U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy


# Marine and Hydrokinetic Technology Development and Advancement

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**FOA Webinar**

**DE-FOA-0001663**

**12/20/2016**

# Anticipated Schedule:

| | |
|---|---|
| **FOA Issue Date:** | **12/15/2016** |
| **FOA Informational Webinar:** | 12/20/2016, 2:00pm ET |
| **Submission Deadline for Concept Papers:** | 01/17/2017, 5:00pm ET |
| **Submission Deadline for Full Applications:** | 03/01/2017, 5:00pm ET |
| **Submission Deadline for Replies to Reviewer Comments:** | 04/13/2017, 5:00pm ET |
| **Expected Date for EERE Selection Notifications:** | June 2017 |
| **Expected Timeframe for Award Negotiations:** | June – August 2017 |

# Notice

- All applicants are strongly encouraged to carefully read the Funding Opportunity Announcement **("FOA")** DE-FOA-0001663 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 MHKFOA1663@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) Concept Papers
7) Full Applications
8) Merit Review and Selection Process
9) Registration Requirements

# FOA Description

The mission of the Department of Energy (DOE) Water Power Technologies Office (WPTO) is to support research, testing, and development of innovative technologies capable of generating renewable, environmentally responsible and cost-effective electricity from U.S. water resources. These include marine and hydrokinetic (MHK) technologies that harness the energy from waves and ocean/tidal/river currents.

The MHK sub-program (The Program) of the WPTO has the opportunity to focus on the technologies that can be deployed in early-adopter markets (i.e., wave and current resources with high energy costs) in the near-term while supporting next generation technologies that have the potential to be cost competitive with other energy generation technologies in large utility scale markets in the longer term.

# FOA Description

This Funding Opportunity Announcement (FOA) targets technologies aiming for economic competitiveness in either early-adopter or large utility scale markets.

This FOA announces DOE's intent to support MHK research and development (R&D) projects in two Topic Areas: (1) system advancement and sub-scale testing of high energy capture wave energy converters (WECs), and (2) open topic on MHK technology development.

# FOA Description

U.S. citizens and lawful permanent residents, for-profit entities, educational institutions, nonprofits that are incorporated in the United States, and 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: Wave Energy Converters System Advancement**

The goal of this Topic Area is to advance the design of wave energy converters from prototypes to full systems, resulting in reduced risk and increased certainty of the techno-economic potential of the full system.

Objectives include:

- maintain high energy capture performance
- refine understanding and predictability of system dynamics in order to facilitate future full scale design
- quantify cost to better estimate Levelized Cost of Energy (LCOE) at full scale
- gain operational and maintenance experience including reliability, maintainability, and availability.

# Topic Areas/Technical Areas of Interest (TA 1)

Successful awardees will design and build high energy capture WECs and conduct testing of a scaled system in open water (e.g., at 1/10th to 1/4th scale). The scaled system should function to capture wave energy and convert to electricity using subsystems representative of those that would be used in the full scale to perform the same functions.

There are a large number of MHK systems being developed, and they are at varying levels of technology performance. The focus of this Topic Area is to advance the system readiness of those technologies which have the greatest potential to compete with other energy generation technologies in the longer term.

# Topic Areas/Technical Areas of Interest (TA 1)

***Topic Area 1 Overview***

DOE anticipates selecting two awards, up to $5M total DOE share per award, each separated into two budget periods (BPs). The applicant may propose the exact split in each budget period, provided that BP1 does not exceed $2.5M DOE share and the total DOE share per award does not exceed $5M.

TA 1 awards will have a period of performance of up to 42 months, broken into two budget periods (BPs) that are separated by a go/no-go review.

TA 1 non-federal cost share will be a minimum of 20%.

# Topic Areas/Technical Areas of Interest (TA 1)

***Topic Area 1 Testing Location***

For Topic Area 1, DOE 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.

# Topic Areas/Technical Areas of Interest (TA 1)

***Topic Area 1 Requirements***

Applicants should establish their level of preparedness and high techno-economic potential. The application must demonstrate that preliminary structural design, numerical modeling, and wave tank testing has been completed. This will ensure that the system is ready for Budget Period 1 design activities. Table 1 (in the FOA) provides more information on the scope and requirements of TA 1 awards.

