
- g. End of term responsibilities.
- i. At least sixty (60) days prior to the end of the term of this Agreement, the parties shall negotiate a mutually agreeable plan for the Charging Infrastructure that will commence at the end of the term of this Agreement, including but not limited to any of the following:
 - 1. PGE sells all Charging Infrastructure to TriMet at a mutually agreed upon price pursuant to a separate purchase agreement; or
 - 2. PGE leases all Charging Infrastructure to TriMet at a mutually agreed upon price pursuant to a separate lease agreement.
 - ii. If at the end of the term of this Agreement the parties have not come to a mutual agreement pursuant to subpart (i) above, the term of the Agreement shall automatically extend for a period of two (2) years and TriMet shall lease all Charging Infrastructure from PGE for such two (2) year extension term at a rate determined by a valuation expert selected by the parties. If at the end of the two (2) year term the parties are unable to agree on the future operation of the Charging Infrastructure, PGE shall have the right to remove the Charging Infrastructure, with the exception of infrastructure foundations and underground cables, wires, conduit, or other equipment, off of TriMet's premises, at PGE's expense. In the event PGE does not remove the Charging Infrastructure within ninety (90) days after the end of the two (2) year extension term, title to the Charging Infrastructure shall transfer to TriMet and the Charging Infrastructure will be deemed abandoned in place in "AS IS" condition, without any warranty (express or implied).
3. PGE will pay \$625,000 toward the cost of the Pilot Project ("PGE Contribution") within 30 days of the execution of this agreement. Payment shall be made by a mutually agreed upon method.

4. PGE will invoice TriMet for amounts owed under this Agreement on a monthly basis. Invoices shall be sent to:

TriMet
Accounts Payable
1800 SW First Ave, St. 300
Portland, OR 97201

- c. **Limitation of Liability** IN NO EVENT SHALL EITHER PARTY OR ANY OF ITS REPRESENTATIVES BE LIABLE UNDER THIS AGREEMENT TO THE OTHER PARTY OR ANY THIRD PARTY FOR ANY CONSEQUENTIAL, INCIDENTAL, INDIRECT, EXEMPLARY, SPECIAL OR PUNITIVE DAMAGES, INCLUDING ANY DAMAGES FOR BUSINESS INTERRUPTION, LOSS OF USE, REVENUE OR PROFIT, WHETHER ARISING OUT OF BREACH OF CONTRACT, TORT (INCLUDING NEGLIGENCE) OR OTHERWISE, REGARDLESS OF WHETHER SUCH DAMAGES WERE FORESEEABLE AND WHETHER OR NOT THE BREACHING PARTY WAS ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

III. GENERAL PROVISIONS

1. **No Third-Party Beneficiary.** Except as set forth herein, this Agreement is between the Parties and creates no third-party beneficiaries. Nothing in this Agreement gives or shall be construed to give or provide any benefit, direct, indirect or otherwise to third-parties unless third-persons are expressly described as intended to be beneficiaries of its terms.
2. **Compliance with Laws.** The Parties shall comply with all federal, state and local laws, regulations, executive orders and ordinances applicable to the work under this Agreement. If a Party is not in compliance with any law, regulation, executive order or ordinance, it shall take immediate steps to gain compliance.
3. **Insurance Requirements.** PGE and TriMet are both self-insured. Both Parties agree the other shall not be required to purchase the insurance described below unless it is no longer self-insured. Any purchased insurance shall meet the following requirements.
 - a. **Comprehensive or Commercial General Liability Insurance covering bodily injury and property damage.** This insurance shall include personal injury coverage; contractual liability coverage for the indemnity provided under this Agreement; and products/completed operations liability. Combined single limit per occurrence shall not be less than \$1,000,000, or the equivalent. Each annual aggregate limit shall not be less than \$2,000,000, when applicable. The liability coverage required for performance of the Agreement shall include both TriMet and PGE as additional insureds, to the extent allowed by law. The party obtaining such insurance shall furnish the other party with a Certificate of Insurance for the limits set out above, which is to be in force and applicable to the Work. The insurance coverage shall not be amended, altered, modified, or canceled without at least thirty (30) days prior written notice to TriMet or PGE, as applicable.
 - b. **Worker's Compensation.** TriMet and PGE, and all employers working under this Agreement, are subject employers under the Oregon Workers' Compensation Law and

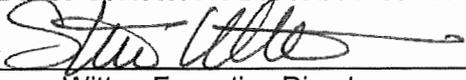
shall comply with ORS 656.017, which requires them to provide Workers' Compensation coverage for all their subject workers. Each party shall be responsible for all costs and expenses related to its employment of individuals to perform the work under this Agreement, including but not limited to, retirement system contributions, Workers Compensation, unemployment taxes, and state and federal withholdings.

