

**Marine and Hydrokinetic Energy Conversion
and Environmental Monitoring Technology
Advancement**
MHKFOA1418@ee.doe.gov

FOA Webinar
DE-FOA-0001418
March 8th, 2016

DE-FOA-0001418: Marine and Hydrokinetic Energy Conversion and Environmental Monitoring Technology Advancement

Anticipated Schedule:

FOA Issue Date:	3/1/2016
FOA Informational Webinar:	3/08/2016, 2:00pm ET
Pacific Northwest National Lab Facilities and Capabilities Webinar (TA 2 Only)	3/09/2016, 2:00pm ET
Submission Deadline for Concept Papers:	3/31/2016, 5:00pm ET
Submission Deadline for Full Applications:	5/26/2016, 5:00pm ET
Submission Deadline for Replies to Reviewer Comments:	7/08/2016, 5:00pm ET
Expected Date for EERE Selection Notifications:	8/15/2016
Expected Timeframe for Award Negotiations:	8/15/2016 - 9/30/2016

Notice

- All applicants are strongly encouraged to carefully read the Funding Opportunity Announcement DE-FOA-0001418 (“FOA”) and adhere to the stated submission requirements.
- This presentation summarizes the contents of FOA. If there are any inconsistencies between the FOA and this presentation or statements from DOE personnel, the FOA is the controlling document and applicants should rely on the FOA language and seek clarification from EERE.
- If you believe there is an inconsistency, please contact *MHKFOA1418@ee.doe.gov*.

Agenda

- 1) FOA Description
- 2) Topic Areas/Technical Areas of Interest
- 3) Award Information
- 4) Statement of Substantial Involvement
- 5) Cost Sharing
- 6) Pre-Selection Interviews
- 7) Concept Papers
- 8) Full Applications
- 9) Merit Review and Selection Process
- 10) Registration Requirements

FOA Description

DOE invests in marine and hydrokinetic (MHK) technologies that generate energy from water resources in order to advance technology performance and readiness, while reducing market barriers, with the overall goal of developing a robust and competitive MHK industry in the United States.

This FOA announces DOE's intent to support MHK research and development (R&D) projects in two Topic Areas: (1) design and test full-scale MHK systems that integrate advanced hardware and software technologies, and (2) support the development and innovation of technologies for monitoring the environmental impacts of MHK technologies.

FOA Description

U.S. citizens and lawful permanent residents, for-profit entities, educational institutions, nonprofits that are incorporated in the United States, state, local, and tribal government entities are eligible to apply for funding as a Prime Recipient or Subrecipient.

Federal agencies and instrumentalities, all Federally Funded Research and Development Centers (FFRDCs), and all Government-Owned, Government-Operated laboratories (GOGOs) are eligible to apply for funding as a Subrecipient, but are not eligible to apply as a Prime Recipient.

FOA Description (TA 1)

Topic Area 1: Advanced Technology Integration and Demonstration

The overall goal of Topic Area 1 (TA 1) is to help wave and current energy (i.e. tidal, ocean, and river current) electricity generation systems achieve a Levelized Cost of Energy (LCOE) target of 15 c/kWh by 2030.

Accordingly, the objective of TA 1 awards is to support projects that show potential to significantly improve LCOE and Annual Energy Production (AEP) through the integration of advanced technologies into existing MHK system designs, with the goal of demonstrating the full potential of today's most promising MHK systems.

Topic Areas/Technical Areas of Interest (TA 1)

TA 1 awards have the specific objective of supporting projects that significantly improve MHK electricity generation system performance, LCOE, and AEP by integrating innovative hardware and software technologies (e.g. generators, power take-off systems, device structures, control systems, etc.) that were developed specifically for MHK applications.

In order to ensure that TA 1 projects have the potential to achieve an LCOE of 15 c/kWh by 2030, DOE will perform a special purpose LCOE review (see Appendix E) during the TA 1 merit review process

At the completion of successful TA 1 projects, awardees will have:

- a. Integrated an MHK hardware and/or software technology into an optimized electricity generation system design
- b. Fabricated a full-scale system prototype
- c. Installed and demonstrated the system during a 1-year open water testing campaign
- d. Demonstrated credible improvements in AEP and LCOE

Topic Areas/Technical Areas of Interest (TA 1)

Topic Area 1 Overview

DOE anticipates making three awards with a maximum value of \$5.35M per award, for a total of up to \$16.05M.

Of the three TA 1 awards, DOE anticipates that two awards will support wave energy technologies and one award will support current energy technologies (i.e. tidal, ocean, and river current).

TA 1 awards will have a period of performance of up to 54 months, broken into three budget periods (BPs) that are separated by go/no-go reviews.

TA 1 non-federal cost share will be a minimum of 20% for BP 1 and a minimum of 50% for BP 2&3.

Topic Areas/Technical Areas of Interest (TA 1)

Topic Area 1 Overview

For Topic Area 1, DOE strongly encourages applicants to perform all work within the United States, and DOE may consider the percentage of work performed in the US when making funding decisions. DOE will consider applications that propose to perform testing activities at international testing centers that provide infrastructure, pre-permitted test berths, and logistical support that maximize project value to the applicant and DOE. Note, however, that the applicant must justify why the work scope cannot be performed within the U.S.

See FOA Section IV.D.12, Section IV.J, and Appendix C for more detail and requirements for applications that propose work outside of the U.S.

