

COOPERATIVE AGREEMENT BETWEEN
PORTLAND GENERAL ELECTRIC
AND
THE CITY OF PORTLAND
AND
PORTLAND STATE UNIVERSITY

This Cooperative Agreement ("Agreement"), effective as of June 30, 2018 ("Effective Date"), is entered into between Portland General Electric Company ("PGE"), the City of Portland ("CoP"), and Portland State University ("PSU"), hereinafter referred to as the "parties" collectively and each as a "party."

RECITALS

WHEREAS the parties have shared interest in installing a "PREPHub" in the Portland Metro Area as part of a pilot project to test its functionality and durability as a community resiliency solution, hereinafter referred to as the "PREPHub Pilot Project."

WHEREAS the parties have agreed to enter into this Agreement to set forth the terms, timelines and deliverables associated with their collaboration on the PREPHub Pilot Project;

THEREFORE, the parties agree as follows:

TERMS AND CONDITIONS

ARTICLE I - PROPOSED WORK

The parties shall use reasonable efforts to carry out the PREPHub Pilot Project in accordance with the plan as described in ATTACHMENT A incorporated herein by reference.

ARTICLE II - TERM AND PROJECT PERIOD

This Agreement becomes effective as of the Effective Date and will terminate on *December 1, 2021*, unless extended by mutual written agreement of the parties or terminated early in accordance with ARTICLE XII.

ARTICLE III - CONSIDERATION

Total funding for the PREPHub Pilot Project is \$360,000 PSU will receive and oversee the utilization of funding to contribute to the proposed work as described in Attachment A (the "Work"). Funding for the PREPHub Pilot Project will be provided and allocated to the Work as follows:

PSU shall contribute \$120,000.00 to the PREPHub Pilot Project for the design, fabrication, installation, construction management services, and operations and maintenance of a PREPHub unit that will be located on the PSU campus.

PGE has contributed \$150,000.00 to the PREPHub Pilot Project in accordance with the letter agreement between PGE and PSU dated December 22, 2017 and the letter of extension between the PGE and PSU dated March 28, 2018. This funding is allocated to the PREPHub Pilot Project as follows:

1. \$100,000.00 to Portland State University for the design, fabrication, installation, operation, and maintenance of one PREPHub unit located at PSU campus.
2. \$50,000.00 for the integration and control of energy storage systems to the PREPHub unit

CoP shall contribute \$90,000.00 to the PREPHub Pilot Project for the design, fabrication, installation, operation, and maintenance of the PREPHub unit located at the PSU campus. Payment shall be made according to the following schedule:

Subject to approval to enter into this Agreement by the Portland City Council, CoP will contribute \$90,000.00 to the PREPHub Pilot Project as soon as is practicable following such approval.

All unspent funds will be used in a manner agreed upon by the parties to this agreement.

ARTICLE IV - COPYRIGHT

Each party shall retain ownership to all copyrights on materials produced by their personnel in the performance of the PREPHub Pilot Project. The parties agree to grant to the other parties, a perpetual, non-transferable, non-exclusive free copyright license to make derivatives, copy, display and distribute any reports and deliverables outlined in ATTACHMENT A, with the exception of any software source code provided by PSU in performance of the research components in the project.

ARTICLE V – PATENTS AND INVENTIONS

All patentable inventions, discoveries, or improvements developed, conceived, owned or controlled by any of the parties before the Effective Date and/or developed or conceived by a party independently of the PREPHub Pilot Project ("Background Intellectual Property") shall remain the property of the party who owned, controlled, developed or conceived of such Background Intellectual Property. Each party hereby grants to the other party a limited term research license to use such party's Background Intellectual Property that is relevant to the PREPHub Pilot Project solely for the purpose of conducting the project.

All patentable inventions, discoveries, or improvements conceived or developed as a result of performing the PREPHub Pilot Project by PSU personnel ("University Inventions") shall be owned by PSU in accordance with PSU policy. All such patentable inventions made by PGE personnel shall be owned by PGE. All such patentable inventions made by CoP personnel shall be owned by CoP. All such patentable inventions for which the inventors include two or more of the parties' personnel shall be jointly owned ("Joint Inventions") by the respective parties.

