1. BACKGROUND AND PURPOSE

Accurate and reliable on-site measurement data is the very basis of evaluating the performance of various energy equipment/systems and quantifying the savings magnitude of energy conservation measures. However, many times building and plant operation personnel may not have access to the required instruments to gather energy systems' operation data.

The Field Validation and Diagnostic Equipment Program is funded by the U.S. Department of Energy (hereinafter referred to as "DOE") through the Better Buildings, Better Plants Program (hereinafter referred to as "Program") to loan various tools or instruments identified on page 5 (hereinafter referred to as "Equipment") without charge to Better Plants and SEP partners working on energy efficiency projects in the United States. Any Equipment provided hereunder may be used for the purposes of furthering the Program including supporting a specific event, such as Kaizen or treasure hunt type audits, or collecting more detailed data to further investigate previously identified energy saving opportunities and help make critical decisions during the implementation of identified opportunities, or determining the instruments' true value in their specific buildings and plants prior to purchase. The Equipment shall under no circumstances be used for a purpose contrary to the spirit of the Program.

2. GENERAL PROVISIONS

This is a loan agreement (hereinafter referred to as "Agreement") between the party requesting the diagnostic equipment (hereinafter referred to as "Loanee") and UT-Battelle, LLC (hereinafter referred to as "UT-Battelle"), a limited liability company organized and existing under the laws of Tennessee, having a business address of 1 Bethel Valley Road, Oak Ridge, TN, collectively referred to herein as "Party" or "Parties." Under the terms and conditions herein, UT-Battelle shall furnish to Loanee the Equipment for the purposes identified in section 1 above. Except as provided for in Section 14 of this Agreement, the Equipment shall be furnished to the Loanee at no cost to UT-Battelle and shall be used only by the Loanee or by authorized agents, employees or subcontractors of the Loanee.

3. EQUIPMENT LOAN REQUEST PROCESS

Equipment shall be requested by completing and signing the form on page 7 of this Agreement and identifying the Equipment to be received on the Instrument Check-out List on page 8 et seq.

The completed form and Instrument Check-Out List shall be sent to the Field Validation and Diagnostic Equipment Program manager Daryl Cox via coxdf@ornl.gov . UT-Battelle will endeavor to confirm receipt of the completed form and Instrument Check-Out List within two business days.

4. PROPERTY RIGHTS

Unless otherwise agreed in writing by the Parties, the Equipment shall at all times remain and be the sole and exclusive property of UT-Battelle, and Loanee shall have no right of property therein, but only the right to use the Equipment according to terms and conditions specified herein. Loanee shall not allow any liens, charges or

encumbrances on the Equipment and will not further loan or transfer the property to a third-party without the express written permission of UT-Battelle.

To the extent applicable, Loanee will not make any changes or modifications to the Equipment unless prior written approval of UT-Battelle is obtained. Loanee will only use the Equipment for the purposes specified in the Agreement unless prior written approval of UT-Battelle is obtained.

5. DELIVERY AND RETURN

After receipt has been confirmed according to Section 3 of this Agreement and under the condition that the Equipment is available, the Equipment and a return label will be sent for shipping or prepared for pick up within two weeks (hereinafter referred to as "Delivery Time"). If UT-Battelle is unable to ship or prepare the Equipment for pick up within the Delivery Time, Loanee will be notified of a potential later delivery date. Prior to or upon termination or expiration of the Agreement, Loanee will return the Equipment to UT-Battelle to the address indicated on the return label.

6. INSTRUMENT LOSS OR DAMAGE

Loanee will use all reasonable efforts to safeguard the Equipment. If any Equipment is lost or damaged while in possession of the Loanee, Loanee agrees to immediately notify the Field Validation and Diagnostic Equipment Program manager by email at the address provided in in Section 3 above. Loanee shall replace lost or damaged Equipment with replacement equipment of the same make and model. If replacement equipment is not available on the market, the replacement equipment having the same or better specifications from well-known manufactures will be acceptable.

7. DISCLAIMER

Loanee hereby acknowledges that it is being furnished testing equipment without any charge for its use. ACCORDINGLY, ALL WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO, IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE DISCLAIMED BY UT-BATTELLE.

UT-Battelle shall have no liability to Loanee or any other person for any claim, loss, damage or expense of any kind caused by the use or performance of the Equipment, or any loss of business or profits or other consequential or indirect damage. Loanee agrees to indemnify UT-Battelle and the U.S. Government for all damages, costs, and expenses, including attorney's fees, arising from the 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 which was derived from the Equipment under this agreement.