FOA Description (TA 2)

Topic Area 2: Innovation, Testing, and Validation of MHK Environmental Monitoring Instrumentation Performance

The overarching objective of Topic Area 2 (TA 2) is to develop instrumentation that will facilitate data collection as a means to reduce environmental risk for MHK developers, ultimately reducing time and costs of environmental monitoring for future projects. Specifically, TA 2 will support the innovative improvement, testing, and validation of monitoring technologies and the associated data-processing software needed to produce fit-for-purpose, cost effective environmental monitoring tools ready for use by the MHK-community. Building upon previous support for instrumentation development, this Topic Area is meant to provide the final innovation, testing and validation needed to deliver reliable and cost-effective instrumentation that are ready for use at MHK projects.

FOA Description (TA 2)

Uncertainty surrounding the environmental impacts of MHK devices has resulted in long and costly permitting processes and onerous baseline and post-installation monitoring requirements. Meeting these monitoring requirements can be difficult as many existing environmental monitoring technologies have not been tested in, tailored to, or validated for use in the extreme, high-energy, and often low-visibility conditions of MHK sites. An additional challenge for most instrumentation types is the processing and analysis of the large data streams collected during environmental monitoring. Previous research and development has made important strides towards addressing these hurdles, yet technical challenges persist and the costs associated with data collection and analysis are still prohibitive.

FOA Description (TA 2)

TA 2 is designed to produce cost-effective, advanced-technology readiness level (TRL) tools and technologies with demonstrated ability to accurately monitor potential environmental impacts of high regulatory concern in harsh MHK environments.

Environmental concerns to be addressed include, but are not limited to: acoustic outputs of MHK devices; electromagnetic fields created by MHK devices, subsea cables and associated equipment; and the interactions between MHK devices and marine animals.

Over the course of the projects, awardees are expected to demonstrate (1) achievement of technical performance targets for hardware and software and (2) overall cost reductions for data collection and processing when compared with an instrument's initial performance and, where applicable, with current commercial off-the-shelf monitoring technologies.

Topic Areas/Technical Areas of Interest (TA 2)

Topic Area 2 is divided into four focus areas to address specific stressors or monitoring targets of high regulatory concern. The focus areas of interest and the amount of funding available per award are outlined below. TA 2 projects can have up to a three year duration and specific information on the technical performance details that should be included in applications for each focus area, and priority areas for improvement are detailed in Table 3 and Table 4. Applications for technologies that monitor environmental impacts different from the suggested focus areas will be considered if the applicant can demonstrate how the technology addresses a high priority need related to regulatory requirements at MHK device deployments.

1) **Acoustic Outputs (Up to \$750,000 per award):** This focus area will support the innovative improvement, testing and validation of technologies designed to monitor the acoustic signature of an operational MHK device, baseline noise, and data processing techniques to analyze the collected data. The desired end-product is a fit-for-purpose, cost-effective prototype ready for commercialization and to be used for environmental monitoring by the MHK community.

Topic Areas/Technical Areas of Interest (TA 2)

2) Electromagnetic Fields (Up to \$750,000 per award): This focus area will support the innovation, testing and validation of technologies designed to measure baseline electromagnetic fields (EMF), and the changes in electromagnetic fields attributed to MHK devices, associated subsea cables, junction boxes, and other related equipment. This focus area aims to develop a research grade, validated device for measuring EMF signatures to address many of the research questions persisting around the impacts of EMF.

3) Marine Organism Monitoring (Up to \$750,000 per award): This focus area will support the innovative improvement, testing and validation of technologies to monitor for baseline marine organism activity, interactions with MHK devices, and methods for processing the large amounts of data typically collected during these activities. This focus area could include optical methods such as visual cameras, or LiDAR, acoustic methods such as sonar, acoustic cameras, or any alternative methods. The desired end-product is a fit-for-purpose, cost-effective prototype ready for commercialization and to be used for environmental monitoring by the MHK community.

4) Integrated Sensor Packages (Up to \$1,100,000 per award): This focus area will support the testing, improvement, and validation of integrated systems using multiple instruments or sensors coupled together to address one or more of the previously listed focus areas (acoustics, EMF or marine organism monitoring). The desired end-product is a fit-for-purpose, cost-effective prototype ready for commercialization and to be used for environmental monitoring by the MHK community.

Scope and Application Requirements (TA2)

- Applicants will be asked to set end-of-project cost and performance targets. These targets should (1) represent significant improvements in technical performance from baseline performance, (2) demonstrate end-of-project technical readiness for deployment at MHK projects, and (3) exhibit improvements in cost and performance over commercial off-the-shelf (COTS) monitoring equipment

Priority Areas for Technical Improvement (TA2)

	FOCUS AREA			
	Acoustics	EMF	Marine Organism Monitoring	Integrated Sensor Packages
Priority Improvement Areas	<ul style="list-style-type: none"> Improved geolocation ability in high energy wave or current environments Improved ability to extract MHK generated noise from background and pseudo noise User friendly data presentation and interpretation 	<ul style="list-style-type: none"> Improved sensitivity Improved geolocation ability in high energy wave or current environments Ability to detect EMF in water column and along seabed Ability to deploy and collect data during conditions when MHK devices are generating power 	<ul style="list-style-type: none"> Identification to lower taxonomic levels Automated identification/data processing Reduction of volume of data collected Ability to detect direct interaction (e.g., blade strike) between organisms and MHK devices, or ability to monitor avoidance and fine-scale evasion behaviors and differentiate these from direct interactions such as blade strike. 	<ul style="list-style-type: none"> Improved communication between sensors to streamline data collection and data integration Improved interpretation and presentation of data Depending on system, refer back to relevant priorities for other focus areas

Proposed Schedule (TA2)

