

Demonstration of Energy & Efficiency Developments (DEED) Grant Agreement
Silicon Valley Power
CG-2167 Maximizing the Effectiveness of Ductless Mini-Splits in Existing Homes

This Grant Agreement ("Agreement") is made and entered into by and between the American Public Power Association ("APPA") and **Silicon Valley Power** ("Grantee" and, collectively with APPA, the "Parties").

WHEREAS, the Board of Directors of the APPA has established the Demonstration of Energy & Efficiency Developments ("DEED") program which is dedicated to improving the operations and services of public power utilities by supporting and demonstrating its members' innovative activities through research, funding and education;

WHEREAS, Grantee has submitted a proposed demonstration project, in a DEED proposal submitted on **02/14/2018**, which is incorporated herein by reference, with data including a project description, the rationale, schedule, and estimated cost of the project, together with a statement of why the project is widely applicable to members of APPA, and supporting technical material;

WHEREAS, the DEED Board of Directors has found the proposed project to be meritorious and worthy of a DEED Grant;

NOW, THEREFORE, the Parties agree as follows:

1. **Funding.** APPA will supply a DEED Grant in the amount of **\$124,284** to Grantee. Payment shall be made within 30 days of receipt of invoice at APPA, as further described in Sections 9 and 10.

2. **Project and Project Personnel.** The project to be undertaken by Grantee is as follows: **Many utilities are incentivizing ductless heat pump (DHP) systems in homes, assuming that they will be used to replace old equipment. Instead, homeowners are typically installing them in a main living room area and keeping their old equipment as back-up. The result is that the DHP is not saving as much energy as expected. In this project, the Pacific Northwest National Laboratory will lead a study to investigate, model and test different solutions that focus on controlling the old HVAC system with the new DHP in a way that maximizes the use of the DHP. The ultimate solutions will be simple, reliable and inexpensive ways to keep homeowners comfortable and save energy, as more fully described in the Grantee's proposal *Maximizing the Effectiveness of Ductless Mini-Splits in***

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Existing Homes. The proposal, as well as the document DEED Grant Requirements & Instructions containing details related to preparing and submitting Quarterly Reports, Final Reports, and Summary Abstracts, are incorporated herein by reference and made a part of this Agreement. It is understood that the key personnel of this project are:

Mary Medeiros McEnroe, Public Benefits Program Manager, Silicon Valley Power.

3. **Term.** The DEED Grant shall commence on the date of Agreement execution. The Grantee is required to complete the project as approved by the DEED Board of Directors by **04/30/2020** as noted in the proposal. Any changes to the completion date must be addressed as further described in Section 6.

4. **Subcontractors.** Grantee has contracted with Battelle Memorial Institute, Pacific Northwest Division to perform work on the project herein. Said contract is attached as Attachment A and incorporated by reference herein.

5. **Accounting and Records.** Accounting for project funds (including receipts, Grantee or other contributions, and expenditures) will be in accordance with generally accepted accounting principles and practices, consistently applied, regardless of the source of funds.

Grantee shall maintain books, records, documents, and other evidence and accounting procedures and practices sufficient to reflect properly (a) the amount, receipt, and disposition by Grantee of all assistance received for the project and (b) the total cost of the project, including all direct and indirect costs of whatever nature incurred for the performance of the project.

Grantee's facilities or such facilities as may be engaged in the performance of the project for which the DEED Grant has been awarded, and records shall be subject at all reasonable times to inspection and audit by APPA.

Grantee shall preserve and make its records available to APPA until the expiration of three years from the date of final payment or completion of the project under this DEED Grant, whichever is later.

All APPA assistance received by Grantee pursuant to this Agreement shall be expended by Grantee solely for carrying out the approved project. Grantee may not delegate or transfer responsibility

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for the use of such funds. Grantee shall comply with all terms and conditions of the DEED Grant, to use grant funds efficiently and effectively within the approved budget, and to supervise completion of the project in a diligent and professional manner. This responsibility may be neither delegated nor transferred without written permission by APPA.

6. Project Changes. Grantee shall promptly notify APPA in writing by e-mail to DEED@PublicPower.org or by certified mail (return receipt requested) of all proposed major project changes, including, but not limited to:

- (a) major changes in the technical plans or specifications for the project;
- (b) acceleration or deceleration in the time of performance of the project, or any major phase thereof;
- (c) major changes that may increase or decrease the total cost of a project;
- (d) major changes that may affect the approved scope of a project; and
- (e) major changed site conditions affecting the project.

APPA may disapprove project changes in writing not later than three weeks after receipt of notice. Failure of Grantee to give notice, or disapproval by APPA of the proposed change, shall result in disallowance of costs incurred that are attributable to the change.

Approved project changes that do not substantially alter the objective or scope of a project may give rise to grant amendments to increase or decrease the dollar amount, the term, or other provisions of the DEED Grant. A DEED Grant amendment shall be affected only by a written amendment to this Agreement signed by both Parties. Requests for modifications from this Agreement shall be submitted as far in advance as the exigencies of the situation will permit. Each request for a modification shall contain at a minimum:

- (a) A full description of the modification and the circumstances in which it will be used;
- (b) A description of the intended effect of the modification; and

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(c) Detailed reasons supporting the request, including any pertinent background information that will contribute to a better understanding of the modification sought.