4. **Indemnification.** Each of the Parties shall hold harmless, indemnify and defend the other and its officers, directors, employees and agents from and against all claims, demands, penalties, and causes of action of any kind or character relating to or arising from this Agreement (including the cost of defense thereof, including attorney fees) in favor of any person on account of personal injury, death, damage to property, or violation of law, which arises out of, or results from, the willful misconduct or negligent acts or omissions of the indemnitor, its officers, employees, or agents. TriMet's indemnity obligation is governed by the Oregon Tort Claims Act, codified at ORS 30.260 through 30.300, and the limits therein.
5. **Information Gathering.** Each party agrees to deliver to the other party information that is reasonably requested by such other party that will be utilized to report the learnings from the Pilot to the Oregon Public Utility Commission ("OPUC"), as required by the stipulation ordered by the OPUC in UM1811. Such learning may include, but are not limited to those attached to this Agreement as Exhibit D.
6. **Effective and Termination Dates.**
 - a. This Agreement shall be effective upon the date all required signatures are obtained. PGE may terminate this Agreement for any reason at any time by providing TriMet sixty (60) days prior notice.
 - b. Either PGE or TriMet may terminate this Agreement in the event of a breach of the Agreement by the other. Prior to such termination, however, the Party seeking the termination shall give the other Party written notice of the breach and of the Party's intent to terminate. If the breaching Party has not entirely cured the breach within thirty (30) days of the notice (or, if the breach is not one that can reasonably be cured within thirty days, if the breaching Party is not working diligently to cure such breach), then the Party giving the notice may terminate the Agreement at any time thereafter by giving a written notice of termination.
7. **Remedies.** The remedies provided under this Agreement shall not be exclusive. The parties also shall be entitled to any other equitable and legal remedies that are available.
8. **Oregon Law, Dispute Resolution and Forum.** This Agreement shall be construed according to the laws of the State of Oregon. TriMet and PGE shall negotiate in good faith to resolve any dispute arising out of this Agreement. If the Parties are unable to resolve any dispute within fourteen (14) calendar days, the Parties are free to pursue any legal remedies that may be available. Any litigation between PGE and TriMet arising under this Agreement or out of work performed under this Agreement shall occur, if in the state courts, in the Multnomah City Circuit Court, and if in the federal courts, in the United States District Court for the District of Oregon located in Portland, Oregon.
9. **Assignment.** Neither TriMet nor PGE shall assign this Agreement, in whole or in part, or any right or obligation hereunder, without the prior written approval of the other.

10. **Severability/Survivability.** If any provision of this Agreement is found to be illegal or unenforceable, this Agreement nevertheless shall remain in full force and effect and the provision shall be stricken. All provisions concerning indemnity survive the termination of this Agreement for any cause.
11. **Interpretation of Agreement.** This Agreement shall not be construed for or against any Party by reason of the authorship or alleged authorship of any provision. The Section headings contained in this Agreement are for ease of reference only and shall not be used in constructing or interpreting this Agreement.
12. **Entire Agreement; Modification; Waiver.** This Agreement constitutes the entire Agreement between the parties on the subject matter hereof and supersede all prior or contemporaneous written or oral understandings, representations or communications of every kind. There are no understandings, Agreements, or representations, oral or written, not specified herein regarding this Agreement. No course of dealing between the parties and no usage of trade will be relevant to supplement any term used in this Agreement. No waiver, consent, modification or change of terms of this Agreement shall bind either party unless in writing and signed by both parties. Such waiver, consent, modification or change, if made, shall be effective only in the specific instance and for the specific purpose given. The failure of a party to enforce any provision of this Agreement shall not constitute a waiver by a party of that or any other provision.
13. **Inspection of Records.** Each of the Parties shall have the right to inspect, at any reasonable time, such records in the possession, custody or control of the other Party as it deems necessary for review of the other party's obligations and its rights under this Agreement. The cost of such inspection shall be borne by the inspecting Party.
14. **Force Majeure.** If a Party is delayed or hindered in, or prevented from the performance required under this Agreement by reason of strikes, lockouts, labor troubles, riots, insurrection, war, acts of God or other reason of like nature not the fault of the Party delayed in performing work or doing acts, including, but not limited to, equipment failure not the fault of the Party delayed, such Party is excused from such performance for the period of delay, providing that the Party claiming Force Majeure has notified the other Party of the delay as soon as is reasonably possible. In such event, the period for the performance shall be extended for the period of such delay.
15. **Branding.** PGE shall have sole discretion and authority to brand the Charging Infrastructure (the "Brand"). PGE shall provide TriMet ten (10) business days to review and provide feedback regarding the Brand before it is placed into use. TriMet shall provide PGE ten (10) business days to review and provide feedback regarding any other branding relating to the Pilot Project before it is placed into use. PGE and TriMet shall use commercially reasonable efforts to collaborate on the creation of mutually agreeable public communications regarding the Pilot Project. PGE shall be responsible for the installation and physical use of the Brand. Neither party shall use the other party's name or logo without the prior approval of such party.