- **Year 1:** Awardees will conduct in water testing in a semi-sheltered environment to validate baseline technical and cost performance.
- **Go/No-Go 1:** A go/no-go decision will be made at the end of year 1 based on initial performance, robustness and feasibility of end-goals.
- **Year 2:** Awardees will conduct hardware and software improvement activities. At the end of the second year, awardees will be asked to conduct a brief in-water test to demonstrate technical improvements relative to the goals outlined in the awardee application.
- **Go/No-Go 2:** A go/no-go decision will be made based on the in-water test results and progress towards project end-goals.
- **Year 3:** Instrument performance will be tested and costs evaluated in a more energetic environment, preferably around an MHK device. If appropriate, testing may be conducted alongside a comparable COTS technology.
- TA 2 will leverage infrastructure and expertise at DOE's marine laboratory, part of the Pacific Northwest National Laboratory (PNNL), to support testing and data collection activities. Initial testing during the first and second years will occur at PNNL's Marine Sciences Laboratory, which is located in a semi-sheltered open water setting. The testing location for the third year will be identified at a later time by DOE and PNNL.

PNNL Support (TA2)

To ensure consistent evaluation across all instrumentation, PNNL and sub-contractors will assist in generating a testing plan and help conduct testing and data collection efforts during all three years. A finite period of PNNL time, resources, facilities and expertise, funded directly by DOE, will be allocated to each project for testing and improvement activities during the project period. Applicants are encouraged to consider how they would like to utilize these capabilities (see below), however applicants **should not** contact any researchers at PNNL during application development.

A webinar on PNNL's facilities and capabilities will be held tomorrow:

DE-FOA-EE0001418: MHK Energy Conversion and Environmental Monitoring Technology Advancement (PNNL Facilities and Capabilities) to be held Mar 9, 2016 2:00 PM ET

<https://attendee.gotowebinar.com/register/78300994057060868>

Information on this webinar can also be found on the EERE Exchange website.

Topic Areas/Technical Areas of Interest (TA 2)

DOE encourages all applicants to describe their strategy to reduce the time and cost associated with data processing and analysis. Applicants are also encouraged to focus on supporting both hardware and software improvements.

Where gaps in expertise of the prime recipient exist, DOE encourages teaming relationships with FFRDCs and other entities in order to ensure the project team has the most relevant and robust expertise.

Non-Responsive Applications (Both TAs)

The following types of applications will be deemed nonresponsive and will not be reviewed or considered for an award:

- Applications that fall outside the technical parameters specified in Section I.B of the FOA, including but not limited to:
 - Applications that fall outside the technical parameters specified in Section I and II of the FOA.
 - Applications considering energy conversion technologies that do not extract energy from ocean waves or tidal, ocean, or river currents.
 - Applications for the development of Ocean Thermal Energy Conversion (OTEC) or hydropower technologies that make use of a dam, diversionary structure, or impoundment.
 - Applications for proposed technologies that are not based on sound scientific principles (e.g. violates the laws of thermodynamics).

Non-Responsive Applications

- For Topic Area 1:
 - Applications that propose using TA 1 funds to support or supplement ongoing fabrication or demonstration projects that have received federal funding or commitments of federal funding.
- For Topic Area 2:
 - Applications from awardees selected under the Environmental Stewardship for Renewable Energy Technologies: MHK Environmental and Resource Characterization Instrumentation (DE-FOA-0000917) that have not completed any tank or open water testing by the time of application.
 - Applications for environmental monitoring technologies that do not address high priority regulatory concerns.

Award Information (Both TAs)

Total Amount to be Awarded	\$22M
Average Award Amount	EERE anticipates making awards that range from \$750K to \$5.35M.
Types of Funding Agreements	Cooperative Agreements
Period of Performance	Topic Area 1: Up to 54 months Topic Area 2: Up to 36 months
Cost Share Requirement	Topic Area 1, Budget Period 1: 20% of Project Costs Topic Area 1, Budget Period 2&3: 50% of Project Costs Topic Area 2: 20% of Total Project Costs

*Subject to the availability of appropriated funds

Statement of Substantial Involvement (Both TAs)

EERE has substantial involvement in work performed under Awards made following this FOA. EERE does not limit its involvement to the administrative requirements of the Award. Instead, EERE has substantial involvement in the direction and redirection of the technical aspects of the project as a whole. Substantial involvement includes, but is not limited to, the following:

1. EERE shares responsibility with the recipient for the management, control, direction, and performance of the Project.
2. EERE may intervene in the conduct or performance of work under this Award for programmatic reasons. Intervention includes the interruption or modification of the conduct or performance of project activities.
3. EERE may redirect or discontinue funding the Project based on the outcome of EERE's evaluation of the Project at that the Go/No Go decision point(s).
4. EERE participates in major project decision-making processes.

Cost Sharing Requirement (TA 1)

TOPIC AREA 1, BUDGET PERIOD 1: 20% COST SHARE REQUIREMENT

Cost Sharing Generally

The cost share must be at least 20% of the total allowable costs for research and development projects (i.e., the sum of the Government share, including FFRDC costs if applicable, and the recipient share of allowable costs equals the total allowable cost of the project) and must come from non-Federal sources unless otherwise allowed by law. (See 2 CFR 200.306 and 2 CFR 910.130 for the applicable cost sharing requirements.) The financial viability of all projects, including cost share considerations, will be evaluated during the merit review process (see Section V.A).