At early stages of technology development, it is difficult to estimate LCOE, and proxies for cost of energy are commonly used in place of LCOE. This Topic Area will use the metric "Average Climate Capture Width per Characteristic Capital Expenditure", referred to as ACE, which is a benefit to cost ratio proxy for LCOE appropriate for evaluating early stage WEC designs. **At the time of application, systems must meet or exceed an ACE threshold of 3 m/$M** calculated for a representative United States (U.S.) wave climate, which is specified and defined in Appendix E in the FOA.

# Topic Areas/Technical Areas of Interest (TA 1)

***ACE***

The two components that make up the ratio ACE are:

- Average Climate Capture Width (ACCW) = a measure of the effectiveness of a WEC at absorbing power from the incident wave energy field, measured in meters [m]; the term 'capture width' may be interpreted as the width of a wave crest that has been completely captured and absorbed by a WEC
- Characteristic Capital Expenditure (CCE) = a measure of the capital expenditure in commercial production of the load bearing device structure, in millions of dollars [$M]

ACE is defined as the ratio of ACCW to CCE, in units of [m/$M], and detailed descriptions of these variables are defined in Appendix E in the FOA.

# Topic Areas/Technical Areas of Interest (TA 1)

***ACE***

Applicants must submit their ACE calculation and provide justification (supporting documentation) to their ACE calculation. A Template Spreadsheet, available on EERE Exchange, has been provided to help applicants with the ACE calculation. Though not required, WPTO encourages applicants to submit their ACE calculation in this template format. Applicants must also submit an ACE Supporting Documentation file at the time of application that details the inputs to the ACE calculation, and justifies all values used for calculation of ACE for the particular WEC design.

- For more information on the requirements for the ACE supporting documentation, see Section I.B. pre-award information and Appendix E in the FOA.

# Topic Areas/Technical Areas of Interest (TA 1)

## *Sea States and scaling factors for calculation of ACCW*

| Tp [s] | Hs [m] | Direction (Heading) [deg] | Scaling Factors for Each Climate | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | Alaska | Washington | Northern Oregon | Oregon | Northern California | Southern California | Hawaii |
| 7.31 | 2.34 | 10 | 24.3% | 13.7% | 15.5% | 17.5% | 20.7% | 15.2% | 32.8% |
| 9.86 | 2.64 | 0 | 33.2% | 27.7% | 30.7% | 26.8% | 23.0% | 27.0% | 24.5% |
| 11.52 | 5.36 | -70 | 7.5% | 4.1% | 5.6% | 5.8% | 1.2% | 1.4% | 0.1% |
| 12.71 | 2.05 | -10 | 20.0% | 33.8% | 34.4% | 29.5% | 46.6% | 39.1% | 13.3% |
| 15.23 | 5.84 | 0 | 2.4% | 2.2% | 3.7% | 3.4% | 1.6% | 1.0% | 0.0% |
| 16.50 | 3.25 | 0 | 1.2% | 4.5% | 4.2% | 5.4% | 6.4% | 9.5% | 1.3% |
| **<Cp(j)> [kW/m] =** | | | 35.5 | 32.7 | 39.3 | 37.9 | 31.5 | 31.2 | 16.8 |

# Topic Areas/Technical Areas of Interest (TA 1)

## *Example of References for CCE calculation*

| *Density and MMC Reference Table:* | | |
|---|---|---|
| **Material Type** | **Density [kg/m^3]** | **Typical Manufactured Material Cost [USD/Tonne]** |
| Aluminum | 2660 | $5,900 |
| Fiberglass | 1550 | $8,200 |
| Filament Wound FRP | 1682 | $5,510 |
| High-Density Polyethylene (HDPE) | 970 | $7,900 |
| Reinforced Concrete | 2450 | $510 |
| Steel | 7850 | $3,000 |