In the event any Joint Inventions result from the PREPHub Pilot Project, PSU and PGE and CoP shall negotiate in good faith a mutually beneficial Joint Invention management agreement within ninety (90) days of PGE and CoP's notification. Such Joint Invention management agreement will contain reasonable terms, and a) govern the patent protection, patent prosecution and commercialization of the Joint Inventions; b) determine the sharing between the parties of any proceeds, revenues or royalties resulting from the commercialization or license to any third party of the Joint Inventions; and c) may grant to PGE and CoP an exclusive license of PSU's rights in the Joint Inventions for the purpose of sub-licensing and/or commercializing such Joint Inventions. If PGE and CoP do not wish to commercialize or sub-license the Joint Inventions, or if within ninety (90) days from PGE and CoP's notification a Joint Invention development agreement is not concluded, PSU and PGE and CoP shall have no further obligation to each other regarding such Joint Inventions. PSU and PGE and CoP each reserve their rights in Joint Inventions for non-commercial use.

Nothing contained in this Agreement shall be deemed to grant, either directly or by implication, estoppel or otherwise any license under any patents, patent applications or other proprietary interests of any other invention, discovery, or improvement of either party.

ARTICLE VI - PUBLICATION BY UNIVERSITY

PSU retains the right to publish or otherwise publicly disclose any results of the work conducted under this Agreement. At least thirty (30) days prior to submission for publication or disclosure, PSU will submit a copy of any proposed manuscript or other disclosure relating to the Project to the other parties to this Agreement for review of such manuscript to identify patentable subject matter and any inadvertent disclosure of other parties Confidential Information. Should the other parties identify patentable subject matter, either party may request that PSU file and prosecute a patent application, and delay publication for period of time not to exceed an additional sixty (60) days if necessary to permit the preparation and filing of such patent application.

The other parties shall keep any unpublished manuscript written by PSU confidential, in accordance with ARTICLE VII, until such manuscript is published.

PSU may use, reuse, and analyze the data developed by PSU during the course of the Project for teaching or research purposes.

ARTICLE VII – PERFORMANCE STANDARD

PSU shall ensure that the Work is performed by persons that are fully experienced and properly qualified, licensed, and equipped to perform the Work and shall ensure that strict discipline and good order is enforced at all times among those assigned to complete the Work. PSU shall perform the Work in a prudent, good and workmanlike manner, free from defects, errors and omissions, and with a high degree of skill and care, no less than that which is utilized by firms and professionals in the same field under the same or similar circumstances.

CONFIDENTIALITY

"Confidential Information" shall mean any information which is provided by one party to the other and (i) is clearly marked confidential with an appropriate legend at the time of disclosure if disclosed in a tangible or written form, or (ii) if disclosed orally or in any other transitory medium, is identified as confidential at the time of disclosure and provided in a written summary within thirty (30) days of disclosure. A receiving party's obligation to protect Confidential Information of the disclosing party shall not include information that:

- was already in receiving party's possession prior to disclosure;
- is or becomes a matter of public knowledge through no fault of receiving party;
- is independently developed by receiving party without use of disclosing party's Confidential Information;
- is received by or becomes known to receiving party from another source in a manner that does not knowingly breach an obligation of confidentiality owed to the disclosing party; or
- is approved for release or use by written authorization of the disclosing party.

Each party shall only use the other party's Confidential Information for the purposes of the Project. The receiving party shall exert reasonable efforts to protect the disclosing party's Confidential Information for a period of three (3) years from the date of receipt against unauthorized use, dissemination or publication. All written documents containing Confidential Information and other material in tangible form received by either party under this Agreement shall remain the property of the disclosing party, and such documents and materials, together with copies of excerpts thereof, shall promptly be returned to disclosing party upon request, except one copy may be retained for archival purposes.

Notwithstanding the foregoing, the receiving party may disclose Confidential Information as required by law, court order, or government regulation provided however, that the receiving party timely notifies and provides disclosing party with an opportunity to minimize or oppose such disclosure. PGE and CoP acknowledges that PSU is subject to, and shall treat appropriately marked Confidential Information as confidential to the extent permitted under the Oregon Public Records Law (ORS 192.311-192.478).