Cost Sharing Requirements (TA 1)

Special Cost Share Waiver for Domestic Institutions of Higher Education, Domestic Nonprofit Entities, FFRDCs, or U.S. State, Local, or Tribal Government Entity

The Assistant Secretary for the Office of Energy Efficiency and Renewable Energy has issued a Cost Share Reduction determination pursuant to Section 988(b)(3) of the Energy Policy Act of 2005 that is applicable to certain entities applying under this FOA. Specifically, recipient cost share requirement for applied research and development activities projects is reduced from 20% to 10% where:

- The Prime Recipient is a domestic institution of higher education; domestic nonprofit entity; FFRDC; or U.S. State, local, or tribal government entity; and
- The Prime Recipient performs more than 50% of the project work, as measured by the Total Project Cost.
- Applicants who believe their project qualifies for the reduced recipient cost share must be able to provide verification that the above requirements are satisfied.

Cost Sharing Requirements (TA 1)

TOPIC AREA 1, BUDGET PERIOD 2&3: 50% COST SHARE REQUIREMENT

The cost share must be at least 50% of the total allowable costs for demonstration projects (i.e., the sum of the Government share, including FFRDC costs if applicable, and the recipient share of allowable costs equals the total allowable cost of the project) and must come from non-Federal sources unless otherwise allowed by law (See 2 CFR 200.306 and 2 CFR 910.130 for the applicable cost sharing requirements). The financial viability of all project, including cost share considerations, will be evaluated during the merit review process (see Section V.A).

Cost Sharing Requirements (TA 2)

TOPIC AREA 2: 20% COST SHARE REQUIREMENT

Cost Sharing Generally

The cost share must be at least 20% of the total allowable costs for research and development projects (i.e., the sum of the Government share, including FFRDC costs if applicable, and the recipient share of allowable costs equals the total allowable cost of the project) and must come from non-Federal sources unless otherwise allowed by law. (See 2 CFR 200.306 and 2 CFR 910.130 for the applicable cost sharing requirements.)

Cost Sharing Requirements (TA 2)

Special Cost Share Waiver for Domestic Institutions of Higher Education, Domestic Nonprofit Entities, FFRDCs, or U.S. State, Local, or Tribal Government Entity

The Assistant Secretary for the Office of Energy Efficiency and Renewable Energy has issued a Cost Share Reduction determination pursuant to Section 988(b)(3) of the Energy Policy Act of 2005 that is applicable to certain entities applying under this FOA. Specifically, recipient cost share requirement for applied research and development activities projects is reduced from 20% to 10% where:

- The Prime Recipient is a domestic institution of higher education; domestic nonprofit entity; FFRDC; or U.S. State, local, or tribal government entity; and
- The Prime Recipient performs more than 50% of the project work, as measured by the Total Project Cost.
- Applicants who believe their project qualifies for the reduced recipient cost share must be able to provide verification that the above requirements are satisfied.

Cost Share Contributions (Both TAs)

- Contributions must be:
 - Specified in the project budget
 - Verifiable from the Prime Recipient's records
 - Necessary and reasonable for proper and efficient accomplishment of the project
- Every cost share contribution must be reviewed and approved in advance by the Contracting Officer and incorporated into the project budget before the expenditures are incurred

Allowable Cost Share (Both TAs)

- Cost Share must be allowable and must be verifiable upon submission of the Full Application
- Refer to the following applicable Federal cost principles:

Entity	Cost Principles
For-profit entities	FAR Part 31
All other non-federal entities	2 CFR Part 200 Subpart E - Cost Principles

Allowable Cost Share (Both TAs)

- Cash Contributions
 - May be provided by the Prime Recipient, Subrecipients, or a Third Party
- In-Kind Contributions
 - Can include, but are not limited to: personnel costs, indirect costs, facilities and administrative costs, rental value of buildings or equipment, and the value of a service, other resource, or third party in-kind contribution

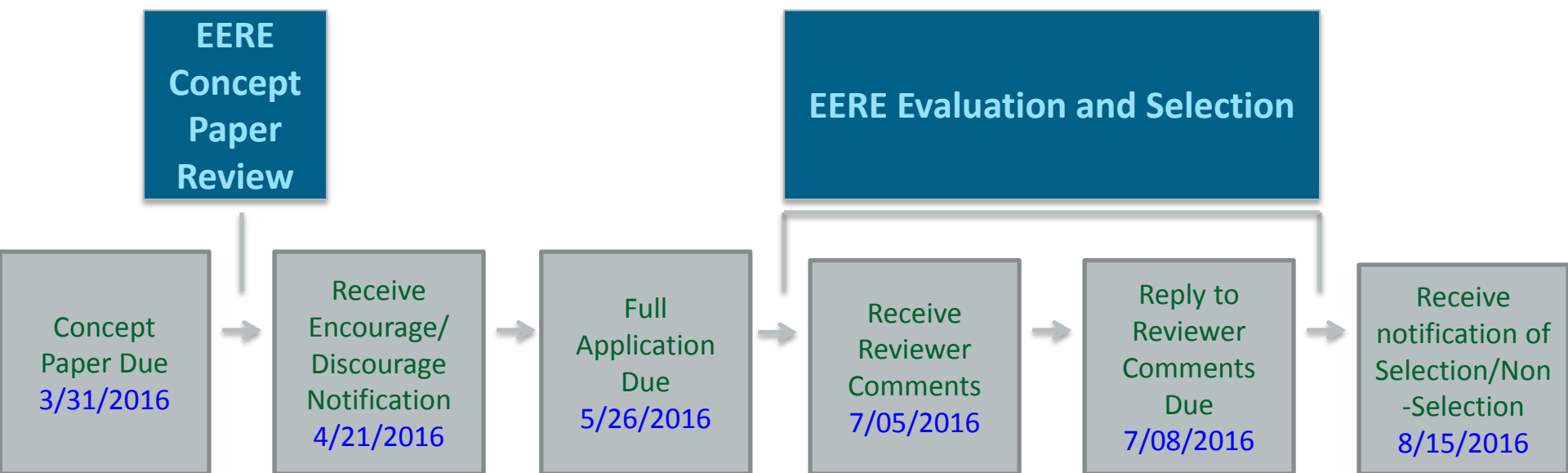
Unallowable Cost Share (Both TAs)