| **Aluminum** | |
|---|---|
| Low MMC | A low MMC for aluminum represents devices that have simple geometries with little cutting and welding time required. These devices will be primarily comprised of flat plate, tubing, or "stock" structural members (I-beams, T-sections, etc.) that are able to utilize robotic welding. In the event that many "small" members are used to create larger members (such as in a truss) a typical or high MMC value should be used to represent the time required to cut, weld, and assemble the structure. |
| Typical MMC | A typical MMC for aluminum represents a geometry that is primarily comprised of simple structures described as Low MMC, but also includes a small portion of components that are more intricate and require significant man hours per unit mass. These smaller components would include ladders, mounting flanges, or any additional components that would require significant fabrication (i.e. welding, cutting, milling) but does not account for a large percentage of mass. |
| High MMC | A high MMC for aluminum represents a geometry that utilizes either complex geometries that require significant amounts of cutting, shaping, or welding. Geometries such as large truss structures, plate utilizing a high percentage of welded stiffeners, or irregular shapes that will require significant amounts of material removal will be considered for high MMC values. This can also represent a geometry with tight tolerance requirements that would be needed, for example, for seals or alignment specifications. |

# Topic Areas/Technical Areas of Interest (TA 1)

## *ACE template available on EERE Exchange*

**Overall Spreadsheet Instructions (Detailed instructions for calculating each part of ACE are in Appendix E of the FOA)**

Fill in all yellow highlighted cells

Detailed instructions for calculating each part of ACE are described in Appendix E of the FOA; all values entered in this spreadsheet must be justified in the application documents

**CCE Instructions**

For each of the materials in the structure, fill in the lines below; the format allows for up to 5 material types, however only use what is needed; at least one material type is required, therefore only one row is highlighted

Use density values given in the table below; if other material types are used, assign density

Typical values of Manufactured Material Cost (MMC) are provided below; these typical values represent normal manufacturing requirements; if tight tolerances or other manufacturing restrictions are expected, MMC should be increased; the use of typical or other MMC values must be justified in application. For materials other than those listed in the reference table below, justification and references for the MMC should be included in the application

| | Material Type | Surface Area [m^2] | Density [kg/m^3] | Representative Structural Thickness [cm] | Manufactured Material Cost [USD/Tonne] | CCE/material [$] |
|---|---|---|---|---|---|---|
| Material 1 | | | | | | $0 |
| Material 2 | | | | | | $0 |
| Material 3 | | | | | | $0 |
| Material 4 | | | | | | $0 |
| Material 5 | | | | | | $0 |
| | | | | | | |
| Total CCE [$] | $0 | | | | | |

**ACCW Instructions**

Fill in the power (at full scale) for each of the six sea states; Bretschneider spectrum should be assumed for each sea state

Power values must be justified in application; if measured data was obtained at subscale, clearly show how the sea states and power values were scaled appropriately according to Froude scaling

Note that percentages for each climate do not add to 100%, because they are based on the contribution to annual omnidirectional wave power density (designated as <CP> in the table), and not based simply on occurrence; climates are in deep water offshore of the locations listed

| Tp [s] | Hs [m] | Direction (Heading) [deg] | P [kW] | Scaling Factors for Each Climate | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Alaska | Washington | Northern Oregon | Oregon | Northern California | Southern California | Hawaii |
| 7.31 | 2.34 | 10 | | 24.3% | 13.7% | 15.5% | 17.5% | 20.7% | 15.2% | 32.8% |
| 9.86 | 2.64 | 0 | | 33.2% | 27.7% | 30.7% | 26.8% | 23.0% | 27.0% | 24.5% |
| 11.52 | 5.36 | -70 | | 7.5% | 4.1% | 5.6% | 5.8% | 1.2% | 1.4% | 0.1% |
| 12.71 | 2.05 | -10 | | 20.0% | 33.8% | 34.4% | 29.5% | 46.6% | 39.1% | 13.3% |
| 15.23 | 5.84 | 0 | | 2.4% | 2.2% | 3.7% | 3.4% | 1.6% | 1.0% | 0.0% |
| 16.50 | 3.25 | 0 | | 1.2% | 4.5% | 4.2% | 5.4% | 6.4% | 9.5% | 1.3% |
| | | | | 88.6% | 86.0% | 94.1% | 88.4% | 99.5% | 93.2% | 72.0% |
| <Cp(j)> [kW/m] = | | | | 35.5 | 32.7 | 39.3 | 37.9 | 31.5 | 31.2 | 16.8 |
| AACW(j) [m] = | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| ACCW [m] = | | | | 0.00 | | | | | | |

| | |
|---|---|
| ACCW [m] | 0.00 |
| Total CCE [$] | $0 |
| ACE [m/$M] | #DIV/0! |