ARTICLE VIII – EQUIPMENT AND OTHER PROPERTY

All equipment, materials, or other property purchased or fabricated under the terms of this Agreement becomes the property of PSU upon acquisition.

ARTICLE IX - INDEMNIFICATION

To the extent permitted by Oregon Law (ORS 30.260 through 30.300) and the Oregon Constitution, Article XI, Sections 7 and 9, each of the parties shall indemnify the other parties against any liability for their own wrongful or negligent acts or omissions; provided, however, no party shall be required to indemnify the other parties for any such liability arising out of the wrongful or negligent acts of employees or agents of

the other parties. The limitations set forth under Oregon Law (ORS 30.260 through 30.300) and the Oregon Constitution, Article XI, Sections 7 and 9 that apply to PSU and CoP shall apply in equal force and to the same extent as they apply to PSU and CoP.

IN NO EVENT SHALL ANY PARTY OR ANY OF ITS REPRESENTATIVES BE LIABLE UNDER THIS AGREEMENT TO ANY 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 SUCH PARTY WAS ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

ARTICLE X – GOVERNING LAW AND DISPUTES

This Agreement shall be governed and construed in accordance with the laws of the State of Oregon, without regard to the conflict of law provisions therein. Venue of any action brought under this Agreement shall occur, if in the state courts, in the circuit court of the State of Oregon for Multnomah County, and if in the federal courts, in the United States District Court for the District of Oregon.

In cases where a dispute arises in relation to this Agreement, the parties agree to make a good faith effort to settle the dispute by mutual consultation.

ARTICLE XI - ASSIGNMENT

No party may assign or transfer any interest in this Agreement, nor assign any claims for money due or to become due during this Agreement without the prior written approval of the other parties.

ARTICLE XII - TERMINATION

Each party may terminate this Agreement by giving the other parties at least thirty (30) days prior written notice of such termination. In the case of such termination, PSU will proceed in an orderly fashion to terminate any outstanding commitments and to stop the Work as soon as it is practicable to do so. If this Agreement is terminated for any reason prior to the completion of the Project, PSU will use the funding provided in accordance with Article III to cover all reasonable costs incurred for the Project through the date of termination. Such costs shall include all non-cancelable commitments that exist at the time the notice of termination is received.

In the event that any party commits a material breach of its obligations under this Agreement and fails to cure that breach within thirty (30) days after receiving written notice of the breach from the non-breaching party, the non-breaching party may terminate this Agreement immediately upon written notice to the party in breach.

Termination of this Agreement, however effectuated, shall not release the parties from their rights and obligations under the ARTICLES on Consideration, Equipment and Other Property, Copyright, Patents and Inventions, Publication by PSU, Confidentiality, and Indemnification

ARTICLE XIII – ORDER OF PRECEDENCE

In the event of a conflict between the Articles of this Agreement and the appendices and attachments hereto, the conflict shall be resolved by the following order of precedence:

The ARTICLES of the Agreement
ATTACHMENT A

ARTICLE XIV - NOTIFICATION

All notifications required by this Agreement shall be executed in writing by the parties hereto and shall be directed to the following individuals:

LEGAL NOTICES/AUTHORIZED REPRESENTATIVES		
For PSU:	For PGE:	For CoP:
Jennifer Ward, Director Sponsored Projects Administration Portland State University PO Box 751 (SPA) Portland, OR 97207-0751 Phone: 503-725-8308 Email: awards@pdx.edu	Verlea Briggs, Director (Interim) Customer Energy Solutions Portland General Electric Phone: 503.464.8029 Email: verlea.briggs@pgn.com	Franco Lucchin Sr. Deputy City Attorney City of Portland Phone: 503-823-3089 Email: franco.lucchin@portlandoregon.gov
FINANCIAL CONTACT		
Anisa Chisti, Finance & Compliance Manager Sponsored Projects Administration Portland State University PO Box 751 (SPA) Portland, OR 97207-0751 Phone: 503-725-3668 Email: spafct@pdx.edu	Kai Lübbe, Project Manager Customer Energy Solutions Portland General Electric Phone: 503.464.7088 Email: kai.lubbe@pgn.com	Somer Erickson Business Operations Supervisor, Finance & Grants Phone: 503-823-4187 Email: Somer.Erickson@portlandoregon.gov
PROJECT DIRECTOR		
Kristen Tuft Smart Cities Liaison, Office of Strategic Partnerships Assistant Research Professor Department of Computer Science Phone: 503-725-2419 Email: tuft@pdx.edu	Joe Colett, Emerging Technology Engineering Specialist Customer Energy Solutions Portland General Electric Phone: 503.464.7846 Email: joe.colett@pgn.com	Courtney Patterson Interim Director Bureau of Emergency Management Phone: 503-793-0676 Email: Courtney.Patterson@portlandoregon.gov