- The Prime Recipient may not use the following sources to meet its cost share obligations including, but not limited to:
 - Revenues or royalties from the prospective operation of an activity beyond the project period
 - Proceeds from the prospective sale of an asset of an activity
 - Federal funding or property
 - Expenditures reimbursed under a separate Federal Technology Office
 - Independent research and development (IR&D) funds
 - The same cash or in-kind contributions for more than one project or program

Cost Share Payment (Both TAs)

- Recipients must provide documentation of the cost share contribution, incrementally over the life of the award
- The cumulative cost share percentage provided on each invoice must reflect, at a minimum, the cost sharing percentage negotiated
- In limited circumstances, and where it is in the government's interest, the EERE Contracting Officer may approve a request by the Prime Recipient to meet its cost share requirements on a less frequent basis, such as monthly or quarterly. See Section III.B.7 of the FOA.

FOA Timeline (Both TAs)



EERE anticipates making awards by 9/30/2016

Pre-Selection Interviews (Both TAs)

- EERE may invite one or more applicants to participate in Pre-Selection Interviews
- All interviews will be conducted in the same format
- EERE will not reimburse applicants for travel and other expenses relating to the Pre-Selection Interviews, nor will these costs be eligible for reimbursement as pre-award costs
- Participation in Pre-Selection Interviews with EERE does not signify that applicants have been selected for award negotiations

Concept Papers (Both TAs)

- Applicants must submit a Concept Paper
 - Each Concept Paper must be limited to a single concept or technology
- The Concept Paper must include a technology description (See Section IV.C of the FOA)
 - The technology description is limited to 3 pages
 - The Concept Paper can also include graphs, charts, or other data (limited to 2 additional pages)
- Concept Papers must be submitted by **3/31/2016, 5:00pm ET** through EERE Exchange, and must comply with the content and form requirements in Section IV.C of the FOA
- EERE provides applicants with: (1) an “encouraged” or “discouraged” notification, and (2) the reviewer comments

Concept Paper Review (Both TAs)

EERE evaluates the Concept Papers based on the following technical review criteria:

Concept Paper Criterion: Overall FOA Responsiveness and Viability of the Project (Weight: 100%)

- The applicant clearly describes the proposed technology, describes how the technology is unique and innovative, and how the technology will advance the current state-of-the-art.
- The applicant has identified risks and challenges, including possible mitigation strategies, and has shown the impact that EERE funding and the proposed project would have on the relevant field and application;
- The applicant has the qualifications, experience, capabilities and other resources necessary to complete the proposed project; and
- The proposed work, if successfully accomplished, would clearly meet the objectives as stated in the FOA.

Full Applications – Required for All Topic Areas

- The Full Application includes:
 - **Technical Volume:** The key technical submission - info relating to the technical content, project team members, etc.
 - **Statement of Project Objectives:** Detailed scope of work for the project, including a listing of key milestones and deliverables.
 - **SF-424 Application for Federal Assistance:** The formal application signed by the authorized representative of the applicant.
 - **SF-424A Budget & EERE 335 Budget Justification:** Detailed budget and spend plan for the project.
 - **Summary for Public Release**
 - **Summary Slide**
 - **SF-LLL:** Disclosure of Lobbying Activities.
 - **U.S. Manufacturing Plans**
 - **Foreign Entity and Performance of Work in the United States waiver requests** (if applicable)
 - **Budget for FFRDC and Authorization from cognizant Contracting Officer for FFRDC** (if applicable)

Full Applications – Required for Topic Area 1 Only

- The Full Application includes:
 - **Data Management Plan**
 - **Proof of Financial Viability**
 - **Risk Management Checklist**
 - **Risk Register**
 - **MHK Cost and Performance Template**
 - **MHK Cost and Performance Template Supporting Documentation**

Full Applications: Technical Volume Content (Both TAs)

- **Technical Volume: the key technical component of the Full Application**

Content of Technical Volume	Suggested % of Technical Volume
Cover Page	
Project Overview	10%
Technical Description, Innovation and Impact	30%
Workplan and Market Transformation Plan	40%
Technical Qualifications and Resources	20%

Full Application Eligibility Requirements (Both TAs)

- Applicants must submit a Full Application by **5/26/2016, 5:00pm ET**.
- Full Applications are eligible for review if:
 - The Applicant is an eligible entity Section III.A of FOA;
 - The Applicant submitted an eligible Concept Paper;
 - The Cost Share requirement is satisfied Section III.B of FOA;
 - The Full Application is compliant Section III.C of FOA; and
 - The proposed project is responsive to the FOA Section III.D of FOA
 - The Full Application meets any other eligibility requirements listed in Section III of the FOA.

Who's Eligible to Apply? (Both TAs)

U.S. citizens and lawful permanent residents, for-profit entities, educational institutions, nonprofits that are incorporated in the United States, state, local, and tribal government entities are eligible to apply for funding as a Prime Recipient or Subrecipient.

Federal agencies and instrumentalities, all Federally Funded Research and Development Centers (FFRDCs), and all Government-Owned, Government-Operated laboratories (GOGOs) are eligible to apply for funding as a Subrecipient, but are not eligible to apply as a Prime Recipient.