IN WITNESS WHEREOF, the parties hereto have executed this Intergovernmental Agreement.

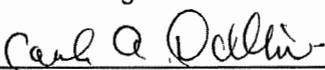
**TRI-MET METROPOLITAN
TRANSPORTATION DISTRICT OF OREGON**

By 
Steven Witter, Executive Director

Date 4/3/18

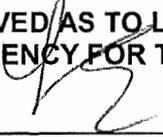


Portland General Electric Company,
by and through

By 

Date 4/24/2018

**APPROVED AS TO LEGAL
SUFFICIENCY FOR TRIMET**

By: 
TriMet Legal Department

Date 4/3/18

EXHIBIT A – ACCEPTANCE CRITERIA

Ownership of the Charging Infrastructure shall be transferred to PGE if and only if the following acceptance criteria are met:

1. All charging infrastructure installation services were performed by qualified professionals.
2. All charging infrastructure was installed according to all applicable installation instructions, vendor recommendations, codes, standards, and regulations.
3. All necessary permits were obtained.
4. All necessary inspections were completed and passed.
5. All Charging Infrastructure is inspected and approved by PGE staff or parties hired on behalf of PGE for adherence to codes, standards, regulations, safety guidelines, and general workmanship.
6. All vendors, including but not limited to ABB and New Flyer, commissioned and approved the operation of all Charging Infrastructure.
7. All Charging Infrastructure is approved for safe operation in close proximity to the public by PGE's internal safety committee. PGE's safety team will review all Charging Infrastructure before, during, and after construction.
8. Each of the five electric buses have successfully charged using on-route Charging Infrastructure at least 20 times of a period of no less than two weeks.
9. Each of the five electric buses have successfully charged on each charging position of the depot Charging Infrastructure at least once.
10. Each depot Charging Infrastructure position successfully completes five charging sessions.
11. All Charging Infrastructure has met the requirements for revenue bus service as determined by TriMet.
12. All Charging Infrastructure located at Merlo Garage can successfully sequentially charge the buses in the required amount of time, as determined by TriMet.
13. All Charging Infrastructure is successfully connected to all necessary communications networks and equipment and can successfully communicate with all five buses and the vendor's back-end software platform.
14. PGE staff and/or parties contracted by PGE received training for equipment owners to adequately inspect and maintain the charging infrastructure.

EXHIBIT B – EQUIPMENT SPECIFICATIONS

“Charging Infrastructure” means all the electric bus charging infrastructure and all associated equipment, installed at TriMet’s Sunset Transit Center and Merlo Garage, and includes but is not limited to the following:

Sunset Transit Center

- 1x ABB HVC 450 E-Bus Charger, including:
 - 1x Mechanical pole with pantograph and pantograph control module
 - 1x HVC-150 ABB fast charging station
 - 2x HVC-150S ABB fast charging stations
 - 1x Main power distribution cabinet with:
 - 3x 150 kW 3 pole power switches
 - 9x 300 A 3 pole fuses
 - 3x surge protection devices
- All cabling and conduit between the main power distribution cabinet, charging stations, and mechanical pole.
- All necessary switchgear associated with ABB HVC 450 E-Bus Charger.
- 10-year software license for equipment operation, remote monitoring, diagnostics, and data collection.
- All necessary maintenance and installation manuals.
- All other software or equipment required for the operation, maintenance, and repair of the ABB HVC 450 E-Bus Charger.