*Density and MMC Reference Table:*

| Material Type | Density [kg/m^3] | Typical Manufactured Material Cost [USD/Tonne] |
|---|---|---|
| Aluminum | 2660 | $5,900 |
| Fiberglass | 1550 | $8,200 |
| Filiment Wound FRP | 1682 | $5,510 |
| High-Density Polyethylene (HDPE) | 970 | $7,900 |
| Reinforced Concrete | 2450 | $510 |
| Steel | 7850 | $3,000 |

*Note: must still justify all values used*

# Topic Areas/Technical Areas of Interest (TA 1)

***ACE***

The ACE Supporting Documentation file must include numerical modeling and/or tank test results to support the calculation of ACCW. Numerical modeling guidelines, as well as guidelines on reporting tank testing results are given in the FOA.

Details on full scale concept of the device structure (size, including surface area and representative thickness, material types, and density), as well as device drawings must be included in the ACE Supporting Documentation file to support calculation of CCE. Typical manufactured material costs (MMC) are provided in Appendix E in the FOA, and the applicant should justify the use of these typical values for their full scale device concept, or increase the cost accordingly if higher tolerances and/or manufacturing requirements would be needed. If other materials than those provided in Appendix E are used, the MMC should be justified clearly.

# FOA Description (TA2)

## Topic Area 2: Open Topic – MHK Technology Development

The overall goal of Topic Area 2 (TA 2) is to develop innovative technologies that have the potential to significantly advance MHK technologies and the state of the MHK industry.

This Topic Area is intended to be open so that applicants can propose activities which address the needs that are most important to their present technology development. The WPTO specifically encourages applications in the areas of wave energy or tidal, river in-stream, or ocean current energy. The focus of this Topic Area is specifically on technology development and is **not** seeking applications that propose to address environmental/social barriers to deployment. Proposed activities should be relevant to an MHK system development pathway.

# Topic Areas/Technical Areas of Interest (TA 2)

Whether focused at component-level or system-level technology advancement, the applicant should demonstrate that there is a market opportunity and a commercialization plan to bring the technology to market. In addition, the onus will be on the applicant to express the impact to the MHK industry, in terms of reducing cost, from the specific technology proposed.

Applicants should propose technologies that are currently in a Technology Readiness Level (TRL) stage of 3-6 and propose research and development that will advance their technology to a TRL 5-8 stage. Each application is required to describe, and provide evidence of, the current stage of readiness of their technology.

# Topic Areas/Technical Areas of Interest (TA 2)

DOE particularly encourages submissions that will benefit multiple MHK device types. The following technology development subtopics are of particular interest:

- Energy Conversion Devices
- Device components
- Instrumentation systems
- Components for energy transfer to shore
- Mooring or anchoring systems.

Other technologies may be proposed that fall outside of these subtopics of particular interest. As an open topic, the onus will be on the applicant to express the impact to the MHK industry from the specific technology proposed.

# Topic Areas/Technical Areas of Interest (TA 2)

***Topic Area 2 Overview***

The Program anticipates selecting up to four awards, ranging from $500k - $1M DOE share per award.

TA 2 awards will have a period of performance of up to 24 months.

TA 2 non-federal cost share will be a minimum of 20%.

# Non-Responsive Applications

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 for proposed technologies that are not based on sound scientific principles (e.g., violates the law of thermodynamics).
- Topic Area 1
  - Applications considering energy conversion technologies that do not extract energy from ocean waves.
  - Applications proposing technologies that do not credibly demonstrate an ultimate commercial goal of delivering electricity to a grid.
  - Applications proposing technologies which have not previously completed numerical modeling and conducted tank testing in order to validate the design concept and predictions of its performance.

# Non-Responsive Applications (continued)

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

- Topic Area 2
  - Applications considering energy conversion technologies that do not extract energy from ocean waves or tidal, ocean, or river currents. Note that for the purposes of this FOA, current energy conversion technologies that use a dam, diversionary structure, or impoundment for electrical power purposes are specifically not of interest.
  - Applications that propose to address environmental/social barriers to deployment.

