

INTELLECTUAL PROPERTY MANAGEMENT PLAN

Award Number: DE-EE0009075

Northeast Energy Efficiency Partnerships, Inc.

Field Validation of Variable Refrigerant Flow System Performance in Cold Climates

I. Preamble

1. This Intellectual Property Management Plan (the Plan) is established by Northeast Energy Efficiency Partnerships, Inc. (NEEP) and the Project Participants listed in Attachment A to address the management of any new Intellectual Property that may be developed as a result of work performed under the Department of Energy's Award Number DE-EE0009075.
2. The general purpose of the Plan is to address the protection and disposition of Intellectual Property newly developed under the DOE Award within the framework of any applicable international and Federal intellectual property laws, regulations, and policies.
3. The Plan objectives include:
 - a. Allowing for the collection of high quality observed in-field data on variable refrigerant flow (VRF) actual energy performance and refrigerant leakage, and
 - b. Establishing parameters for the sharing of this data among project partners, and
 - c. For the public good, promoting the rapid dissemination of the analysis, conclusions, and project results to key audiences that directly impact heating, ventilation and air conditioning (HVAC) technology selection in commercial institutional and multifamily buildings.

II. Definitions

1. **"Award" and "DOE Award"** refers to a grant of financial assistance from DOE to an entity or entities by means of a grant, cooperative agreement, work authorization, Technology Investment Agreement, or other authorized financial assistance instrument.
2. **"Award Work"** means any work or activity performed by a Participant pursuant to and funded by a DOE Award.

3. **“Background Intellectual Property”** means and includes Intellectual Property first and independently conceived, discovered, developed, reduced to practice and/or generated before or independent of the performance of the Award.
4. **“Background Technical Data”** means information, in hard copy or in electronic form, including, without limitation, documents, drawings, models, designs, data memoranda, tapes, records, and databases developed before or independent of performance under the Award that is necessary for the performance of Award Work and which is not related to or derived from any Intellectual Property, confidential or proprietary information of Participants.
5. **“Field Engineer”** means an individual or entity collecting Project Technical Data in the execution of Award Work.
6. **“Intellectual Property”** means technical information, Inventions, developments, discoveries, know-how, methods, techniques, formulae, algorithms, data, processes and other proprietary ideas (whether or not patentable or copyrightable). Intellectual Property also includes patent applications, patents, copyrights, trademarks, mask works, trade secrets, and any other legally protectable information, including computer software. Any Intellectual Property, or derivative thereof, of any Participant may only be used in Award Work pursuant to a separate written consent and agreement of such Participant.
7. **“Invention”** means any discovery or a new device, method, or process developed from study and experimentation that is or may be patentable or otherwise protectable under Title 35 of the United States Code. Any Invention, or derivative thereof, of any Participant may only be used in developing Award Work pursuant to a separate written consent and agreement of such Participant.
8. **“Manufacturer”** means an entity manufacturing VRF equipment and/or a building management system used in Award Work. A Manufacturer may be a Recipient, Participant, and/or part of a Project Team.
9. **“Owner”** means a party, public or private, holding legal title to Intellectual Property, consistent with applicable international and Federal laws and regulations. See also definition of Site Owner.
10. **“Participant”** means a Recipient who contributes to the execution of Award Work as part of a Project Team.

11. **“Project Intellectual Property”** means and includes Intellectual Property first and independently conceived, discovered, developed, reduced to practice and/or generated in the performance of the Award.
12. **“Project Team”** refers to a specific collective of Participants working in a collaborative manner to execute a DOE funded project.
13. **“Project Technical Data”** means information (in hard copy or in electronic form) including, without limitation: documents, drawings, models, designs, data, memoranda, tapes, records, and databases developed during the performance of Award Work.
14. **“Recipient”** means an individual or entity who, directly or indirectly, receives money or benefits from a DOE Award. Field Engineers and Site Owners are not considered Recipients.
15. **“Site Owner”** means an individual or entity holding legal title to Project Technical Data collected at a given site and allows for the collection of data in the execution of Award Work.
16. **“Subject Invention”** means any Invention of a Participant that is independently conceived or first actually reduced to practice in the performance of work under a DOE Award.

III. Title to Subject Inventions and Other Project Intellectual Property

1. Each Participant shall retain title to Subject Inventions and other Project Intellectual Property developed solely by its employees and agents.
2. Unless agreed otherwise, the Participant filing a patent application shall pay all preparation and filing expenses, prosecution fees, issuance fees, post issuance fees, patent maintenance fees, annuities, interference expenses, and attorneys’ fees for that patent application and any resulting patent(s).
3. As an incentive, and so long as no conflict of interest with Participant and Participant’s employer(s) is created or exists, in which case Participant should remove or recuse himself or herself, Participants shall be joint Owners of Project Intellectual Property that is developed jointly by those Participants. Each Owner shall have an undivided interest in the jointly owned Project Intellectual Property. The jointly developed Project Intellectual Property shall be protected with joint patent applications in which the co-Owners are co-applicants.