7. Termination. If, without written notification to APPA, the project has not been initiated within six months of the effective date of this Agreement, the project will be subject to termination by the DEED Board of Directors. Grantee shall not terminate the project except for good cause. If APPA finds Grantee has terminated the project work without good cause, then it shall terminate the DEED Grant award, and all APPA grant funds previously paid to Grantee shall be returned as final settlement. In the event the project is terminated for good cause or completed prior to expenditure of all funds provided by APPA, the proportionate share of APPA's DEED Grant shall be refunded. Notwithstanding anything to the contrary in this Agreement, APPA may terminate this Agreement at its option with or without cause by providing written notice to Grantee. Unless otherwise stated in the termination notice, termination shall be effective upon receipt of the notice. After the effective date of termination, neither Party shall have any further obligation to the other under this Agreement except for Grantee's obligations under the provisions where a continuing obligation is implied, and APPA's obligation to pay Grantee a portion of the Agreement's fixed price equal to the percentage of work required by the Agreement that is completed.

Grantee shall deliver to APPA or its designee(s) upon request all information and work in tangible form created or compiled by Grantee or its subcontractor(s) in performing services under this Agreement.

8. Press Release. Press releases and other public dissemination of information by the Grantee shall acknowledge APPA support of the project through a DEED Grant.

9. Reports. Grantee shall prepare and submit to APPA quarterly project reports according to directions in the document DEED Grant Requirements & Instructions. These reports will be posted to the DEED project database, located on APPA's website for viewing by DEED members. Capturing the project in photos is encouraged. Electronic copies of project photos taken during the course of the project term shall be submitted to DEED@PublicPower.org. By submitting project photos to APPA, Grantee

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grants to APPA a non-exclusive limited worldwide license to use the project photos online and offline for promotional purposes. According to instructions in the document DEED Grant Requirements & Instructions, Grantee also shall submit to APPA/DEED: (1) an acceptable, detailed final report relating to the conduct and results of the approved project, describing activities, cost, bibliography, achievements, problems, results, and recommendations, to be submitted within six (6) months of project completion; and (2) a completed "DEED Project Summary Abstract;" and (3) any other deliverable as described in Grantee's original proposal or grant approval letter.

APPA will withhold 25 percent of the DEED Grant award pending satisfactory completion of said report and abstract. In the event the final report and abstract are not provided by the Grantee by the due date, APPA may complete the final report and/or abstract itself or hire a third party to do so. APPA may utilize up to the 25 percent withheld to pay for the costs of production and reduce the amount otherwise available to Grantee in the same amount.

10. Payment. The standard method of project payment shall be based on invoices for work completed to date. No more than 25 percent of the total DEED Grant award may be provided to Grantee at the inception of the project except in rare instances when the DEED program administrator may increase this amount up to a total of 50 percent due to special circumstances.

11. Grantee hereby grants APPA a nonexclusive, royalty-free, perpetual, worldwide, irrevocable license to use, copy, publish, create derivative works, distribute, market and support, in all mediums including APPA's website, all information, materials and work product, including reports, abstracts, videos, guidebooks, software programs, documentation, and other deliverables, created pursuant to this Grant (collectively, the "Work"). Any software programs especially developed by Grantee or its Subcontractors during the course of the project, or substantially modified for use in the project, shall be supplied to APPA in a form that may be used by others independently of Grantee's proprietary programs or computer configurations. The Grantee shall incorporate a Section setting forth the substance of this

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Section 11 in its agreement with the Subcontractor. Contracts between Grantee and its Subcontractor participating in the project shall contain similar provisions.

12. Representations and Warranties. Grantee represents and warrants for itself and any subcontractors that:

(a) The Work and Subcontractor Work Product are original and do not infringe on the intellectual property rights of any third party, or constitute defamation, invasion of privacy, or the violation of any right of publicity or any other right of any party; (b) Grantee and subcontractor has obtained all necessary licenses and/or permissions to use third party content that may appear in the Work and/or Subcontractor Work Product; (c) Grantee and any subcontractors shall maintain in strict confidence any confidential or proprietary information shared by APPA during the course of this Agreement, and such information shall not be disclosed to any third party, either directly or indirectly; and (d) Grantee has the unencumbered right to enter into this Agreement. Grantee agrees to defend, indemnify, and hold harmless APPA, its officers, directors, members, and employees for any losses, costs, damages, liabilities and expenses (including attorneys' fees and court costs) arising out of any breach of the warranties set forth in this Section 12.

13. Fees. Grantee also warrants that no person or agency has been employed or retained to solicit or secure this grant upon an agreement or understanding for a commission, percentage, brokerage, or contingent fee, excepting bona fide employees or bona fide offices established and maintained by Grantee for the purpose of securing grants or business. For breach or violation of this warranty, APPA shall have the right to terminate this DEED Grant Agreement without liability or in its discretion to deduct from the grant award, or otherwise recover, the full amount of such commission, percentage, brokerage, or contingent fee.

14. Indemnifications. It is understood that this DEED Grant Agreement is not a joint venture and that Grantee is not an agent of APPA. APPA assumes no liability with respect to accidents, bodily injury, illness, breach of contract, or any other damages or loss, or with respect to any claims arising out

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of any activities undertaken with the financial support of the APPA DEED Grant, whether with respect to persons or property of Grantee or third parties. Grantee shall indemnify (including court costs and attorneys' fees) APPA if APPA is made a party to any litigation, arbitration, mediation or negotiations for activities connected with this DEED Grant Agreement, unless APPA, its employees or agents are found to be grossly negligent or otherwise directly at fault.