# Award Information

| | | |
|---|---|---|
| **Total Amount to be Awarded** | **Up to *$12,000,000** | |
| **Average Award Amount** | Topic Area 1 | EERE anticipates making awards that range up to $5,000,000.00 |
| | Topic Area 2 | EERE anticipates making awards that range from $500,000.00 to $1,000,000.00 |
| **Types of Funding Agreements** | Cooperative Agreements, Grants, Technology Investment Agreements, Work Authorizations, and Interagency Agreements | |
| **Period of Performance** | TA1 up to 42 months | |
| | TA2 up to 24 months | |
| **Cost Share Requirement** | _20_% of Total Project Costs | |

*Subject to the availability of appropriated funds

# Statement of Substantial Involvement

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:

- EERE shares responsibility with the Recipient for the management, control, direction, and performance of the Project.
- 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.
- 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.
- EERE participates in major project decision-making processes.

# Cost Sharing Requirements

- Applicants must contribute a minimum of 20% of the total project costs for R&D projects. *Unless the project qualifies for the Cost Share Reduction.*

- ***Cost Share Reduction***: EERE has reduced the Recipient Cost Share Requirement to **10%** for R&D activities where:
  - The Prime Recipient is a domestic institution of higher education; domestic nonprofit entity; 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

# Cost Share Contributions

- 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

- 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

- 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

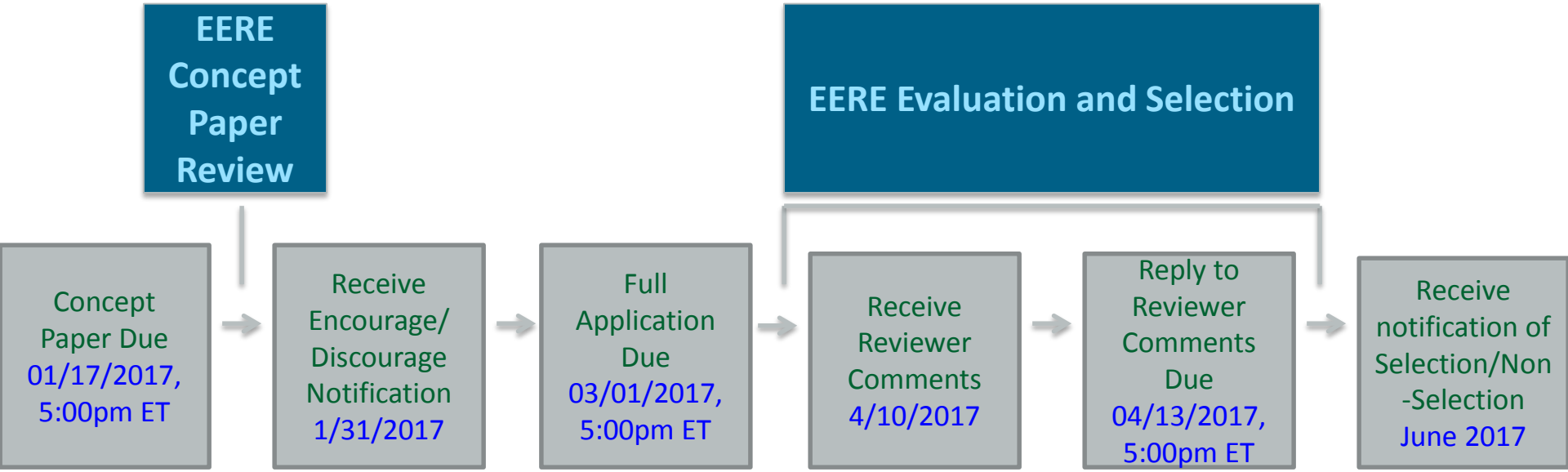
# Unallowable Cost Share

- 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

- 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 of the FOA.