Who's Eligible to Apply? (Both TAs)

Eligible applicants for this FOA include:

1. Individuals
2. Domestic Entities
3. Foreign Entities
4. Incorporated Consortia
5. Unincorporated Consortia

For more detail about each eligible applicant, please see Section III.A of the FOA for eligibility requirements

Nonprofit organizations described in Section 501(c)(4) of the Internal Revenue Code of 1986 that engaged in lobbying activities after December 31, 1995, are not eligible to apply for funding.

Multiple Applications

Topic Area 1

Applicants may submit one Concept Paper and one Full Application for consideration under TA 1. If an applicant submits more than one Concept Paper or Full Application, EERE will only consider the last timely submission for evaluation. Any other submissions received listing the same applicant will be considered noncompliant and not eligible for further consideration. This limitation does not prohibit an applicant from collaborating on other applications (e.g., as a potential Subrecipient or partner) so long as the entity is only listed as the prime applicant on one Concept Paper and Full Application submitted under this FOA.

Topic Area 2

Applicants may submit multiple concept papers and full applications. Each application must cover a significantly distinct technology. Each Concept Paper and Full Application must address no more than one of the four focus areas identified in Section I.B of this FOA.

Application Requirements (TA 1)

Relevance and Outcomes:

- Discussion of required system scale: TA 1 fabrication and testing activities must be performed at full-scale. For purposes of TA 1, full-scale is defined as the device scale that is appropriate for early grid connected commercial deployments. Applicants should provide any information that is necessary to credibly demonstrate the proposed project meets this definition of full-scale.
- Grid Connection: Connection to the electrical grid is not required for TA 1 projects.
- Discussion of broad applicability: If applicable, the applicant should describe how the work scope has the potential to benefit multiple marine energy systems and/or technology types.

Application Requirements (TA 1)

Feasibility

- Discussion of technology development status: Applicants must provide information that demonstrates that they have (1) previously developed an advanced technology specifically for applications in wave or current energy conversion systems, (2) developed the advanced hardware or software technology and the full system design to at least TRL 5/6 (i.e., laboratory tested and validated model scale prototype component/process), and (3) modeled the energy conversion system in question using numerical simulations or laboratory tests to demonstrate system performance in operational and survival (i.e. extreme) conditions.

Application Requirements (TA 1)

Innovation and Impact

- Discussion of commercial viability: The applicants must provide information that (1) demonstrates their technology development pathway towards achieving an LCOE of 15 c/kWh by 2030, (2) describes how the tasks in the proposed project align with a logical MHK system development pathway, (3) describes how the proposed work scope will lead to significant LCOE and AEP improvements (with reference to information provided in the MHK Cost and Performance Template as applicable) over a defensible baseline value and quantify improvements by completing the “baseline value” and “target value at completion of project” columns of the Metrics Table in the MHK Cost and Reporting Template, and (4) credibly demonstrates that the applicant is developing a technology with the ultimate commercial goal of delivering electricity to a grid.

Application Requirements (TA 1)

Qualification and Resources

- Discussion of testing location: The applicant must describe where the open water testing will be performed and include a discussion of how required permitting activities will be performed during the period of performance.
- If the applicant proposes to test outside of the United States, justification for why the work cannot be successfully performed in the U.S. must be provided (also see Appendix C).

MHK Cost and Performance Template and Supporting Documentation (TA 1)

The Cost and Performance Reporting Template provides a standard format for Topic Area 1 Applicants to report cost and performance data for the baseline and improved MHK systems at both single unit and array-scales. The information entered into and calculated by this template will be used in the Special Purpose LCOE Review and the Merit Review Process.

The template relies heavily on the DOE MHK LCOE Reporting Guidance - <http://en.openei.org/community/document/mhk-lcoe-reporting-guidance-draft>. It is strongly recommended that Applicants read the applicable portions of the LCOE reporting guidance document before completing this template. Applicants may request additional clarification on reporting requirements and ask questions on this Cost and Performance Reporting Template by submitting questions via EERE Exchange.

MHK Cost and Performance Template and Supporting Documentation (Continued) (TA 1)

Applicants must enter information in three worksheets in this template:

1. The LCOE Metrics Worksheet: This worksheet automatically calculates LCOE and other relevant parameters based on information entered into the template by the Applicant. The Applicant must enter general information and specifications for their MHK system.
2. The Cost Breakdown Structure Worksheet: CAPEX and OPEX cost information and assumptions for the single device and array are entered in this worksheet.
3. The Resource & Performance Worksheet: The wave or current (i.e. tidal, river, or ocean) resource and the system performance characteristics must be entered into this worksheet.

Supporting documentation: Applicants are encouraged to submit documentation that supports the information entered into this template in the Cost and Performance Supporting Documentation that is submitted with TA 1 applications. As described in DE-FOA-1418, the Cost and Performance Template will be evaluated in part based on its clarity, completeness, and defensibility. As such, Applicants should submit whatever information they feel is necessary to demonstrate these characteristics.

Merit Review and Selection Process (Full Applications – Both Topic Areas) (Both TAs)

- The Merit Review process consists of multiple phases that each include an initial eligibility review and a thorough technical review
- Rigorous technical reviews are conducted by reviewers that are experts in the subject matter of the FOA
- Ultimately, the Selection Official considers the recommendations of the reviewers, along with other considerations such as program policy factors, to make the selection decisions

Technical Merit Review Criteria (TA 1)

Criterion 1: Technical Merit, Innovation, and Impact (50%)

Technical Merit and Innovation

- Technology development status:
 - Degree to which the applicant has previously developed an advanced hardware and/or software technology specifically for applications in wave or current energy conversion systems.
 - Degree to which the applicant proposes to use hardware or software technologies and full system designs that have been developed to at least TRL 5/6 (i.e. laboratory tested and validated model scale prototype component/process).
 - Degree to which the applicant has sufficiently modeled the energy conversion system in question using numerical simulations or laboratory tests in order to demonstrate system performance in operational and survival (i.e. extreme) conditions.
- Degree to which the applicant demonstrates the system they propose to test is a full-scale system.
- Extent to which the application demonstrates how the proposed work scope will advance the state of the art through the proposed work scope; and
- Sufficiency of technical detail in the application to assess whether the proposed work is scientifically meritorious, including relevant data, calculations and discussion of prior work in the literature with analyses that support the viability of the proposed work.

