

# **ESTCP Installation Energy and Water Technology Transfer (T2) Plan Instructions and Requirements**

(For Non-Federal PIs)

Project Title

Project Number

Principle Investigator Name

Date

The purpose of this outline is to assist ESTCP Installation Energy and Water (EW) Principal Investigators in developing a Technology Transfer (T2) Plan for advancing the demonstrated “*technology*”<sup>1</sup> toward commercial viability. The Plan should describe the methods and activities the project team will use to transition the demonstrated technology to end user(s) and to commercialize or move the technology to a more mature stage.

The Plan will provide an opportunity to set goals and identify issues and opportunities related to transfer and commercialization of the ESTCP demonstration technology. The commercialization of a technology is vital to allow diffusion into the DoD inventory as well as the larger commercial market.

A single member of the project team should be responsible for coordinating and leading T2 activities for the project, including completion of the initial Plan. The T2 Lead should be an integral team member with intimate knowledge of the demonstration and technology and plan to participate in the In-Progress Reviews (IPRs) as needed. Either the lead technical principal investigator (PI) or another team member who is more experienced with the commercialization and technology transition process may serve as T2 Lead for the project.

The following major areas need to be considered and addressed in the T2 Plan:

- Level of team’s market and industry knowledge
  - o Any Intellectual Property Management
  - o Any known Regulatory issues
    - DoD unique items Unified Facilities Criteria (UFC), Engineering Technical Letter (ETL), Executive Orders (EO)
    - Institutional or regulatory barriers that affect the transition
  - o Development level of any business model/plan
- T2 team members
- Manufacturing/Scalability/Supply Chain overview
  - o Cost and Performance estimates when commercialized
- Future funding options, paths, and plans

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<sup>1</sup>Technology includes hardware, software, and systems. (e.g., HVAC, monitoring, and BMS, etc.)

## T2 Lead

Name and complete contact information of the designated T2 Lead. Include name, email address, and primary telephone contact information for this individual.

## Overall Transition Plan

1. Describe how the technology being demonstrated is expected to transition from its current stage of development into a commercially available product and ultimate market diffusion and deployment. Please note that while some of the ESTCP EW demonstrated technologies will be ready to transition to a commercial or deployment-focused effort, others may be focused on advancing the level of maturity or state of the science.

The following items should be addressed in the Plan as applicable:

- a. Upon completion of a successful demonstration, the timeline required to transition to a product or service suitable for acquisition or implementation by DoD installations.
  - b. Likely commercialization approach (startup, license, etc.), including any expected handoff at the end of the demonstration project (e.g., grant funding, license/acquisition – established company, license/acquisition – technology spinout, internal product development, private sector funding, other).
  - c. The potential near and long-term markets targeted, including potential first DoD users and follow-on implementation after the demonstration.
  - d. Organizations (e.g., DOE, major manufacturers, incubators, universities, etc.) currently involved and/or expected to be involved in the transition of the technology (partners, customers, etc.).
  - e. The technology transfer considerations specific to DoD Energy Managers including implementation, Operation and Maintenance, and Cyber Security. This should include all Service Branches (e.g., Air Force, Army, Navy, Marine Corps).
  - f. The anticipated methods to reach stakeholder audiences (e.g., energy managers, energy services companies, etc.) including developing guidance, design, and/or protocol documents such as UFC<sup>2</sup>, ASHRAE or IEEE standards that will assist in future implementation.
  - g. Any DoD or service programs that are responsible for technology implementation or relevant requirements or regulations that will affect transition.
2. Technology's Commercial Readiness:
    - a. Describe the following commercial diffusion factors:
      - i. Key players in that sector – Who are the major stakeholders?
      - ii. Competitive landscape - what is the market share expected for this technology?
      - iii. Market needs and requirements (e.g., how many units would be needed to meet market needs?)
    - b. Describe the product concept and value of the demonstrated technology against competing technologies. Why is it superior?

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<sup>2</sup> See: [www.wbdg.org](http://www.wbdg.org) UFC documents provide planning, design, construction, sustainment, restoration, and modernization criteria, and apply to the Military Departments, the Defense Agencies, and the DoD Field Activities in accordance with DoD Directive 4270.5 (Military Construction) and USD (AT&L) Memorandum dated 29 May 2002

- c. Describe the plan to validate the technology value to the market.
- d. What specific activities are planned to advance the technology toward market viability during the ESTCP demonstration project?
- e. What is the status of the business plan for the technology?
- f. Describe any proposed guidance, design, and/or protocol documents such as Unified Facilities Criteria, ASHRAE or IEEE standards that will assist in future implementation.

Using the table below, define the spectrum of commercial maturity from basic market research to full deployment. Describe the current level of commercial readiness of the proposed technology and indicate the level of commercial readiness expected at the end of the project period. Please note that commercial readiness is not equivalent to Technology Readiness Level (TRL).

<b>Commercial Readiness Level</b>	<b>Description</b>
1	Knowledge of the technology applications, and a cursory understanding of potential applications, markets, and existing similar technologies/products exists. Market research is derived primarily from secondary or anecdotal sources and unvalidated.
2	There is a deep understanding of the application and what is needed in the market. There is a comprehensive cost-performance model that substantiates the economics of the product and provides a detailed understanding of product design trade-offs.
3	Product design is complete. Market/customer needs and how those translate to product needs are defined. Supply sources and customers are identified. All necessary certifications and/or regulatory compliance for product are identified and accommodated. Financial models and projections have been built and validated for early stage and late stage production
4	Customer qualifications are complete, and initial products are manufactured and sold. Commercialization readiness continues to mature to support larger scale production and sales. Assumptions are continually and iteratively validated to accommodate market dynamics.
5	This is an established Commercial product

### 3. Team Capability and Development

- a. Describe any gaps in the capability, knowledge, and availability of current team resources that may impede advancement of the technology to commercialization.
- b. Describe how and when the gaps will be addressed (new partnerships, advisors, consultants, conferences, etc.).

### 4. Manufacturing and Scalability

- a. Describe how the manufacturing, assembly or production at full commercial scale will be performed for the proposed technology. Describe the approaches/options that are available.

- b. Provide an estimated, quantitative cost/benefit analysis for the proposed technology. This could include a cost/performance model, manufacturing cost model, or other quantitative analysis used to evaluate the value for the demonstrated technology.
  - c. Define the key costs, manufacturing, and scalability risks associated with the demonstrated technology and describe how these risks will be mitigated.
  - d. Describe how field support (operation and maintenance) for the product will be accomplished.
5. Future Funding Options and Plans
- a. Define the resources that are needed for the phase of development that follows the end of the ESTCP demonstration and validation project.
  - b. Define the expected source(s) of private or public funding for the next stage of commercialization and describe the plan to engage them during the ESTCP project.

6. Additional Resources Requested

ESTCP may provide assistance to help prepare for market adoption and deployment of demonstrated technologies. Please indicate from the list below where additional help may be needed:

Area of Need	Specific Need (Describe below)
Market and Industry Knowledge	
Business Model / Plan	
Manufacturing / Scalability / Supply Chain	
Next Stage Funding	
Team Development	
Other (please explain)	

**Note:**

It is understood that this plan does not address all situations. For instance, a technology may not be a “stand alone technology” and therefore commercialized as part of a system. Please adjust the plan to provide a comprehensive picture of the specific situation for the demonstrated technology and how the project intends meet the DoD need it is addressing.