15. **Taxes.** Except with respect to taxes which may be due as a result of income to APPA, Grantee and any subcontractor shall be responsible for payment of all taxes for which Grantee, subcontractor or APPA may be liable in connection with this Agreement, including any sales, use, or other tax owed for work products delivered or services performed by Grantee or a subcontractor in connection with this Agreement. Except as required by law, APPA shall not withhold federal, state or local income tax, or any other tax, from any payment to Grantee pursuant to this Agreement.

The Parties hereto have executed this Agreement, effective as of the _____ day of _____, 20__.

American Public Power Association
DEED Program

Name: _____

Signature: _____

Title: _____

Date: _____

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CITY OF SANTA CLARA, CALIFORNIA
a chartered California municipal corporation

APPROVED AS TO FORM:

Dated: _____

BRIAN DOYLE
City Attorney

DEANNA J. SANTANA
City Manager
1500 Warburton Avenue
Santa Clara, CA 95050
Telephone: (408) 615-2210
Fax: (408) 241-6771

“CITY”

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ATTACHMENT A

Agreement for the Performance of Services by and between the City of Santa Clara, California,
and Battelle Memorial Institute, Pacific Northwest Division.

**Strategic Partnership Projects Agreement No. 72173
Between**

**BATTELLE MEMORIAL INSTITUTE, PACIFIC NORTHWEST DIVISION
Operating under Prime Contract No. DE-AC05-76RL01830
for the U.S. Department of Energy
and**

CITY OF SANTA CLARA

The obligations of the above-identified DOE Contractor shall apply to any successor in interest to said Contractor continuing the operation of the DOE facility involved in this Strategic Partnership Projects Agreement.

GENERAL TERMS AND CONDITIONS

ARTICLE I. PARTIES TO THE AGREEMENT

The U.S. Department of Energy Contractor, Battelle Memorial Institute, Pacific Northwest Division, hereinafter referred to as the "Contractor," has been requested by, City of Santa Clara hereinafter referred to as the "Sponsor," to perform the work set forth in the Statement of Work, attached hereto as Appendix A. It is understood by the Parties that, except for the intellectual property provisions of this Agreement, the Contractor is obligated to comply with the terms and conditions of its M&O contract with the United States Government (hereinafter called the "Government") represented by the United States Department of Energy (hereinafter called the "Department" or "DOE") when providing goods, services, products, processes, materials, or information to the Sponsor under this Agreement.

ARTICLE II. TERM OF THE AGREEMENT

The Contractor estimated period of performance for completion of the Statement of Work is 20 months. The term of this Agreement shall be effective as of the latter date of (1) the date on which it is signed by the last of the Parties thereto or (2) the date on which the Contractor receives advance funding from the Sponsor, if required under Article IV.

ARTICLE III. COSTS

- A. The Contractor estimated cost for the work to be performed under this Agreement shall not exceed \$174,284
- B. The Contractor has no obligation to continue or complete performance of the work at a cost in excess of the original estimated cost or any subsequent amendment(s).
- C. The Contractor agrees to provide at least 60 days notice to the Sponsor if the actual cost to complete performance will exceed its estimated cost.

ARTICLE IV. FUNDING AND PAYMENT

The Sponsor shall pay the Contractor as follows:

- A. **Advance Payment.** The Sponsor shall advance full funding in the amount of One-Hundred Seventy-four Thousand Two-hundred Eighty-four dollars (\$174,284) payable upon execution of the Agreement. Upon termination or completion, any excess funds shall be refunded by the Contractor to the Sponsor. Payments will be directed as follows:

Check Payment:

Battelle
For Project Number: 72173
P. O. Box 84391, ATTN: Cashier
Seattle, WA 98124-5691

Wire Transfer:

U.S. Bank
Richland, WA 99352
ABA No. 125000105
Account No. 153502961169
SWIFT Code: USBKUS44IMT

For check payments, include Project Number 72173 and all invoice numbers being paid on the check. For wire transfers, include contract number and invoice number on the receiver info-line and list all invoice numbers being paid on the sender info-line.

- B. **Applicable Currency.** All payments due the Contractor under this Agreement, including cost estimates and obligations of funds, shall be in United States dollars (U.S.\$).

ARTICLE V. SOURCE OF FUNDS

The Sponsor hereby warrants and represents that, if the funding it brings to this Agreement has been secured through other Agreements or is being secured through existing international Agreements, such other Agreements do not have any terms and conditions (including intellectual property) that conflict with the terms of this Agreement. If the Strategic Partnership Projects Agreement entered into conflicts with existing International Agreements, the International Agreement terms and conditions will take precedence.

ARTICLE VI. PROPERTY

Property or equipment produced or acquired in conducting the work under this Agreement shall be owned by DOE. No Federal funds of the Contractor will be used to purchase property or equipment for this Agreement. Property or equipment produced or acquired as part of this Agreement will be accounted for and maintained during the term of the Agreement in the same manner as Department property or equipment.

ARTICLE VII. PUBLICATION MATTERS

The publishing Party shall provide the other Party a 30 day period in which to review and comment on proposed publications that either disclose technical developments and/or research findings generated in the course of this Agreement, or identify Proprietary Information (as defined in paragraph 1.C of Article XV). The publishing Party shall not publish or otherwise disclose Proprietary Information identified by the other Party, except as provided by law.