Technical Merit Review Criteria (TA 1)

Impact of Technology Advancement

- Degree to which the work proposed in the application could potentially benefit the entire MHK industry.
- Degree to which the project supports the topic area objectives and target specifications and metrics.
- Commercial viability:
 - Degree to which the proposed project contributes toward MHK technologies achieving an LCOE of 15 c/kW-h by 2030.
 - Degree to which the proposed project is on a logical system development pathway.
 - Degree to which the project will make significant LCOE and AEP improvements over a defensible baseline value provided in the Metrics Table (see the MHK Cost and Performance Template) ,as documented in the MHK Cost and Performance Template (and supporting documentation), and as informed by the Special Purpose LCOE Assessment.
 - Successful demonstration by the applicant that the system is being developed for the purposes of delivering electricity to a grid.

Technical Merit Review Criteria (TA 1)

Criterion 2: Project Research Plan (30%)

Research Approach, Workplan and SOPO

- Degree to which the approach and critical path have been clearly described and thoughtfully considered; and
- Degree to which the task descriptions are clear, detailed, timely, and reasonable, resulting in a high likelihood that the proposed Workplan and SOPO will succeed in meeting the project goals.

Identification of Technical Risks

- Discussion and demonstrated understanding of the key technical risk areas involved in the proposed work and the quality of the mitigation strategies to address them.
- Likelihood of project success as demonstrated by the risk register and risk management checklist.

Technical Merit Review Criteria (TA 1)

Baseline, Metrics, and Deliverables

- The level of clarity in the definition of the baseline, metrics, and milestones; and
- Relative to a clearly defined experimental baseline, the strength of the quantifiable metrics, milestones, and mid-point deliverables defined in the application, such that meaningful interim progress will be made.

Market Transformation Plan

- Identification of target market, competitors, and distribution channels for proposed technology along with known or perceived barriers to market penetration, including mitigation plan; and
- Comprehensiveness of market transformation plan including but not limited to product development and/or service plan, commercialization timeline, financing, product marketing, legal/regulatory considerations including intellectual property, infrastructure requirements, Data Management Plan, U.S. manufacturing plan etc., and product distribution.

Technical Merit Review Criteria (TA 1)

Criterion 3: Team and Resources (20%)

- The reasonableness of the budget (including cost share contributions) and spend plan for the proposed project and objectives.
- The capability of the Principal Investigator(s) and the proposed team to address all aspects of the proposed work with a high probability of success. The qualifications, relevant expertise, and time commitment of the individuals on the team;
- The sufficiency of the facilities to support the work;
- The degree to which the proposed consortia/team demonstrates the ability to facilitate and expedite further development and commercial deployment of the proposed technologies;
- The level of participation by project participants as evidenced by letter(s) of commitment and how well they are integrated into the Workplan.

Special Purpose LCOE Review (TA 1)

- EERE will commission an independent Special Purpose Reviewer to review all FOA submission documents, with a focus on the MHK Cost and Performance Template and supporting documentation.
- The Special Purpose Reviewer will produce a report that will be distributed to the Selection Officials and Merit Review Committee for use in the merit review process. The report will not rate or rank applicants, but will instead provide an analysis of completeness, transparency, and defensibility of the information provided in the FOA application. The focus of the Special Purpose Review will be to:
 - Evaluate the completeness, transparency, and defensibility of the delivered MHK Cost and Performance Template and supporting documentation.
 - Evaluate the potential commercial viability of the technology and system in question

More information on the special purpose LCOE review is provided in Appendix E of the FOA.

Technical Merit Review Criteria (TA 2)

Criterion 1: Technical Merit, Innovation, and Impact (50%)

Technical Merit and Innovation

- Extent to which the proposed technology addresses specific technical criteria for the appropriate focus area as outlined in Table 3;
- Extent to which the proposed technology or process is innovative and has the potential to advance the state of the art;
- Degree to which the current state of the technology and the proposed advancement are clearly described;
- Extent to which the application specifically and convincingly demonstrates how the applicant will move the state of the art to the proposed advancement; and
- Sufficiency of technical detail in the application to assess whether the proposed work is scientifically meritorious and revolutionary, including relevant data, calculations, and discussion of prior work in the literature with analysis that supports the viability of the proposed work.

Technical Merit Review Criteria (TA 2)

- Extent to which the proposed technology will fill a critical technical gap and reduce costs associated with current MHK environmental monitoring technologies.
- The degree to which the project addresses environmental monitoring issues of significant regulatory concern to the MHK industry

Impact of Technology Advancement

- How the project supports the topic area objectives and target specifications and metrics; and
- The potential impact of the project on advancing the state-of-the-art.

Technical Merit Review Criteria (TA 2)

Criterion 2: Project Research Plan (30%)

Research Approach, Workplan and SOPO

- Degree to which the approach and critical path have been clearly described and thoughtfully considered; and
- Degree to which the task descriptions are clear, detailed, timely, and reasonable, resulting in a high likelihood that the proposed Workplan and SOPO will succeed in meeting the project goals.

Identification of Technical Risks

- Discussion and demonstrated understanding of the key technical risk areas involved in the proposed work and the quality of the mitigation strategies to address them.