ARTICLE XV – ENTIRE AGREEMENT, MODIFICATIONS, WAIVER AND SEVERANCE

This Agreement constitutes the complete and final Agreement between the parties. Any modifications to this Agreement or the PREPHub Pilot Project must be executed in writing by the authorized representatives of the parties. Terms and conditions which may be set forth (front, reverse, attached or incorporated) in any purchase order issued by the parties in connection with this Agreement shall not apply, except for informational billing purposes.

The failure of a party in any instance to insist upon the strict performance of the terms of this Agreement will not be construed to be a waiver or relinquishment of any of the terms of this Agreement, either at the time of the party's failure to insist upon strict performance or at any time in the future, and such terms will continue in full force and effect.

Each clause of this Agreement is a distinct and severable clause and if any clause is deemed illegal, void or unenforceable, the validity, legality or enforceability of any other clause or portion of this Agreement will not be affected thereby.

ARTICLE XVI – INDEPENDENT CONTRACTOR

In the performance of the Agreement, no party is authorized or empowered to act as agent for the other parties nor shall one party be bound by the acts or conduct of any of the other parties, any liability or understanding unless expressly stated herein.. Each party shall perform its duties hereunder as an

independent contractor and not as an employee of the other. None of the parties, nor any agent or employee of any of the parties, shall be entitled to unemployment insurance or workers compensation benefits through any of the other parties.

ARTICLE XVII – NO WARRANTIES

All intellectual property, project results, reports and deliverables developed by university under this agreement are provided to sponsor "as is." University makes no representation or warranty as to the accuracy, completeness, or fitness for any purpose or condition including freedom from any patent or other intellectual property infringement with respect to the project results, the deliverables created under the project or publications resulting from the project, whether written or oral, statutory, expressed or implied.

This agreement constitutes the entire agreement between the parties. There are no understandings, agreements, or representations, oral or written, not specified herein regarding this agreement, unless otherwise referenced in this document. No amendment, consent, or waiver of terms of this agreement shall bind either party unless in writing and signed by all parties. Any such amendment, consent, or waiver shall be effective only in the specific instance and for the specific purpose given. By the signature below of its authorized representative, acknowledges having read and understood the agreement and sponsor agrees to be bound by its terms and conditions.

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be executed as of the date set forth herein by their duly authorized representatives.

PORTLAND STATE UNIVERSITY

PORTLAND GENERAL ELECTRIC COMPANY

By: _____

By: _____

Name/Title: _____

Name/Title: _____

Date: _____

Date: _____

CITY OF PORTLAND

By:  _____

Name/Title: Courtney Patterson, Director

Date: June 29, 2018

APPROVED AS TO FORM


CITY ATTORNEY

ATTACHMENT A**PREPHub Pilot Project Plan and Timeline**

Portland General Electric (PGE), the City of Portland (CoP), and Portland State University (PSU) will collaborate on a pilot project focused on testing the utility of a PREPHub to achieve Emergency Preparedness Goals. PREPHubs are disaster resilience nodes composed of technological services that a community may use in both every-day and emergency scenarios, such as radio communications, public Wi-Fi, cached goods, lights, etc.

The objective of this project is to install one (1) PREPHub on the Portland State University campus as a pilot to test its functionality and durability as a community resiliency solution.

