



# **PRE-DEMONSTRATION PLAN GUIDANCE**

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**Installation Energy and Water Projects**

**March 2018**

## OVERVIEW

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This document provides guidance for preparing Pre-Demonstration Plans for projects that receive funding under the Environmental Security Technology Certification Program (ESTCP) Installation Energy and Water program area. The guidance provided in this document will help ensure that key logistical issues for ESTCP Installation Energy and Water demonstrations are addressed, budgeted, and planned for during the initial phase of the project.

A Pre-Demonstration Plan is required for all ESTCP-funded Installation Energy and Water projects. **Demonstrators should submit a Pre-Demonstration Plan as early as possible after project initiation for review and discussion. Support from the ESTCP office is available to help non-DoD demonstrators develop this plan if necessary. Please contact the Installation Energy and Water Program Area Technical Assistant to arrange support if required. Several portions of the Pre-Demonstration Plan can be used for the Demonstration Plan.**

### Format

The following general formatting parameters are recommended for Site Selection Memorandums:

Font	Times New Roman proportional font
Cover Main Title	26 pt, bold, flush right
Cover Title	18 pt, bold, flush right
Section headings	14 pt, bold, flush left
Subsection headings	12 pt, bold, flush left
Text	12 pt
Margins	1" top, left, right, bottom
Page Numbering	Bottom center Cover page: none Front matter: i, ii, iii, iv... Body of document: 1, 2, 3, 4...
Word processing software	Use either Microsoft Word or provide a PDF document
Figures, tables, and photographs	Insert in the document on the same or first page following the first reference. Liberal use is highly recommended.

### How to Submit a Pre-Demonstration Plan

A Pre-Demonstration Plan must be submitted to the ESTCP Support Office using *one of the methods* indicated below:

- For files that are 100MB or less: Submit the report in SEMS 2.0 (<https://sems2.serdp-estcp.org>). Follow the instructions below for uploading your document:
  - From the project dashboard, click “Overview & Plan” in the left-hand panel, then click “Project Plan”.

- Scroll down to the document milestone and click “Upload” in the milestone box.
- Select the file you would like to upload and click the “Upload” button.
- Click
- “Submit” in the bottom right corner of the milestone box.
- For files larger than 100MB: Contact [serdp-estcp.documents@noblis.org](mailto:serdp-estcp.documents@noblis.org) to receive an email with the web link that will allow access to the system to upload your file(s). Please make sure you include the project number and the title(s) of the document(s) to allow identification of your files.

**Please do not submit documents directly to the ESTCP Program Manager.**

# **SECTION-BY-SECTION PRE-DEMONSTRATION PLAN GUIDANCE FOR INSTALLATION ENERGY AND WATER TECHNOLOGIES**

**Project Title**

**ESTCP Project Number**

**Date Submitted**

## **1.0 OBJECTIVES OF THE DEMONSTRATION**

Provide a succinct statement of the specific, tangible objective of the demonstration project.

## **2.0 TECHNOLOGY DESCRIPTION**

Provide an overview of the technology and/or practices featured in the demonstration.

## **3.0 FACILITY/SITE DESCRIPTION**

Provide a concise summary of the selected facility or site and include all facility or site information that is relevant to the demonstration. All information should be verified by a site visit and meeting with on-site staff. State the name of the installation(s) selected and any further descriptive information available, such as building number, address or general location of the demonstration site on the installation. Provide description and drawings, or photos for the proposed location of any hardware to be installed during the demonstration.

### **3.1 HARDWARE INSTALLATION REQUIREMENTS**

Provide a summary and assessment of hardware installation issues relevant for the specific site selected. Review all electrical, mechanical, and structural issues relevant for the hardware installation.

Provide an assessment of costs, schedule and risks for hardware installation activities. Identify any changes from the proposal.

### **3.2 INSTALLATION SUPPORT**

Provide written documentation from the cognizant installation official for support of the demonstration. List contact information for all appropriate base personnel (i.e. Facility Planning Office, Public Works Office, building manager etc.) Indicate if NEPA will be required. If so provide plans for achieving compliance. List any future approval process for hardware installation that will be required. Identify documentation, process for approval, and time required.

Provide an assessment of costs, schedule and risks for approval activities.

### **3.3 NETWORK CONNECTIVITY**

Provide a concise description of all network connections required to conduct the demonstration (both DoD and commercial networks). Either provide written approval for each connection or a detailed schedule for achieving approval. The schedule shall include process steps, documentation required, approval authority and timeline.

Provide an assessment of costs and risks for network connection approvals. Identify any changes from the proposal.