8. LOAN PERIOD

The loan period of this Agreement shall commence on the date of acceptance by Loanee and expire upon the earlier of its termination as provided in Section 9 below or two weeks following the date of acceptance of the Equipment by the Loanee. UT-Battelle may agree to a longer loan period (up to four weeks) provided the Loanee submit a request by email addressed to the Field Validation and Diagnostic Equipment Program manager

indicated in Section 3 upon submission of this application, which longer term shall not be unduly withheld. Extension of the term may be requested by email prior to the termination of this Agreement. All extensions are at the sole discretion of UT-Battelle.

9. TERMINATION

9.1. Either Party may terminate this Agreement during its term by giving notice to the other Party. Notice under this section may be given to UT-Battelle by email to the Field Validation and Diagnostic Equipment Program manager at the address listed in Section 3. Notice under this section may be given to Loanee by email at the contacts in the Instrument User Information.

9.2. In the event of the termination of this Agreement either upon the expiration of its term or its earlier termination, Loanee shall remove the Equipment and shall bear all expenses in connection with removal of the Equipment.

10. COMPLIANCE LAWS & EXPORT

The Parties agree to comply with all applicable government laws, regulations and rules with respect to the use, maintenance and operation of the Equipment. This shall include compliance with U.S. export control laws and regulations applicable to the transfer of goods and/or technology.

11. SEVERABILITY OF PROVISIONS

Should any part of this Agreement be declared invalid by a court of law, such decisions shall not affect the validity of any remaining portions which shall remain in full force and effect as if the invalid portion was never a part of this Agreement when it was executed. Should the severance of any such part of this Agreement materially affect any other rights and obligations of the parties hereunder, the parties hereto will negotiate in good faith to amend this Agreement in a manner satisfactory to the parties.

12. NON-ASSIGNABILITY

Neither party hereto shall, directly or indirectly, assign or purport to assign this Agreement or any of its rights and obligations in whole or in part to any third party without the prior written consent of the other party. Notwithstanding the foregoing, UT-Battelle shall have the right to assign this agreement to the Department of Energy (DOE), or its designee.

13. AMENDMENT

This Agreement shall not be amended, modified or altered, except in writing, duly accepted and executed by both parties.

14. COST OF SHIPPING

The cost of shipping to the Loanee and the return label shall be borne by UT-Battelle on all Equipment.

15. GOVERNING LAW

This Agreement shall be governed by, and construed in accordance with, the laws of the State of Tennessee.

16. ENTIRE AGREEMENT

This Agreement constitutes the entire agreement and understanding of the parties hereto, and no representations or promises have been made that are not fully set forth herein.

17. TRANSFER OF THIS AGREEMENT

This Agreement may be transferred to DOE or its designee upon termination of UT-Battelle's Prime Contract with DOE.

18. MISCELLANEOUS

18.1. USER'S MANUAL AND REQUIRED SOFTWARE

Some tools may arrive with the user's manual and the required software. Loanee may be required to visit the Equipment manufacturers' website to download the desired user's manual and the necessary software.

Limited technical assistance may be provided at UT-Battelle's discretion on selecting and using the Equipment. However, the Loanee will have the ultimate responsibility to ensure that the Equipment is suitable for its intended purpose and to guarantee its proper use. Videos and webinars showing the proper use and care of the Equipment may be made available.

ATTACHMENT 1

INSTRUMENTS

The following instruments are currently available and can be used to collect data on energy systems or the building envelope.

Instrument	Application
Anemometer	Measure air flow and help quantify leakage around seals (process heat, building envelope).
Combustion Analyzer	Quantify the amount of excess oxygen in boiler/combustion process exhaust.
Conductivity Meter	Quantify the amount of undissolved solids in boiler blowdown.
Current Transformer	Help quantify an actual change in the electrical consumption of a component or system.
Digital Manometer	When used with pitot tubes, digital manometers can help determine air flow rates in fan systems or ductwork.
Digital Multimeter	Measure voltage, current and resistance.
Digital Thermometer	When combined with a thermocouple this is useful for determining process temperatures.
Head Mounted Tablet	Wearable camera for documenting equipment operation or installation that can also interface with Microsoft Teams.
HOBO Data Logger	When combined with the accessories below, the data logger is used to determine trends in non-steady state systems: current transformer - clamp-on; current transformer - split core; pressure transducer; temperature/RH sensor.
Infrared Camera	Useful for evaluating structures, door seals, insulation, oven hot spots, etc.
Infrared Thermometer	An infrared thermometer can be useful for non-contact temperature measurements for both manufacturing processes and building envelope applications.
Manometer–Hydronic	Used for measuring pressure drop across components in fluid systems.
Pitot Tube	Measure fluid flow velocity by using the difference between the total and static pressures.
Power Logger	Used for logging power in low voltage (<600 V) 1-Phase or 3-Phase electrical components such as pumps, fans, and compressors.
Pressure Transducer	Pressure transducers are most frequently used for compressed air and pumping systems.
Sonic Imager	Creates a visual sound map to locate and identify compressed air leaks.
Strobe Tachometer	A strobe tachometer is a non-contact method for determining the rotating speed of a shaft (motors, pumps, fans).
Thermocouple	Used to measure temperature for various applications.
Time-of-use Logger	Used for logging starts and stops of equipment with intermittent duty cycles such as sump pumps, vent fans, refrigeration units, etc.
TRMS Supermeter	Used for non-contact temperature measurement and voltage, current, resistance, inductance, capacitance, and frequency measurement.