ARTICLE VIII. LEGAL NOTICE

The Parties agree that the following Legal Disclaimer Notice shall be affixed to each report furnished to the Sponsor under this Agreement and to any report resulting from this Agreement which may be distributed by the Sponsor:

DISCLAIMER

This report was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency thereof, nor Battelle Memorial Institute, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product process, or service by trade name, trademark, manufacturer, or otherwise does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof, or Battelle Memorial Institute. The United States Government reserves for itself a royalty-free, worldwide, irrevocable, non-exclusive license for Governmental purposes to publish, disclose, distribute, translate, duplicate, exhibit, prepare derivative works, and perform any such data included herein. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof.

PACIFIC NORTHWEST NATIONAL LABORATORY
operated by
BATTELLE MEMORIAL INSTITUTE, PACIFIC NORTHWEST DIVISION
for the
UNITED STATES DEPARTMENT OF ENERGY
under Contract DE-AC05-76RL01830

ARTICLE IX. DISCLAIMER

THE GOVERNMENT AND THE CONTRACTOR MAKE NO EXPRESS OR IMPLIED WARRANTY AS TO THE CONDITIONS OF THE RESEARCH OR ANY INTELLECTUAL PROPERTY, GENERATED INFORMATION, OR PRODUCT MADE OR DEVELOPED UNDER THIS STRATEGIC PARTNERSHIP PROJECTS AGREEMENT, OR THE OWNERSHIP, MERCHANTABILITY, OR FITNESS FOR A PARTICULAR PURPOSE OF THE RESEARCH OR RESULTING PRODUCT; THAT THE GOODS, SERVICES, MATERIALS, PRODUCTS, PROCESSES, INFORMATION, OR DATA TO BE FURNISHED HEREUNDER

WILL ACCOMPLISH INTENDED RESULTS OR ARE SAFE FOR ANY PURPOSE INCLUDING THE INTENDED PURPOSE; OR THAT ANY OF THE ABOVE WILL NOT INTERFERE WITH PRIVATELY OWNED RIGHTS OF OTHERS. NEITHER THE GOVERNMENT NOR THE CONTRACTOR SHALL BE LIABLE FOR SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES ATTRIBUTED TO SUCH RESEARCH OR RESULTING PRODUCT, INTELLECTUAL PROPERTY, GENERATED INFORMATION, OR PRODUCT MADE OR DELIVERED UNDER THIS STRATEGIC PARTNERSHIP PROJECTS AGREEMENT.

ARTICLE X. GENERAL INDEMNITY

The Sponsor agrees to indemnify and hold harmless the Government, the Department, the Contractor, and persons acting on their behalf from all liability, including costs and expenses incurred, to any person, including the Sponsor, for injury to or death of persons or other living things or injury to or destruction of property arising out of the performance of the Agreement by the Government, the Department, the Contractor, or persons acting on their behalf, or arising out of the use of the services performed, materials supplied, or information given hereunder by any person including the Sponsor, and not directly resulting from the fault or negligence of the Government, the Department, the Contractor, or persons acting on their behalf.

ARTICLE XI. PRODUCT LIABILITY INDEMNITY

Except for any liability resulting from any negligent acts or omissions of the Government or the Contractor, the Sponsor agrees to indemnify the Government and the Contractor for all damages, costs, and expenses, including attorney's fees, arising from personal injury or property damage occurring as a result of the making, using, or selling of a product, process, or service by or on behalf of the Sponsor, its assignees, or licensees, which was derived from the work performed under this Strategic Partnership Projects Agreement. In respect to this Article, neither the Government nor the Contractor shall be considered assignees or licensees of the Sponsor, as a result of reserved Government and Contractor rights. The indemnity set forth in this paragraph shall apply only if the Sponsor shall have been informed as soon and as completely as practical by the Contractor and/or the Government of the action alleging such claim and shall have been given an opportunity, to the maximum extent afforded by applicable laws, rules, or regulations, to participate in and control its defense, and the Contractor and/or Government shall have provided all reasonably available information and reasonable assistance requested by the Sponsor. No settlement for which the Sponsor would be responsible shall be made without the Sponsor's consent, unless required by final decree of a court of competent jurisdiction.

ARTICLE XII. INTELLECTUAL PROPERTY INDEMNITY—LIMITED

The Sponsor shall indemnify the Government and the Contractor and their officers, agents, and employees against liability, including costs, for infringement of any United States patent, copyright, or other intellectual property arising out of any acts required or directed by the Sponsor to be performed under this Agreement to the extent such acts are not already performed at the facility. Such indemnity shall not apply to a claimed infringement that is settled without the consent of the Sponsor unless required by a court of competent jurisdiction.

ARTICLE XIII. NOTICE AND ASSISTANCE REGARDING PATENT AND COPYRIGHT INFRINGEMENT

The Sponsor shall report to the Department and the Contractor, promptly and in reasonable written detail, each claim of patent or copyright infringement based on the performance of this Agreement of which the Sponsor has knowledge. The Sponsor shall furnish to the Department and the Contractor, when requested by the Department or the Contractor, all evidence and information in the possession of the Sponsor pertaining to such claim.