The PREPHub site will include a residential energy storage device, to which PSU will add its DÉRAS (Distributed Energy Resource Aggregation System) aggregation control agents.

During regular operations, the devices will be managed by PGE and PSU as an extension of PGEs existing residential storage demonstration project. During an outage the storage device will island from the grid and provide backup power to the PREPHub. PREPHubs may power small plug loads, LED lighting and an informational display. Local generation may be provided by a PV module and a DC pedal power generator. PSU and PGE will use the sites to expand upon existing research on controlling and aggregating distributed energy storage for PGE.

Based on the findings of the pilot project, the City of Portland, through the Portland Bureau of Emergency Management (PBEM), will determine the feasibility for expansion and adoption of additional PREPHubs.

The project partners will be responsible for collaborating to carry out the pilot project as outlined below.

Portland State University, under the direction of Kristin Tufte, will use the funding provided in accordance with the terms of this agreement to oversee the design, installation, operation and maintenance of one (1) PREPHub on the Portland State University campus. PSU will:

1. Hold at least two PREPHub design workshops to gather feedback from project partners and/or members of the community.
2. Commission and/or license final PREPHub designs that shall include:
 - a. At least one photovoltaic array and inverter of at least 1 kW in AC output
 - b. On-site energy storage of at least 10 kWh capacity and 5 kW power output
 - c. An educational sign / kiosk branded with PGE, City of Portland, and Portland State University logos
 - d. A connection to the utility grid
 - e. A connection to the internet via hardwired or wireless connection
 - f. A pedal-powered DC generator
 - g. A passive amplification horn
 - h. A television display of at least 12 inches by 12 inches in size
 - i. At least five USB charging ports operational in both grid-connected and stand-alone configurations
 - j. An LED light operational in both grid-connected and stand-alone configurations
 - k. Connection to the PSU Alerts campus notification system (PSU location only)
3. Provide project management services for PREPHub fabrication and installation.

4. Operate and maintain the PREPHub unit for a pilot period of no less than two (2) years, including but not limited to the following tasks:
 - a. Conduct weekly remote monitoring activities that include reviewing the output and function of the photovoltaic and energy storage systems.
 - b. Conduct monthly inspections that include testing the function of photovoltaic array, energy storage system, pedal-powered DC generator, USB charging ports, television screen, and any other onboard electronics.
 - c. Conduct monthly equipment cleanings including removing dirt, debris, and/or graffiti.
 - d. Conduct all manufacturer recommended maintenance.
 - e. Conduct emergency repairs on an as needed basis as requested by Portland State University, City of Portland, or Portland General Electric staff.
 - f. Pay for electricity consumed by PREPHub site located on their property at Portland General Electric's standard retail electricity rates.
5. Design, fabricate, and install educational signage that describes the function of the PREPHub unit and displays the logos of Portland State University, City of Portland, and Portland General Electric
6. Remove and responsibly dispose of the unit at end-of-life including recovering and recycling all scrap metal, electronics, and energy storage devices

Portland State University (PSU), under the direction of Robert Bass, will initiate the integration and control of energy storage system on the PREPHub. PSU will use \$50,000 of the funding provided to begin the

1. Provide engineering guidance for the configuration of the PREPHub Battery Integration System (BIS)
2. Add DERAS agent control boards to the PREPHub BIS
3. Consult with PGE on use cases expected of BIS and mutually agree on up to 3 to be implemented in DERAS aggregator

Portland General Electric will:

1. Provide technical consultation for all energy storage system design, procurement, installation, operation, maintenance, and end-of-life.