### **3.4 UTILITY AND REGULATORY ISSUES**

Provide a concise summary of any approval or permits required from local utility, utility privatization contractor, local or state regulatory agencies or federal regulatory agencies. Either provide written approval or copies of permits for each requirement or a detailed schedule for gaining approval or permits. The schedule shall include process steps, documentation required, approval authority and timeline.

Provide an assessment of costs and risks for utility interconnection and regulatory permits approvals. Identify any changes from the proposal.

## **4.0 PERFORMANCE OBJECTIVES**

Describe the technology and economic Performance Objectives (PO). Describe how they will enable measurement of the contribution of the technology to DoD Energy and Water goals and how they will enable measurement of the impact of the demonstrated technology on military installations. Consider the following three criteria when selecting performance objectives:

- Energy and Water Security: The performance objectives should help measure assured access to reliable supplies of sufficient energy and/or water to meet military installations' needs. Key measurements of the contribution of the new technology may include: reducing vulnerability to power grid disruptions, increasing the use of renewable energy generation or reducing energy intensity (MMBtu/ft<sup>2</sup> or kWh/ft<sup>2</sup>) or water consumption.
- Cost Avoidance: The performance objectives should measure cost avoidance or reduction, lead to improved metering and measurement of energy usage or reduce the adverse impact of price or supply volatility or disruption.
- Greenhouse Gas Reduction: The performance objectives should measure the reduction of GHG emissions for installations or non-tactical vehicles.

### **4.1 "TABLE 1" SUMMARY OF PERFORMANCE OBJECTIVES**

Investigators will collect data before and during system operation to evaluate the technical objectives of the project. Provide a summary of proposed performance objectives in Table 1 in a manner similar to the example provided below. Sections 5.0 and 6.0 of the Demonstration Plan will include details of the methods for collecting and analyzing the data needed to assess the performance objectives.

**Table 1. Performance Objectives**  
**[- Adjust as appropriate for specific technologies.]**

<b>Performance Objective</b>	<b>Metric</b>	<b>Data Requirements</b>	<b>Success Criteria</b>
<b>Quantitative Performance Objectives</b>			
Facility Energy Usage	Energy Intensity (MMBtu/ ft <sup>2</sup> or kWh/ft <sup>2</sup> )	Meter readings of energy used by installation; square footage of buildings using energy	% Reduction compared to baseline, or, targeted threshold value
Renewable Energy Usage	RE Used on Installation (kWh, MMBtu)	Meter readings of renewable energy usage	% Increase or targeted threshold value
Water Usage	Water (Gallons)	Meter readings of water used by installation	% Reduction compared to baseline, or, targeted threshold value
Direct Greenhouse Gas Emissions	Direct fossil fuel GHG emissions (metric tons)	Measured or estimated release of GHG based on source of energy	% Reduction compared to baseline, or, targeted threshold value
Facility Metering	Number	Number of metered buildings	% Increase
System Maintenance	Number or Level	Scheduled and unscheduled maintenance events; downtime; survey data	% Reduction or increase compared to industry standard or similar systems
System Economics*	%, \$, Years	Dollar costs, discount rate, usable life	% Reduction or increase
Other			
<b>Qualitative Performance Objectives</b>			
User Satisfaction	Degree of Satisfaction	Likert Scale Survey	% Increase in satisfaction over baseline
Other			

\*For “System Economics” - Refer to the NIST Building Life Cycle Cost program, available on the DOE website: <https://energy.gov/eere/femp/building-life-cycle-cost-programs>. For additional guidance see the EW Demonstration Plan Guidance (<https://serdp-estcp.org/Investigator-Resources/ESTCP-Resources/Demonstration-Plans>)

#### **4.2 PERFORMANCE OBJECTIVES DESCRIPTIONS**

Describe each performance objective listed in Table 1. Refer to earlier descriptions of data or metrics for subsequent descriptions if they are similar. Use the format below for quantitative and any qualitative POs if appropriate.

- Name and Definition: Describe the PO.
- Purpose: Describe the use and relevance of the PO in the context of the demonstration - for comparison with the currently used system, to show direct contribution toward a DoD goal, to address situations unique to military installations, etc.

- Metric: Describe the metric (units) the investigator will use to measure performance. Provide brief background information about the range of values of the metric relevant to the technology demonstration. For example, for a demonstration of new solar PV technology provide the efficiency of other solar PV technologies as points of reference.
- Data: Describe the data required to calculate or evaluate the metric.
- Analytical Methodology: Briefly address the type of analytical methodology the investigator will use, such as type of statistical or graphical analysis outlined in Section 6.
- Success Criteria: Describe the metric threshold value, percent change from a baseline or other criteria used to determine success.