ARTICLE XIV. PATENT RIGHTS –WAIVER AND FULL GOV. LICENSE

1. Definitions.

- A. "Facility Contractor" means BATTELLE MEMORIAL INSTITUTE as operator of PACIFIC NORTHWEST NATIONAL LABORATORY operating under DOE Prime Contract No. DE-AC05-76RL01830 or any successor contractor thereof.
- B. "Subject Invention" means any invention or discovery of the Facility Contractor, or, to the extent the Sponsor or a Facility subcontractor is performing any work under this Agreement, of the Sponsor, conceived in the course of or under this Agreement, or, in the case of an invention previously conceived by the Sponsor or Facility subcontractor, first actually reduced to practice in the course of or under this Agreement. "Subject Invention" includes any art, method, process, machine, manufacture, design or composition of matter, or any new and useful improvement thereof, or any variety of plant, whether patented under the patent laws of the United States of America or any foreign country, or unpatented.
- C. "Patent Counsel" means the DOE Patent Counsel assisting the procuring activity which has the administrative responsibility for the facility where the work under this Agreement is to be performed.

2. Rights of the Sponsor.

Subject to the provisions of paragraph 3 with respect to any Subject Invention reported and elected in accordance with paragraph 4 of this article, the Sponsor may elect to obtain the entire right, title, and interest throughout the world to each Subject Invention and any patent application filed in any country on a Subject Invention and in any resulting patent secured by the Sponsor. Where appropriate, the filing of patent applications by the Sponsor is subject to DOE and other Government security regulations and requirements.

3. Rights of Contractor and Government.

A. Assignment to either the Facility Contractor or the Government

The Sponsor agrees to assign to either the Facility Contractor or the Government, as requested by the Facility Contractor, the entire right, title, and interest in any country to each Subject Invention of the Sponsor and to each Subject Invention of the Facility Contractor, where the Sponsor:

- (1) does not elect pursuant to this article to retain such rights; or
- (2) elects to obtain title to a Subject Invention pursuant to paragraph 2 but fails to have a patent application filed in that country on the Subject Invention or decides not to continue prosecution or not to pay any maintenance fees covering the invention.

B. Terms and Conditions of Waived Rights

- (1) To preserve the Facility Contractor's and the Government's residual rights to Subject Inventions, and in patent applications and patents on Subject Inventions, the Sponsor shall take all actions in reporting, electing, filing on, prosecuting, and maintaining invention rights promptly, but in any event, in sufficient time to satisfy domestic and foreign statutory and regulatory time requirements, or, if the Sponsor decides not to take appropriate steps to protect the invention rights, it shall notify the Facility Contractor in sufficient time to permit either the Facility Contractor or the Government to file, prosecute, and maintain patent applications and any resulting patents prior to the end of such domestic or foreign statutory or regulatory time requirements.
- (2) The Sponsor shall convey or ensure the conveyance of any executed instruments necessary to vest in either the Facility Contractor or the Government the rights set forth in this Clause.
- (3) With respect to any Subject Invention in which the Sponsor obtains title, the Sponsor hereby grants to the Government a non-exclusive, nontransferable, irrevocable, paid-up license to practice or have practiced by or on behalf of the United States the Subject Invention throughout the world.
- (4) The Sponsor shall provide the Government a copy of any patent application filed on a Subject Invention within 6 months after such application is filed, including its serial number and filing date.
- (5) Preference for U.S. Industry. Notwithstanding any other provision of this article, the Sponsor agrees that neither it nor any assignee will grant to any

person the exclusive right to use or sell any Subject Invention in the United States unless such person agrees that any products embodying the Subject Invention or produced through the use of the Subject Invention will be manufactured substantially in the United States. However, in individual cases, the requirement for such an Agreement may be waived by DOE upon a showing by the Sponsor or its assignee that reasonable but unsuccessful efforts have been made to grant licenses on similar terms to potential licensees that would be likely to manufacture substantially in the United States or that under the circumstances domestic manufacture is not commercially feasible.

- (6) The Sponsor agrees to refund any amounts received as royalty charges on any Subject Invention in procurement by or on behalf of the Government and to provide for that refund in any instrument transferring rights to any party in the invention.
- (7) The Sponsor agrees to include, within the specification of any U.S. patent applications and any patent issuing thereon covering a Subject Invention, the following statement. "The Government has rights in this invention pursuant to (specify this underlying Agreement)."

4. Invention Identification, Disclosures, and Reports.

- A. The Sponsor shall furnish the Patent Counsel a written report containing full and complete technical information concerning each Subject Invention it makes within 6 months after conception or first actual reduction to practice, whichever occurs first, in the course of or under this Agreement, but in any event prior to any on sale, public use, or public disclosure of such invention known to the Sponsor. The report shall identify the contract and inventor and shall be sufficiently complete in technical detail and appropriately illustrated by sketch or diagram to convey to one skilled in the art to which the invention pertains a clear understanding to the extent known at the time of disclosure, of the nature, purpose, operation, and the physical, chemical, biological, or electrical characteristics of the invention. The report should also include any election of invention rights under this article. When an invention is reported under this paragraph 4.A, it shall be presumed to have been made in the manner specified in Section (a)(1) and (2) of 42 U.S.C. 5908.
- B. The Facility Contractor shall report Subject Inventions it makes in accordance with the procedures set forth in contract DE-AC05-76RL01830. In addition, the Facility Contractor shall disclose to the Sponsor at the same time as disclosure to the Department any Subject Inventions made by the Facility Contractor under this Agreement and the Sponsor shall notify the Department within 6 months of

receipt of such disclosure by the Sponsor of any election of patent rights under this Clause.