Ultrasonic Flow Meter	Used to measure the flow rate in fluid systems without breaking the pressure boundary.
Ultrasonic Leak Detector	Used to identify leaks in compressed air or steam systems.

INSTRUMENT USER INFORMATION

Please send this Form with your signature to Field Validation and Diagnostic Equipment Program manager Daryl Cox via coxdf@ornl.gov.

Company Name			
Shipping Address	*Plant Name*	*Address*	
	City	*State*	*Zip*
Contacts	*Name*	*Phone*	*Email*
	Name	*Phone*	*Email*
Dates Requested	**From:**	**To:**	

Performance Parameters / Environment / Installation (Please provide a brief description):

AGREEMENT OF TERMS

By signing this document, the Loanee agrees to the terms and conditions specified above and understands that the Equipment as defined above shall be used properly according to user's manual for the specific applications. The signatory is responsible for instrument loss or damage according to the terms of this Agreement. The signee also assumes the responsibility of returning the loaned instruments before the loan period expires.

Print Name/Company	Signature	Date

INSTRUMENT CHECK OUT LIST

Please mark the needed instruments and fill out the requested quantity in below form.

	Description	Manufacturer	Model	Range	Units	Quantity Requested		Total
	Combustion analysis							
☐	Combustion analyzer	Bacharach	PCA3				of	1
☐	Combustion analyzer	Testo	340				of	2
	Data logging							
☐	HOBO Data logger	Onset Computer Corp	H22-001				of	20
☐	HOBO Analog input module	Onset Computer Corp	S-FS-CVIA	0–20 mA or 0–20V DC			of	22
☐	HOBO TRMS Current Module	Onset Computer Corp	S-FS-TRMSA				of	16
☐	Temperature/RH sensor–2M cable	Onset Computer Corp	S-THB-M002				of	6
☐	Temperature/RH sensor–8M cable	Onset Computer Corp	S-THB-M008				of	6
☐	CT – Split core	Magnelab	SCT-0750-005	0-5	amps		of	8
☐	CT – Split core	Magnelab	SCT-1250-100	0-100	amps		of	4
☐	CT – Split core	Magnelab	SCT-1250-200	0-200	amps		of	4
☐	CT – Split core	Magnelab	SCT-1250-600	0-600	amps		of	2
☐	CT – Split core	Magnelab	SCT-2000-1000	0-1000	amps		of	3
☐	CT-Split core	Continental Control Systems	Accu-CT	0-250	amps		of	6
☐	Current transformer–Coil	Accuenergy	RCT24-1000	0-1000	amps		of	4
☐	Current transformer	Accuenergy	H138-600	0-600	amps		of	6
☐	Data Shuttle	Onset Computer Corp	U-DT-1				of	3
☐	HOBO Data logger	Onset Computer Corp	UX120-006M				of	6
☐	CT – Split core	Onset Computer Corp	CTV-A	0-20	amps		of	6
☐	CT – Split core	Onset Computer Corp	CTV-C	0-100	amps		of	4
☐	CT – Split core	Onset Computer Corp	CTV-D	0-200	amps		of	6