IV. Intellectual Property Licensing

1. If a Participant does not retain title to a Subject Invention but is instead granted an exclusive license to use that Subject Invention, then Participant shall be responsible for all expenses and fees, past and future, in connection with the preparation, filing, prosecution, and maintenance of any patent applications and patents claiming exclusively-licensed Subject Inventions, subject to written agreement of the Owner of whatever is licensed. If such Participant is granted a non-exclusive license, then the Participant shall be responsible for a pro-rated share, divided equally among all licensees, of expenses and fees for the non-exclusively licensed Subject Inventions.
2. Participants who retain title to Project Intellectual Property may grant exclusive and non-exclusive licenses for use of technologies arising out of the Project Intellectual Property. Joint-Owners of Project Intellectual Property shall share equally in paying licensing expenses, and any benefits from licensing (i.e. royalties and equity) received shall be distributed equally between co-Owners, subject to prior written estimate and agreement by the Participants or Owners. Any such license that an Owner may grant shall be subject to a reservation of certain rights to the Federal Government under the provisions of 35 U.S.C. § 201 *et seq.*, which include march-in rights and U.S. Competitiveness.
3. Any license that an Owner may grant may reserve the option to permit private or public educational institutions to use the Project Intellectual Property on a royalty-free basis for research and education, but not for commercial purposes, subject to confidentiality requirements and a separate written agreement.
4. Any licensing of Project Intellectual Property shall be conducted pursuant to and in accordance with the terms of the Award under which the Project Intellectual Property was developed. Licensing of Project Intellectual Property shall not inhibit performance of Award Work. Notwithstanding anything else in this Agreement, no party will have any right to use the Background Intellectual Property of another party without that other party's express written consent.

V. Ownership of Project Technical Data

1. Each Participant, except a Manufacturer, shall have the right to use other Participants' Project Technical Data and related Background Technical Data for the sole purpose of carrying out Award Work, but only if such Technical Data is expressly detailed and agreed upon in writing, in advance, by Participant. Each Participant shall establish and implement specific measures and protocols to protect such data from disclosure.

2. Each Manufacturer shall only have the right to the Project Technical Data specific to site(s) with their equipment and/or building management system. Each Manufacturer shall establish and implement specific measures and protocols to protect their data as they deem appropriate including without limitation entering into a written confidentiality or nondisclosure agreement with anyone involved at the site or in the Award.
3. Each Site Owner shall only have the right to the Project Technical Data specific to their site. Each Site Owner shall establish and implement specific measures and protocols to protect their data as they deem appropriate including without limitation entering into a written confidentiality or nondisclosure agreement with anyone involved at the site or in the Award.
4. Each Field Engineer shall only have the right to the Project Technical Data specific to the site from which they are collecting data. Each Field Engineer shall establish and implement specific measures and protocol to protect such data from disclosure including without limitation entering into a written confidentiality or nondisclosure agreement.

VI. Dispute Resolution

1. Any dispute between Participants relating to the management of Project Intellectual Property, as provided for in this Plan, or to the interpretation of this Plan, shall be referred to the Participants' respective officers, as designated below. Through the designated officers, Participants' agree to first attempt informal resolution of disputes, within a reasonable period of time and in a fair and equitable manner, taking into consideration the objectives of the Award and any laws, statutes, rules, regulations or guidelines to which the involved Participants are subject.

The designated officers are as follows:

For NEEP: Robert M. McTighe

For BPA: _____

For Daikin: _____

For MassCEC: _____

For METUS: _____

For NEEA: _____

For NYSERDA: _____

For UMass: _____

For Winn: _____

2. If the designated officers are unable to resolve the issues presented before them, and if the dispute cannot be settled through negotiation after thirty (30) days, the Participants agree first to try in good faith to settle the dispute by mediation administered by the American Arbitration Association under its Commercial Mediation Procedures before resorting to arbitration, litigation, or some other dispute resolution. If within thirty (30) days after service of a written demand for mediation, the mediation does not result in settlement of the dispute, then any unresolved issues shall be settled by arbitration administered by the American Arbitration Association in accordance with its Commercial Arbitration Rules, and judgment on the award rendered by the arbitrator(s) may be entered in any court having jurisdiction thereof.

IN WITNESS THEREOF, the parties hereto have executed or approved this Intellectual Property Management Plan on the dates below their signatures.