- C. Requests for extension of time for election under subparagraphs A and B may be granted by Patent Counsel for good cause shown in writing.

5. Limitation of Rights.

Nothing contained in this patent rights article shall be deemed to give the Government any rights with respect to any invention other than a Subject Invention except as set forth in the Facilities License of paragraph 6.

6. Facilities License.

In addition to the rights of the Parties with respect to inventions or discoveries conceived or first actually reduced to practice in the course of or under this Agreement, the Sponsor agrees to and does hereby grant to the Government an irrevocable, non-exclusive, paid-up license in and to any inventions or discoveries regardless of when conceived or first actually reduced to practice or acquired by the Sponsor, which at any time, through completion of this Agreement, are owned or controlled by the Sponsor and are incorporated in the facility as a result of this Agreement to such an extent that the facility is not restored to the condition existing prior to the Agreement (1) to practice or to have practiced by or for the Government at the facility, and (2) to transfer such license with the transfer of the facility. The acceptance or exercise by the Government of the aforesaid rights and license shall not prevent the Government at any time from contesting the enforceability, validity, or scope of, or title to, any rights or patents herein licensed.

7. Early Termination of Agreement.

The terms and conditions of this article shall survive the Agreement, in the event that the Agreement is terminated before completion of the Statement of Work.

ARTICLE XV. RIGHTS IN TECHNICAL DATA — PROPRIETARY DATA PROTECTION

1. Definitions.

- A. "Facility Contractor" means BATTELLE MEMORIAL INSTITUTE as operator of PACIFIC NORTHWEST NATIONAL LABORATORY operating under DOE Prime Contract No. DE-AC05-76RL01830 or any successor contractor thereof.
- B. "Generated Information" means information produced in the performance of this Agreement; and Facility subcontracts under this Agreement.

- C. "Proprietary Information" means information which is developed at private expense, is marked as Proprietary Information, and embodies (1) trade secrets or (2) commercial or financial information which is privileged or confidential under the Freedom of Information Act (5 U.S.C. 552 (b)(4)).
- D. "Unlimited Rights" means the right to use, disclose, reproduce, prepare derivative works, distribute copies to the public, and perform publicly and display publicly, in any manner and for any purpose, and to have or permit others to do so.
2. For the work to be performed at the DOE facility, the Sponsor agrees to furnish to the Contractor or leave at the facility that information, if any, which is (1) essential to the performance of work by the Contractor personnel or (2) necessary for the health and safety of such personnel in the performance of the work. Any information furnished to the Contractor shall be deemed to have been delivered with Unlimited Rights unless marked as Proprietary Information. The Sponsor agrees that it has the sole responsibility for appropriately identifying and marking all documents containing Proprietary Information, whether such documents are furnished by the Sponsor or produced under this Agreement and made available to the Sponsor for review.
3. The Sponsor may designate as Proprietary Information any Generated Information where such data would embody trade secrets or would comprise commercial or financial information that is privileged or confidential if it were obtained from the Sponsor. Such Proprietary Information will, to the extent permitted by law, be maintained in confidence and disclosed or used by the Facility Contractor (under suitable protective conditions) only for the purpose of carrying out the Facility Contractor's responsibilities under this Agreement. Upon completion of activities under this Agreement, such Proprietary Information will be disposed of as requested by the Sponsor. Before the Facility Contractor releases data associated with this Agreement to anyone, the Sponsor will be afforded the opportunity to review that data to ascertain whether it is Proprietary Information and if so, to mark it as such.
4. The Government and Facility Contractor agree not to disclose properly marked Proprietary Information to anyone other than the Sponsor without written approval of the Sponsor, except to Government employees who are subject to the statutory provisions against disclosure of confidential information set forth in the Trade Secrets Act (18 U.S.C. 1905). The Government and Facility Contractor shall have the right, at reasonable times up to 3 years after the termination or completion of the Agreement, to inspect any information designated as Proprietary Information by the Sponsor, for the purpose of verifying that such information has been properly identified as Proprietary Information.
5. The Sponsor is solely responsible for the removal of all of its Proprietary Information from the facility by or before termination of this Agreement. The Government and Facility Contractor shall have Unlimited Rights in any information which is not removed from the

facility by termination of this Agreement. The Government and Facility Contractor shall have Unlimited Rights in any Proprietary Information which is incorporated into the facility or equipment under this Agreement to such extent that the facility or equipment is not restored to the condition existing prior to such incorporation.

6. The Sponsor agrees that the Facility Contractor will provide to the Department a nonproprietary description of the work performed under this Agreement.
7. The Government shall have Unlimited Rights in all Generated Information produced or information provided by the Parties under this Agreement, except for information which is disclosed in a Subject Invention disclosure being considered for patent protection, or which is marked as being Proprietary Information.
8. Copyrights. The Sponsor may assert copyright in any of its Generated Information, and may also require the Facility Contractor, at the Sponsor's expense, to register copyright and assign copyright in any Generated Information produced by the Facility Contractor which the Sponsor wishes to copyright. Subject to the other provisions of this article, and to the extent that copyright is asserted, the Government reserves for itself a royalty-free, worldwide, irrevocable, non-exclusive license for Governmental purposes to publish, disclose, distribute, translate, duplicate, exhibit, prepare derivative works, and perform any such copyrighted works.
9. The terms and conditions of this article shall survive the Agreement, in the event that the Agreement is terminated before completion of the Statement of Work.