# FOA Timeline




EERE anticipates making awards between June-August 2017

# Concept Papers

- 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)
  - Cover Page is limited to 1 page.
  - The technology description is limited to 3 pages
  - The Concept Paper can also include graphs, charts, or other data (limited to 2 pages)
- Concept Papers must be submitted by 1/17/2017, 5:00 PM 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

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%)**This criterion involves consideration of the following factors:

- 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

- The Full Application (see FOA section IV.D. for templates) includes:
  - **Technical Volume**: The key technical submission - info relating to the technical content, project team members, etc.
  - **SF-424 Application for Federal Assistance:** The formal application signed by the authorized representative of the applicant.
  - **Budget Justification EERE 335:** a detailed budget and spend plan for the project. Additional Subaward EERE 335(s), if applicable.
  - **Summary for Public Release**
  - **Summary Slide**
  - **Data Management Plan**
  - **U.S. Manufacturing Plan**
  - **Statement of Project Objectives (SOPO)**
  - **Administrative Documents:** E.g., Foreign Entity and Performance of Work in the United States waiver requests, FFRDC Authorization and FWP (if applicable), Disclosure of Lobbying Activities, etc
  - ***For TA 1*, the following information is also required**: Risk Management Checklist, Risk Register, ACE Calculation and Supporting Documentation

# Full Applications - Continued

- Data Management Plan
  - Applicants are required to submit a Data Management Plan with their Full Application.
  - Additional Detail is provided in Appendix C

| Anticipated Completion (Quarter) | Task (# and Name) | Associated Milestone # if Applicable | Deliverable Type (Report, Presentation, Data (e.g. Drawing, image, time-series, input/output files, etc.) | Description of Deliverable or Data Content* | Data Format** | Protection (Unlimited, Protected, Limited) | Expected File Size | Special Requirements *** | Where to submit the deliverable (PMCD, MHK-DR, etc.) |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | |
| | | | | | | | | | |

# Full Applications: Technical Volume Content

- **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 | 40% |
| Technical Qualifications and Resources | 20% |

# Full Application Eligibility Requirements

- Applicants must submit a Full Application by 3/1/2017, 5:00 PM 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.

  - Note: Applicants may only submit one Full Application for each topic area of this FOA. If an applicant submits more than one Full Application to the same topic area, EERE will only consider the last timely submission for evaluation

# Who's Eligible to Apply?

U.S. citizens and lawful permanent residents, for-profit entities, educational institutions, nonprofits that are incorporated in the United States, and 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?

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

Applicants may submit one application to each topic area of this FOA.

If an applicant submits more than one Concept Paper or Full Application in a topic area, EERE will only consider the last timely submission for evaluation. Any other submissions received listing the same applicant in that topic area 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 for each topic area under this FOA.

# Merit Review and Selection Process (Full Applications)

- 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

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

Technical Merit and Innovation

- Extent to which the proposed technology or process is innovative;
- Degree to which the current state of the technology and the proposed advancement are clearly described;
- Degree to which the applicant demonstrates the technical feasibility of the proposed technology and capability of achieving the anticipated performance targets, including a description of previous work done to meet incoming application requirements;
- 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 analyses that support the viability of the proposed work.

Impact of Technology Advancement

- How the project supports the topic area objectives and target specifications and metrics; and
- Degree to which the work proposed in the application could potentially benefit the entire MHK industry; and
- The potential impact of the project on advancing the state of the art.

# Technical Merit Review Criteria - Continued

**Criterion 2: Project Research and Commercialization Plan (30%)**

Research Approach and Workplan

- 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.
- Demonstrated ability to share data with National Laboratories to validate work.

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 - Continued

**Criterion 2, Continued**

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 commercialization 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 and Open Source Software Distribution Plan , U.S. manufacturing plan etc., and product distribution.

# Technical Merit Review Criteria - Continued

**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 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; and
- The reasonableness of the budget and spend plan for the proposed project and objectives.

# Replies to Reviewer Comments

- 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 4/13/2017, 5:00 PM 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

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

The Selection Official may consider the following program policy factors in making his/her selection decisions:

- The degree to which the proposed project exhibits technological diversity when compared to the existing DOE project portfolio and other projects selected from the subject FOA;
- 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 accelerate commercialization and overcome key market barriers;
- The degree to which the proposed project is likely to lead to increased employment and manufacturing in the United States;
- The degree to which 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 proposed project, including proposed cost share, disseminates project data and results to the entire MHK industry in a timely manner, including the degree to which information is made open source.

# Registration Requirements

- 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

- 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

- 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

- 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

- Questions about this FOA? Email: MHKFOA1663@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