Northeast Energy Efficiency Partnerships, Inc. (NEEP) – *Recipient, Participant*

Northwest Energy Efficiency Alliance (NEEA) – *Recipient, Participant*

Signature: _____

Signature: _____

Name: _____

Name: _____

Title: _____

Title: _____

Date: _____

Date: _____

Bonneville Power Administration (BPA) – *Recipient, Participant*

New York State Energy Research and Development Authority (NYSERDA) – *Recipient, Participant*

Signature: _____

Signature: _____

Name: _____

Name: _____

Title: _____

Title: _____

Date: _____

Date: _____

Daikin Industries, Ltd – *Recipient, Participant, Manufacturer*

University of Massachusetts (UMass) – *Recipient, Participant*

Signature: _____

Signature: _____

Name: _____

Name: _____

Title: _____

Title: _____

Date: _____

Date: _____

Massachusetts Clean Energy Council (MassCEC)
- Recipient, Participant

Winn Companies
- Recipient, Participant

Signature: _____

Signature: _____

Name: _____

Name: _____

Title: _____

Title: _____

Date: _____

Date: _____

Mitsubishi Electric Trane HVAC US LLC (METUS)
- Recipient, Participant, Manufacturer

Signature: _____

Name: _____

Title: _____

Date: _____

TBD Engineering Firm
- Field Engineer

TBD Site Owner
- Site Owner

Signature: _____

Signature: _____

Name: _____

Name: _____

Title: _____

Title: _____

Date: _____

Date: _____

ATTACHMENT A
Project Participant List

VRF Field Validation Project Participant List			
Organization	Contact	Email Address	Role
DOE	Charles Llenza	charles.llenza@ee.doe.gov	Technology Manager/Technical Project Officer
DOE	Christina Dunn	christina.dunn@ee.doe.gov	Grants Management Specialist
DOE	Diana Raggio	diana.raggio@ee.doe.gov	Project Engineer
DOE	David Orens	david.orens@ee.doe.gov	Contracting Officer
DOE	Star Gibbs	Starlette.Gibbs@ee.doe.gov	Meeting Coordinator
NEEP	Dave Lis	djlis@NEEP.org	Principal Investigator
NEEP	Ben Hiller	bhiller@neep.org	Project Manager
NEEP	Andy Winslow	awinslow@neep.org	Project Support
NEEP	Sue Stocker	sstocker@neep.org	Accounting Manager
NEEP	Laura DeAngelo	ldangelo@neep.org	Grants & Contracts Manager
NEEP	Robert M. McTighe	bmctighe@neep.org	Project Support
VEIC	Rachael Mascolino	rmascolino@veic.org	Technical Support Contractor
VEIC	Chris Badger	cbadger@veic.org	Technical Support Contractor
NYSERDA	Donovan Gordon	Donovan.Gordon@nyserda.ny.gov	Project Partner
MassCEC	Peter McPhee	PMcPhee@MassCEC.com	Project Partner
BPA	Robert Weber	rmweber@bpa.gov	Project Partner
BPA	Jamie Anthony	jtanthony@bpa.gov	Project Partner
NEEA	Christopher Dymond	CDymond@neea.org	Project Partner
NEEA	Jeff Rigotti	jrigotti@neea.org	Project Partner
Mitsubishi	Eric Dubin	edubin@hvac.mea.com	Project Partner
Mitsubishi	Stephen Breckenridge	sbreckenridge@hvac.mea.com	Project Partner
Mitsubishi	John Scheeler	jscheeler@hvac.mea.com	Project Partner
Mitsubishi	Tom Greco	tgreco@hvac.mea.com	Project Partner
Mitsubishi	Ed Blair	eblair@hvac.mea.com	Project Partner
Daikin	Jon Hacker	jon.hacker@daikin.com	Project Partner
WinnCompanies	Christina McPike	cmcpike@WINNCO.com	Project Partner
UMass	Lauren Mattison	laurenm@umass.edu	Project Partner

ATTACHMENT B
Project Technical Data

VRF DOE Field Validation Project – Project Technical Data	
<p>The actual Project Technical Data collected at a site will be determined after the Project Team assesses existing lab and in-field protocols and develops standard protocols for this project. Technical Data gathered during the project may include, but is not limited to, the following list of performance metrics.</p>	
<u>Project Technical Data</u>	<u>Units</u>
Compressor amperage	A
Compressor voltage	V
Compressor power	kW
Compressor frequency	Hz
Expansion valve position	%
Outdoor unit power	kW
Indoor unit power	kW
Supply airflow	CFM
Supply fan speed	Low/med/high
Supply air temperature	deg F
Supply air humidity	%RH
Return air temperature	deg F
Return air humidity	%RH
Output power	BTUH
Output energy	BTU
Capacity	BTUH
Space temperature set point	deg F
Space temperature	deg F
Space humidity	%RH
Outdoor temperature	deg F
Outdoor humidity	%RH
CO2	ppm
Particulate matter	ppm

Refrigerant concentration	ppm
Refrigerant receiver level	%
Refrigerant pressure	PSI
Refrigerant charge	lbs.