ARTICLE XVI. ASSIGNMENT

Neither this Agreement nor any interest therein or claim thereunder shall be assigned or transferred by either Party, except as authorized in writing by the other Party to this Agreement, provided, the Contractor may transfer it to the Department, or its designee, with notice of such transfer to the Sponsor, and the Contractor shall have no further responsibilities except for the confidentiality, use, and/or non-disclosure obligations of this Agreement.

ARTICLE XVII. SIMILAR OR IDENTICAL SERVICES

The Government and/or Contractor shall have the right to perform similar or identical services in the Statement of Work for other Sponsors as long as the Sponsor's Proprietary Information is not utilized.

ARTICLE XVIII. EXPORT CONTROL

Each Party is responsible for its own compliance with laws and regulations governing export control.

ARTICLE XIX. TERMINATION

Performance of work under this Agreement may be terminated at any time by either Party, without liability, except as provided above, upon giving a 60-day written notice to the other Party. The Contractor shall terminate this Agreement only when the Contractor determines, after direction from DOE, that such termination is in the best interest of the Government, provided however, that the Contractor shall have the right to terminate unilaterally if the Sponsor shall have failed to advance the funds required by Article IV. In the event of termination, the Sponsor shall be responsible for the Contractor's costs (including closeout costs) through the effective date of termination, but in no event shall the Sponsor's cost responsibility exceed the total cost to the Sponsor as described in Article III, above.

It is agreed that any obligations of the Parties regarding Proprietary Information or other intellectual property will remain in effect, despite early termination of the Agreement.

In witness whereof, the Parties hereto have executed this Agreement.

**BATTELLE MEMORIAL INSTITUTE
PACIFIC NORTHWEST DIVISION**

Name Mary Hughes
Title Sr. Contracts Specialist
Date _____

CITY OF SANTA CLARA, CALIFORNIA
a chartered California municipal corporation

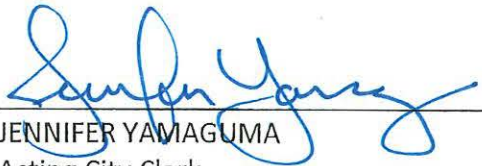
Approved as to Form:

Dated: 9/11/2018


BRIAN DOYLE
City Attorney


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City Manager
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Santa Clara, CA 95050
Telephone: (408) 615-2210
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Attest:


JENNIFER YAMAGUMA
Acting City Clerk

STATEMENT OF WORK

June 26, 2018

Introduction:

Recently, many utilities have provided incentives for ductless mini-split (DHP) units, with most homeowners adding one indoor unit in a central living area. However, anecdotal post-installation studies (in the Bonneville Power Administration and Efficiency Maine territories) have shown that these units are not reaching their full potential because the previous existing heating system continues to operate in parallel with the DHP. Energy savings associated with a more reliable control solution for both systems could be a large portion of the home's original heating energy use (best guess estimates at this time are somewhere between 20-60% of heating energy). The overall project aims to maximize the use of the DHP unit in an existing home that also contains less efficient technology, through cost effective control strategies.

The Pacific Northwest National Laboratory (PNNL), in partnership with Silicon Valley Power, the Northwest Energy Efficiency Alliance, the Bonneville Power Administration, the Northeast Energy Efficiency Project, Washington State University and Efficiency Solutions, will model, and experimentally test, three cost-effective options for controlling DHP systems in existing homes with other equipment. The solutions will be easy-to-install, applicable for a variety of existing systems, have quantifiable savings, and improve the comfort of the home.

There is no single modeling tool that could capture all of the interzonal and whole-house physics associated with this situation. However, the EnergyPlus software tool is very flexible and can model multiple zones, multiple heating or cooling systems, and can provide detailed scheduling of set points and other parameters. EnergyPlus will be the primary tool used for modeling the solutions identified in this project. Up to three solutions (widgets or otherwise), with up to two algorithms each (total of 6 models) will be developed prior to the experiments.

The "Lab Homes" located at PNNL will be used to install, monitor and evaluate the performance of three solutions. The side-by-side homes are identical, 1500 sq. ft. homes, with capabilities to heat with zonal Cadet wall heaters, a heat pump, or an electric furnace. In this case, the baseline home and experimental homes will both be outfitted with a DHP system in the living room. A typical thermostat and thermostat setting will be applied to the baseline home. The more advanced widgets and algorithms will be applied to the experimental home, and the difference in energy use, will represent the energy savings potential from each solution.

After the experiments have been conducted, the results will be compared to the modeled results. The model will be adjusted to match the experimental results if necessary. The model will then be expanded and extrapolated to multiple climate zones around the U.S., with a few prototype building sizes. This will provide many utilities with helpful information about which solutions would be the most cost-effective in their regions.

The three technical tasks and respective research questions associated with this project are:

- 1) **Modeling:** How many hours is it possible to offset with different control algorithms? What is

the energy savings associated with that offset?

- 2) **Experiment:** Are simulation results verifiable in a real home? Is the temperature distribution throughout the home acceptable for various algorithms?
- 3) **Extrapolated Results:** What is the energy savings potential of the most cost-effective solutions to controlling DHPs in existing homes around the country?

Finally, outreach material such as a power point presentation, a homeowner brochure and/or a poster will be developed to help communicate the results and helpful information to utilities and customers. This will ensure that the results of this project can quickly be used by the members of the DEED.