Merlo Garage

- 2x ABB HVC 100C E-Bus Chargers, including:
 - 2x HVC-100 ABB fast charging stations
 - 5x ABB charge control sets with 25 foot cables with SAE J1772 Combined Charging System Type 2 connectors.
 - 1x Main power distribution cabinet with:
 - 2x 100 kW 3 pole power switches
 - 6x 300A 3 pole fuses
 - 2x surge protection devices
- All cabling and conduit between the main power distribution cabinet and charging stations.
- All foundations and other support equipment required for installation of 2x ABB HVC 100C E-Bus Chargers.
- All necessary switchgear associated with 2x ABB HVC 100C E-Bus Chargers.
- 10-year software license for equipment operation, remote monitoring, diagnostics, and data collection.
- All necessary maintenance and installation manuals.
- All other software or equipment required for the operation, maintenance, and repair of 2x ABB HVC 100C E-Bus Chargers.

EXHIBIT C – LABOR RATES

PGE shall bill TriMet at the following rates:

- Monitoring
 - Billing Rate: \$85 per hour
 - Expected Annual Hours: 200 hours per year
- Periodic inspection
 - Billing Rate: \$120 per hour
 - Expected Annual Hours: 100 hours per year
- Preventative maintenance
 - Billing Rate: \$120 per hour
 - Expected Annual Hours: 50 hours per year
- Emergency repair
 - Billing Rate: \$120 per hour
 - Expected Annual Hours: Unknown
- Materials, equipment, and mileage shall be billed at documented actual cost plus 10% to pay for overhead associated with administration, procurement, shipping, and warehousing.
- Overtime, afterhours, and weekend work shall be billed at one and half times the above rates. Work on PGE holiday shall be billed at two times the above rates.

Rates shall increase at a rate of 3% per contract year.

Should PGE contract a third party to perform its obligations under this Agreement, PGE shall bill TriMet all actual documented costs plus 10% to pay for overhead associated with administration, procurement, shipping, and warehousing.

EXHIBIT D - UM1811 DRAFT PILOT LEARNINGS

1. TriMet Pilot

Description

PGE will own, operate and maintain the bus charging infrastructure, including one 450 kW on route overhead charger and two 100 kW depot chargers powering five charging dispensers for use as part of a mass transit electrification pilot with TriMet. A goal of this pilot is to study impacts of electrified mass transit on PGE's system to help in determining how it can be used to create a system benefit.

Pilot Learnings

- Pilot design elements, including an exploration of:
 - Program Implementation
 - Pricing
 - How costs and customer use of different options in the existing, filed tariff affect future tariff design?
 - Suppliers
 - PGE physical infrastructure and cost
 - Line extension
 - Line drop
 - Distribution equipment requirements
 - Customer service and technical assistance needs
- Actual impacts of bus charging load on system infrastructure
 - Additional infrastructure and cost, if any, needed to support and ensure reliable bus charging infrastructure.
- Actual impacts of bus charging load on the distribution system loading
 - Total load and non-coincident peak load compared to feeder loading.
 - Coincident peak demand, summer and winter of combined depot chargers.
- Actual impacts to the bus fleet and fleet facility, of which some information will be provided by TriMet.
 - Based on information provided by TriMet:
 - How does the integration of chargers impact internal logistics of route planning? (Benefits and costs to operations).
 - How does their optimal schedule for charging align with system load?
 - How flexible is their charging need such that it could better align with system loading?
 - TriMet staff feedback on operations and charging compared to existing fleet resources.
 - Total combined costs from PGE and TriMet, including charging infrastructure installation, operation, and maintenance costs.
- PGE's initial deployment with TriMet will include time of use (TOU) rates with demand charges (through Schedule 85-P). PGE intends to study the system impacts on peak days, evaluate the bus charging use case, and assess the customer's needs. PGE may include these alternative dynamic pricing elements in the future to maximize the benefit of this program to PGE's electrical system.