WASHINGTON
Clean Energy Testbeds

Cleantech Hardware Innovation Prototyping Application

Applications can only be submitted through the online portal: https://www.wcet.washington.edu/cleantech-hardware-innovation-prototyping/.

In addition to completing the questionnaire found on the application website, each application will consist of a Technical Volume, Budget Justification, acknowledgement of DOE's intellectual property policy, and applicant resumés, each to be submitted as separate PDF files on the online portal.

Technical Volume

The technical volume may not exceed three pages when printed using standard letter-size (8.5 inch x 11 inch) paper with 1-inch margins (top, bottom, left, and right). The font must not be smaller than 11 point. Figures and references, if included, must fit within the three-page limit.

COMPONENTS	DESCRIPTION
PROJECT OVERVIEW	The Project Overview must contain the following information: • Background: The applicant should briefly discuss the organization's background, including its history, successes, and current operating status. • Project Goals: The applicant should explicitly identify the targeted improvements and critical success factors in achieving these goals.
PROJECT PROPOSAL	The Project Proposal should contain the following information: • A technical discussion of the applicant's planned activities at the Washington Clean Energy Testbeds. • Technical feasibility. • Technological compatibility with available prototyping resources. Testbeds staff can help verify compatibility. Email wcet@uw.edu to request a meeting.
PROJECT IMPACT	The Project Impact section should contain the following information: • CHIP Impact: The applicant should discuss the impact that CHIP funding would have on the proposed project. Applicants should explicitly explain how CHIP funding, relative to prior, current, or anticipated funding from other public and private sources, is necessary to achieve the project objectives. • A description of how the proposed project will advance the applicant's Technology Readiness Level (TRL) by one level

	and how it relates to your technology transition goals. See the TRL table at the end of this document. • A description of your current commercialization plan.

Budget Justification

The budget justification may not exceed one page when printed using standard letter-size (8.5 inch x 11 inch) paper with 1-inch margins (top, bottom, left, and right). The font must not be smaller than 11 point. Figures and references, if included, must fit within the one-page limit.

COMPONENTS	DESCRIPTION
CHIP BUDGET	The CHIP Budget should contain the following information: • Selected equipment to be used in applicant's proposed project. • Expected number of hours on each piece of equipment and associated cost based on published equipment rates. • Expected number of WCET staff assistance hours. Testbeds staff can advise on assistance hours. Email wcet@uw.edu to request a meeting.
RESOURCES PROVIDED BY APPLICANT	Costs not supplied by WCET that are not associated with equipment and/or WCET staff, but rather on supplies such as chemicals, hardware, necessary equipment upgrades, etc.

Resumes

COMPONENTS	DESCRIPTION
RESUMES	• Resumes should be included at the end of the proposal. • Include resumes for all parties listed on the cover page (PI and all co-investigators). • Resumes may not exceed one page in length.

IP Agreement

COMPONENTS	DESCRIPTION
IP AGREEMENT FORM	• An IP agreement form stating the Department of Energy's intellectual property legal guidelines must be read, signed, and uploaded with the rest of the application materials. • The form can be downloaded from the application website page.

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Additional Details

Funding provided by CHIP can only be used toward the hourly use of equipment and staff services at the Washington Clean Energy Testbeds and select other facilities at the University of Washington. Successful applicants will receive access to Testbeds resources equivalent to the amount of funding requested. No money will be provided to companies participating in CHIP. All materials and other resource costs are to be covered by the applicant and discussed in the Budget Justification portion of the application.

The proposal's budget cannot exceed $30k in requested CHIP funds.

The period of work to be funded shall not exceed 6 months.

All prices for equipment and services can be found on our website at the following link: https://www.wcet.washington.edu/user-resources/

While working at WCET, there will be no restrictions on your intellectual property or entanglement thereof with the University of Washington.

Existing users of the Washington Clean Energy Testbeds are ineligible to apply for CHIP funding unless the proposed project is fundamentally different to any existing projects currently underway at the Testbeds.

Technology Readiness Levels

Technology Readiness Levels (TRL) are a series of technology development steps that new inventions and innovations must take to move from the basic, fundamental research stage to full commercial deployment. TRLs are often used by U.S. Federal funding agencies (i.e., DOE, DOD, etc.) to judge R&D progress. The definition of TRLs may vary between government agencies and there are cases of specific TRL charts being developed for certain types of technologies. For the purpose of this program, a general TRL chart developed by the U.S. Government Accountability Office (AGO) will serve as the basis for the TRL advancement justification required by applicants in the Technical Volume.

Technology readiness level (TRL)	Description
1 Basic principles observed and reported	Lowest level of technology readiness. Scientific research begins to be translated into applied research and development. Examples include paper studies of a technology's basic properties.
2 Technology concept and/or application formulated	Invention begins. Once basic principles are observed, practical applications can be invented. Applications are speculative, and there may be no proof or detailed analysis to support the assumptions. Examples are limited to analytic studies.
3 Analytical and experimental critical function and/or characteristic proof of concept	Active research and development is initiated. This includes analytical studies and laboratory studies to physically validate the analytical predictions of separate elements of the technology. Examples include components that are not yet integrated or representative.
4 Component and/or breadboard validation in laboratory environment	Basic technological components are integrated to establish that they will work together. This is relatively low fidelity compared with the eventual system. Examples include integration of ad hoc hardware in the laboratory.
5 Component and/or breadboard validation in relevant environment	Fidelity of breadboard technology increases significantly. The basic technological components are integrated with reasonably realistic supporting elements so they can be tested in a simulated environment. Examples include high fidelity laboratory integration of components.
6 System/subsystem model or prototype demonstration in a relevant environment	Representative model or prototype system, which is well beyond that of TRL 5, is tested in its relevant environment. Represents a major step up in a technology's demonstrated readiness. Examples include testing a prototype in a high-fidelity laboratory environment or in a simulated operational environment.
7 System prototype demonstration in an operational environment	Prototype near or at planned operational system. Represents a major step up from TRL 6 by requirement demonstration of an actual system prototype in an operational environment (e.g., in an aircraft, a vehicle, or space).
8 Actual system completed and qualified through test and demonstration	Technology has been proven to work in its final form and under expected conditions. In almost all cases, this TRL represents the end of true system development. Examples include developmental test and evaluation of the system in its intended weapon system to determine if it meets design specifications.
9 Actual system proven through successful mission operations	Actual application of the technology in its final form and under mission conditions, such as those encountered in operational test and evaluation. Examples include using the system under operational mission conditions.

Source: GAO simplification of agency documents. | GAO-16-410G

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