Goals:

Other portions of the project will have different goals. The portion of this experiment that is funded by Silicon Valley Power will have the following goals.

1. Determine the Energy Efficiency Savings of Various Control Solutions Through Experimentation
2. Extrapolate Experimental Results Nationwide.
3. Provide information about the savings, challenges, and best practices for one or more cost effective controls solutions to SVP and APPA Utilities that will reduce "take back" resulting from pre-existing heating compromising the savings from incentivized DHP systems in existing homes.

Task 1 – PNNL Lab Home Experiment

The field demonstration project will be undertaken in the PNNL lab homes (www.labhomes.pnnl.gov). The 1500 square foot matched pair of homes offer a unique platform to conduct side-by-side experiments in a residence to evaluate, demonstration and test the performance of building envelope and equipment and compare the performance of equipment to selected 'baseline' equipment. These homes are the only pair of experimental homes in the West.

The pair of homes are exposed to the identical outdoor (weather) conditions and identical indoor conditions using simulated occupancy (including water use) and equipment use scheduling. Therefore all weather and occupant influences are eliminated from the experiment and equipment performance in a dwelling is isolated from uncontrolled factors. The lab homes are ideal for calibrating models using the onsite weather data and end-use metered data collected during experiments. Therefore, the data collected during the experiments are transferrable to any utility in any climate regime.

This task will include the planning/calibration of the homes (for the heating season only), installing, subcontracting, data collection, data uploading, data analysis (for the cooling season only) and draft/final technical report deliverables. Mitsubishi will provide 2 ductless mini-splits for the use of this experiment. The baseline home will run the ductless min-split with back up heat and set both controls to a static 71°F in the winter and 76°F in the summer.

The research questions to be answered by this part of the study are:

1. What is the energy savings potential of each control solution studied?
2. Are simulation results verifiable in a real home?
3. Is the temperature distribution throughout the home acceptable for various algorithms?

Subtask 1.1 – Experimental Set-up

- Develop the draft experimental plan. This will be done through conference calls and email. The experiment should be set up to answer at least the research questions stated above.
- Convene the project advisory team to review experimental plan. This will be done through phone or webinar meeting.
- Coordinate the shipping, receiving of mini-split units from Mitsubishi and install units in the PNNL Lab Homes.

Subtask 1.2 – Experiment, Maintenance and Operations

Provided that the contract is in place by the beginning of September, 2018, the following experiments will be conducted during the winter of 2018-2019, and through the summer of 2019.

- Baseline homes will include running the homes simultaneously together to determine if relative difference in energy use between the two homes/Mitsubishi systems is acceptable to move forward.
- Run each scenario that is outlined in the experimental plan
- This part of the task also includes various maintenance and operations required to maintain energy symmetry between the homes throughout the experiment
- Likely duplicate data collection if weather pattern is too close to room temperature at any point during the experiment.

Subtask 1.3 – Analysis and Reporting

- PNNL will complete the download and cleaning process for the data collected over the cooling season experiment.
- The cooling season data will be analyzed to determine the energy savings potential of each control strategy.
- The draft technical report for both seasons will be written by the PNNL team and reviewed by the advisory team.
- A final draft will be delivered for review to SVP, NEEA and the project advisory team.
- After review comments from all interested parties are addressed, the final report will be published. The results will be distributed through many technical conferences and forums.

Task 2.0 – General Audience Materials

The results of the modeling (including data extrapolation) and experimentation will be summarized for a general audience. This will enable utility program managers to 1) understand the potential energy, load/demand impact and cost-effectiveness of ductless mini-split controls for their utility and customers; 2) make informed decisions on the development of efficiency, incentive, and/or market transformation programs for ductless heat pumps; and 3) disseminate unbiased information to their customers on the use and value (energy & cost savings/comfort) of ductless heat pumps.

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- A draft fact sheet and PowerPoint meant for general audiences will be developed in conjunction with SVP. The audience for these materials includes utility managers, who might structure an incentive program around this technology.
- After review comments from interested parties are addressed, the final fact sheet and PowerPoint will be delivered to SVP. The final data set collected will also be delivered to any utility who is interested in having it for future analysis.

Timeline

Activity/Deliverable	Due Date
Task 1.0 – Lab Homes Experiment	
<i>Task 1.1 - Experimental Set-up</i>	
Deliverable: Draft Experimental Plan	October 26 th , 2018
Deliverable: Final Experimental Plan	November 16 th , 2018
<i>Task 1.2 – Experiment, M+O</i>	
Baseline homes	Nov. 1 st -26 th , 2018
Experiments	Nov. 26 th – August 30 th 2019
<i>Task 1.3 – Analysis and Reporting</i>	
Analyze summer data	September 1 st – September 30 th , 2019
Write Report	October 1 st – October 24 th , 2019
Deliverable: Draft Technical Report	October 25 th , 2019
Deliverable: Final Technical Report	December 13 th , 2019
<i>Task 2.0 – General Audience Materials</i>	
Deliverable: Draft General Audience Materials	March 13 th , 2020
Deliverable: Final General Audience Materials	April 30 th , 2020

Note: Two pieces of this project are being funded by cost share partners. First, the modeling exercise mentioned in the introduction of this document, is being funded by the Bonneville Power Administration. This work will occur during the summer of 2018. Second, the analysis of the winter data and set up for the summer experiments will be funded by the Northwest Energy Efficiency Alliance. This work will occur from January 2019, to June 2019.