	Description	Manufacturer	Model	Range	Units	Quantity Requested		Quantity Total
☐	CT – Split core	Onset Computer Corp	CTV-E	0-600	amps		of	2
	Pressure transducers must be paired with a data logger							
☐	Pressure transducer	Ashcroft	G1	0-200	psig		of	4
☐	Pressure transducer	Ashcroft	G2	0-200	psig		of	20
☐	Pressure transducer	Ashcroft	G2	0-300	psig		of	4
☐	Pressure transducer	Ashcroft	K1	0-150	psig		of	4
☐	Pressure transducer	Ashcroft	K1	VAC-60	psig		of	1
	Electric Power							
☐	Power logger–3 phase	Dent Instruments	ElitePro XC	80-600V / 0-5000A			of	2
☐	Power logger–3 phase	Yokogawa	CW240	Cat III			of	1
	Flow measurement–Air							
☐	Anemometer–Hot wire	Testo	425				of	1
☐	Anemometer–Vane	Omega	HHF91				of	1
☐	Digital Manometer	Dwyer	475-000-FM	0-1.0	in wc		of	1
☐	Digital Manometer	Dwyer	478A-0	-4.00 – 4.0	in wc		of	1
☐	Digital Manometer	Dwyer	475-2-FM	0–40	in wc		of	1
☐	Digital Manometer	Dwyer	478A	-60 – +60	in wc		of	1
☐	Incline manometer	Dwyer	250.5-AF	-0.1–1	inch		of	2
☐	Pitot tube–12"	Dwyer	160-12				of	1
☐	Pitot tube–18"	Dwyer	160-18				of	1
☐	Pitot tube–36"	Dwyer	160-36				of	1
☐	Pitot tube–48"	Dwyer	160-48				of	1
	Flow measurement–Compressed air							
☐	Compressed air flow meter	CDI	5200	0-100	SCFM		of	2
☐	Ultrasonic Gas Flow Meter	GE Panametrics	PT878GC				of	1

	Description	Manufacturer	Model	Range	Units	Quantity Requested		Total
	Flow measurement–Water							
☐	Ultrasonic Flow meter	Siemens	FUP1010				of	2
☐	Ultrasonic Flow meter	GE Panametrics	PT900				of	1
	Thermal measurement							
☐	Digital thermometer	Omega	HH506RA				of	2
☐	Thermocouple	Omega	KHXL-14G-RSC-24				of	2
☐	Thermocouple	Omega	KHXL-316G-RSC-18				of	1
☐	Thermocouple	Omega	XCIB-4-6-10				of	2
☐	Thermocouple	Omega	KHXL-18G-RSC-12				of	1
☐	Thermocouple	Omega	KHXL-14G-RSC-18				of	1
☐	Pyrometer	Ametek Land	160L	200 - 1400	°C		of	1
☐	IR Thermometer	Fluke	561				of	1
☐	IR Thermometer	Fluke	566				of	1
	Thermal imaging							
☐	IR Camera	Flir	i7				of	1
☐	IR Camera	Flir	E40				of	1
	Miscellaneous							
☐	Head Mounted Tablet	RealWear	HMT-1				of	1
☐	Laser Distance Meter	Fluke	414D	0-165	ft		of	1
☐	Light Meter	Testo	540				of	1
☐	Conductivity meter	Amprobe	WT-60				of	1
☐	Sonic Imager	Fluke	Ii900					1
☐	Strobe tachometer	Monarch	Palm Strobe				of	1
☐	Strobe tachometer	Monarch	DB+				of	1
☐	Time-of-use logger	Dent Instruments	MAGlogger 4G				of	2
☐	Ultrasonic leak detector	ue Systems	Ultraprobe 100				of	1

☐	Ultrasonic leak detector	Bacharach	Tru Pointe 1100			of	1
☐	Temperature/RH logger	Onset Computer	UX100-011A			of	3

	Description	Manufacturer	Model	Range	Units	Quantity Requested		Total
☐	Thermocouple logger	Onset Computer	UX100-014M				of	2

☐ **Treasure Hunt Kit**

Description	Manufacturer	Model	Range	Units	Quantity
Clamp meter	Fluke	345PQ			1
Conductivity meter	REED	SD-4307			1
CT – Split core	Onset Computer Corp	CTV-A	0-20	Amps	2
CT – Split core	Onset Computer Corp	CTV-C	0-100	Amps	2
CT – Split core	Onset Computer Corp	CTV-D	0-200	Amps	2
CT – Split core	Onset Computer Corp	CTV-E	0-600	Amps	2
Digital thermometer	Omega	HH506RA			1
IR Camera	Flir	E5			1
HOBO Data logger	Onset Computer Corp	UX120-006M			6
Plug load logger	Onset Computer Corp	U120-018			2
Laser Distance Meter	Fluke	414D	0-165	ft	1
Ultrasonic leak detector	Bacharach	Tru Pointe 1100			1
Light meter	Testo	540			1
Pressure transducer	Ashcroft	G2	0-200	psig	2
Thermocouple	Omega	KHXL-18G-RSC-12			2
Vane anamometer	Dwyer	9671			1
IR thermometer	Fluke	566			1