PSU and PGE will collaborate to establish an agreement to fund continued work on the energy storage system including the following activities:

1. Establish communication between the PREPHub BIS and the PSU DERAS aggregator;
2. Integrate the PREPHub into the PSU DERAS aggregator;
3. Expand the utility use cases supported by the DERAS aggregator

City of Portland shall:

1. Conduct education and outreach events including but not limited to:
 - a. At least one resilience training with a curriculum mutually agreed upon by all parties and in line with PBEM NET/BEECN/Community resilience programming.
 - b. Inclusion of at least one PREPHub location in quarterly earthquake preparedness drills.
2. Test the feasibility of PREPHub units for installation at all City of Portland Basic Earthquake Emergency Communication Nodes, including a report detailing:
 - a. Overall ability of PREPHub designs to meet City of Portland goals and objectives
 - b. Total cost of design and installation of PREPHub locations
 - c. Costs of operations and maintenance of PREPHub locations

- d. Value of grid services derived from each location, based on information provided by PGE
- e. Costs and staff requirements of deploying PREPHubs at all City of Portland BEECN locations
- f. Lessons learned and potential design improvements

Portland General Electric (PGE), the City of Portland (CoP), and Portland State University (PSU) shall collaborate to develop and implement a plan to evaluate the PREPHUB during the course of the pilot project.

The criteria to evaluate the ability of PREPHub to provide community resilience solutions may include:

1. The estimated total number of unique interactions between the PREPHub device and members of the public during non-emergency conditions, as measured by:
 - i. Observation of the PREPHub by research staff.
 - ii. Total number of uses of DC pedal powered generator
 - iii. Total number of unique connections to the public Wi-Fi node (if applicable)
 - iv. Total number of unique charging sessions provided by the USB charging ports
2. The ability to provide services during simulated grid outage events, as measured by:
 - i. Total estimated number of charging sessions provided by the USB charging ports
 - ii. Total estimated hours of emergency signal illumination
 - iii. Total estimated hours of display illumination
3. The ability to provide grid services during non-emergency conditions, as measured by:
 - i. Total number of demand response events participated in
 - ii. Frequency and duration of all other grid services provided
4. The ability to successfully store emergency supplies and withstand vandalism
5. Community acceptance
6. Cost

Costs for carrying out the evaluation portion of this agreement are not included in the \$360,000 of funding outlined in Article III of this Cooperative Agreement.

At the end of the pilot, measurements of the above evaluation criteria will be compiled into a report authored by Portland State University and circulated to all other parties no later than three months after the completion of the pilot.

The PREPHub shall be licensed, fabrication, installed, evaluated, and decommissioned according to the following timeline:

- PREPHub Design Licensed from MIT: August 1st, 2018
- Report on PREPHub BIS Engineering Design: December 31, 2018
- PREPHub Fabrication Complete: June 1st, 2019
- PREPHub Installation Complete: July 1st, 2019
- PREPHub Pilot Start: August 1st, 2019
- PREPHub Six Month Evaluation Complete: February 1st, 2020
- PREPHub Year One Evaluation

- | | |
|--------------------------------|----------------------------------|
| Complete: | August 1 st , 2020 |
| • PREPHub Pilot Complete: | September 1 st , 2021 |
| • PREPHub Evaluation Complete: | December 1 st , 2021 |

FUTURE RESEARCH AND PLANNING

If all parties are in agreement that PREPHub meets City of Portland's resilience solution goals, arrangements shall be made to coordinate the fabrication, installation, operation, and maintenance of up to two (2) additional PREPHubs.

The PREPHub will be regarded as successfully providing resilience solutions if the following criteria are met:

1. More than 1,000 unique interactions with the community are recorded
2. Installed cost of the PREPHub is less than \$100,000 per unit
3. Annual maintenance costs are less than \$5,000 per unit per year
4. Communities provide positive feedback
5. All emergency supplies remained secure
6. No major incidents of vandalism impacted the performance of the PREPHub

Based on a successful outcome of the initial installation, the vision of the partners – City of Portland, Portland General Electric and Portland State Universities – is to install additional PREPHubs in selected locations in the City. Specifically, the partners intend to install a PREPHub in a traditionally underserved community, based on the community's interest in PREPHub. An educationally-focused PREPHub at OMSI is also being considered. During the time period of the pilot, the partners agree to plan for these potential additional installations with actions including engaging the general community, including, but not limited to BEECN and NETS members as well as representatives of traditionally underserved communities and OMSI. The 6-month and 1-year evaluations are intended to help the partners validate initial success and to define the parameters of future PREPHubs. The partners agree to keep the goal of making PREPHubs effective and available to traditionally underserved communities in mind while moving forward with the installation of the first PREPHub at Portland State University.