Technical Merit Review Criteria (TA 2)

Baseline, Metrics, and Deliverables

- The level of clarity in the definition of the baseline, metrics, and milestones; and
- Relative to a clearly defined experimental baseline, the strength of the quantifiable metrics, milestones, and a mid-point deliverables defined in the application, such that meaningful interim progress will be made.

Market Transformation Plan

- Identification of target market, competitors, and distribution channels for proposed technology along with known or perceived barriers to market penetration, including mitigation plan; and
- Comprehensiveness of market transformation plan including but not limited to product development and/or service plan, commercialization timeline, financing, product marketing, legal/regulatory considerations including intellectual property, infrastructure requirements, Data Management Plan, U.S. manufacturing plan etc., and product distribution.

Technical Merit Review Criteria (TA 2)

Criterion 3: Team and Resources (20%)

- The capability of the Principal Investigator(s) and the proposed team to address all aspects of the proposed work with a high probability of success. The qualifications, relevant expertise, and time commitment of the individuals on the team;
- The degree to which the proposed consortia/team demonstrates the ability to facilitate and expedite further development and commercial deployment of the proposed technologies;
- The level of participation by project participants as evidenced by letter(s) of commitment and how well they are integrated into the Workplan; and
- The reasonableness of the budget and spend plan for the proposed project and objectives.

Replies to Reviewer Comments (Both TAs)

- EERE provides applicants with reviewer comments
- Applicants are not required to submit a Reply - it is optional
- To be considered by EERE, a Reply must be submitted by 7/08/2016, 5:00pm ET and submitted through EERE Exchange
- Content and form requirements:

Section	Page Limit	Description
Text	2 pages max	Applicants may respond to one or more reviewer comments or supplement their Full Application.
Optional	1 page max	Applicants may use this page however they wish; text, graphs, charts, or other data to respond to reviewer comments or supplement their Full Application are acceptable.

Selection Factors (Both TAs)

The Selection Official may consider the merit review recommendation, program policy factors, and the amount of funds available in arriving at selections for this FOA

Program Policy Factors (Both TAs)

In addition to the above criteria, the Selection Official may consider the following program policy factors in determining which Full Applications to select for award negotiations:

- The degree to which the proposed project, including proposed cost share, optimizes the use of available EERE funding to achieve programmatic objectives;
- The level of industry involvement and demonstrated ability to commercialize energy or related technologies;
- Technical, financial, market, organizational, and environmental risks associated with the project;
- Whether the proposed project is likely to lead to increased employment and manufacturing in the United States;
- Whether the proposed project will accelerate transformational technological advances in areas that industry by itself is not likely to undertake because of technical and financial uncertainty; and
- The degree to which the applicant has demonstrated they have sufficient funds or can raise sufficient funds to successfully compete the project
- The degree to which all awards made under this FOA exhibit geographic diversity.
- The degree to which all awards made under this FOA exhibit technological diversity.

Program Policy Factors

- TA 1 only:
 - The percentage of the work scope being performed in the United States and the percentage of the budget being spent in the United States
- TA 2 only:
 - Where gaps in expertise of the prime recipient exist, the degree to which applicant utilizes teaming relationship with FFRDCs and other entities in order to ensure project team has the most relevant and robust expertise.

Registration Requirements (Both TAs)

- To apply to this FOA, Applicants must register with and submit application materials through EERE Exchange: <https://eere-Exchange.energy.gov>
- Obtain a “control number” at least 24 hours before the first submission deadline
- Although not required to submit an Application, the following registrations must be complete to received an award under this FOA:

Registration Requirement	Website
DUNS Number	http://fedgov.dnb.com/webform
SAM	https://www.sam.gov
FedConnect	https://www.fedconnect.net
Grants.gov	http://www.grants.gov

Means of Submission (Both TAs)

- Concept Papers, Full Applications, and Replies to Reviewer Comments must be submitted through EERE Exchange at <https://eere-Exchange.energy.gov>
 - EERE will not review or consider applications submitted through other means
- The Users' Guide for Applying to the Department of Energy EERE Funding Opportunity Announcements can be found at <https://eere-Exchange.energy.gov/Manuals.aspx>

Key Submission Points (Both TAs)

- Check entries in EERE Exchange
 - Submissions could be deemed ineligible due to an incorrect entry
- EERE strongly encourages Applicants to submit 1-2 days prior to the deadline to allow for full upload of application documents and to avoid any potential technical glitches with EERE Exchange
- Make sure you hit the submit button
 - Any changes made after you hit submit will un-submit your application and you will need to hit the submit button again
- For your records, print out the EERE Exchange Confirmation page at each step, which contains the application's Control Number

Applicant Points-of-Contact (Both TAs)

- Applicants must designate primary and backup points-of-contact in EERE Exchange with whom EERE will communicate to conduct award negotiations
- It is imperative that the Applicant/Selectee be responsive during award negotiations and meet negotiation deadlines
 - Failure to do so may result in cancellation of further award negotiations and rescission of the Selection

Questions (Both TAs)

- Questions about this FOA? Email ***MHKFOA1418@ee.doe.gov***
 - All Q&As related to this FOA will be posted on EERE Exchange
 - You must select this specific FOA Number in order to view the Q&As
 - EERE will attempt to respond to a question within 3 business days, unless a similar Q&A has already been posted on the website
- Problems logging into EERE Exchange or uploading and submitting application documents with EERE Exchange? Email ***EERE-ExchangeSupport@hq.doe.gov***
 - Include FOA name and number in subject line
- All questions asked during this presentation will be posted on EERE Exchange