



Energy-Water Desalination Hub
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FOA Webinar
DE-FOA-0001905
January 7, 2019

DE-FOA-0001905

Energy-Water Desalination Hub

Anticipated Schedule:

FOA Issue Date:	December 13, 2018
FOA Informational Webinar:	January 7, 2019
Submission Deadline for Concept Papers:	February 7, 2019 5:00 pm ET
Submission Deadline for Full Applications:	May 7, 2019 5:00 pm ET
Submission Deadline for Replies to Reviewer Comments:	June 28, 2019 5:00 pm ET
Expected Date for EERE Selection Notifications:	August 2019
Expected Timeframe for Award Negotiations:	90 days maximum

Notice

- All applicants are strongly encouraged to carefully read the Funding Opportunity Announcement **DE-FOA-0001905 (“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 AMOWaterHub@ee.doe.gov.

Notice

- NO NEW INFORMATION OTHER THAN THAT PROVIDED IN THE FOA WILL BE DISCUSSED IN THE WEBINAR.
- There are no particular advantages or disadvantages to the application evaluation process with respect to participating on the webinar today.
- Your participation is completely voluntary.

Agenda

- 1) FOA Description
- 2) Topic Areas
- 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

Energy-Water Desalination Hub Background and Purpose

The purpose of this funding opportunity announcement (FOA) is to establish an Energy Innovation Hub (referred to hereafter as the Energy-Water Desalination Hub, or the Hub) to address water security issues in the U.S. For the purpose of this FOA, “desalination” more broadly includes technologies that primarily remove salts. The Hub is a critical component of the Department of Energy’s (DOE) broader Water Security Grand Challenge which will use a coordinated suite of prizes, competitions, early stage research and development (R&D), and other programs to help address the nation’s water security needs.

FOA Description

Specifically, the Hub will:

- Address water security needs for a broad range of stakeholders including utilities, oil and gas production, manufacturing, agriculture, states and municipalities;
- Focus on early-stage R&D for energy-efficient and low-cost desalination technologies, including manufacturing challenges, for treating non-traditional water sources for beneficial end use applications with the goal of achieving **pipe parity**;
- Establish a significant, consistent, and multidisciplinary effort (i.e. using a broad set of engineering and scientific disciplines) to identify challenges and opportunities;
- Enhance the economic, environmental, and energy security of the U.S.; and
- Lead to fundamental new knowledge to drive energy-efficient and low-cost technological innovations to the point that industry will further develop and enable U.S. manufacturing of these new technologies to be deployed into the global marketplace.

***Pipe parity** is defined as technology solutions that are cost competitive with existing water sources and end-use applications.*

FOA Description

These technology advancements represent an opportunity for domestic suppliers of water desalination systems to manufacture critical components and parts, including the design and manufacture of small-modular and large-scale systems in the U.S. Therefore, industry representatives from across the supply chain should be closely involved to provide commercial expertise and to advise on relevant problems, technical and economic targets, operating parameters, and performance metrics needed to achieve desalination across multiple application domains (e.g., industrial, energy sector, municipal, and agricultural).

FOA Description

Energy Efficiency and Renewable Energy (EERE) will have substantial involvement in work performed under the award made as a result of this FOA. EERE does not limit its involvement to the administrative requirements of the award. Instead, EERE will have substantial involvement in the direction and redirection of the technical aspects of the project as a whole. EERE anticipates hands-on participation and involvement in the Hub. See Section VI.B.ix, Statement of Substantial Involvement, for more details.

FOA Description

Technology Space and Strategic Goals

The strategic goal for the Hub is to advance technologies that will enable pipe parity water for a range of non-traditional water sources using energy-efficient, water-efficient, cost-competitive, and manufacturable technologies. Pipe parity water varies depending on the water source, end-use application, and technology option -- and not all of the research, data, and analysis are available in order to benchmark all cases at this time.

FOA Description

Purifying water from a given source for any particular need requires energy and tends to become more challenging with increasing salinity. DOE's analysis has shown that the average energy intensity to purify seawater and brackish waters to pipe parity drinking water is approximately 3.2 kilowatt hours per cubic meter (kWh per m³), (ranging between 1.6 and 4.8 kWh per m³), and costs an average \$1.50 per m³. In comparison, pipe parity drinking water production from fresh water has an average energy intensity of 0.29 kWh per m³ and costs on average \$0.50 per m³ to extract, convey and treat.

In 2017, DOE released a study, “Bandwidth Study on Energy Use and Potential Energy Savings Opportunities in U.S. Seawater Desalination Systems”, that examined energy consumption and potential energy savings opportunities in U.S. seawater desalination plants. The study evaluated the state of technology and energy-savings improvement potential of seawater desalination for municipal water supplies. In the U.S. this is done with reverse osmosis membrane technology.

FOA Description

Figure 1 summarizes some of the study's results, and estimates the current energy footprint of seawater desalination in the U.S. ("Current Typical"), the current opportunity to reduce the energy footprint, if commercially available state-of-the-art technologies were deployed ("State-of-the-Art"), and the future opportunity to reduce the energy footprint, if technologies currently under R&D globally are deployed in the future to produce the same volume of water ("Practical Minimum").

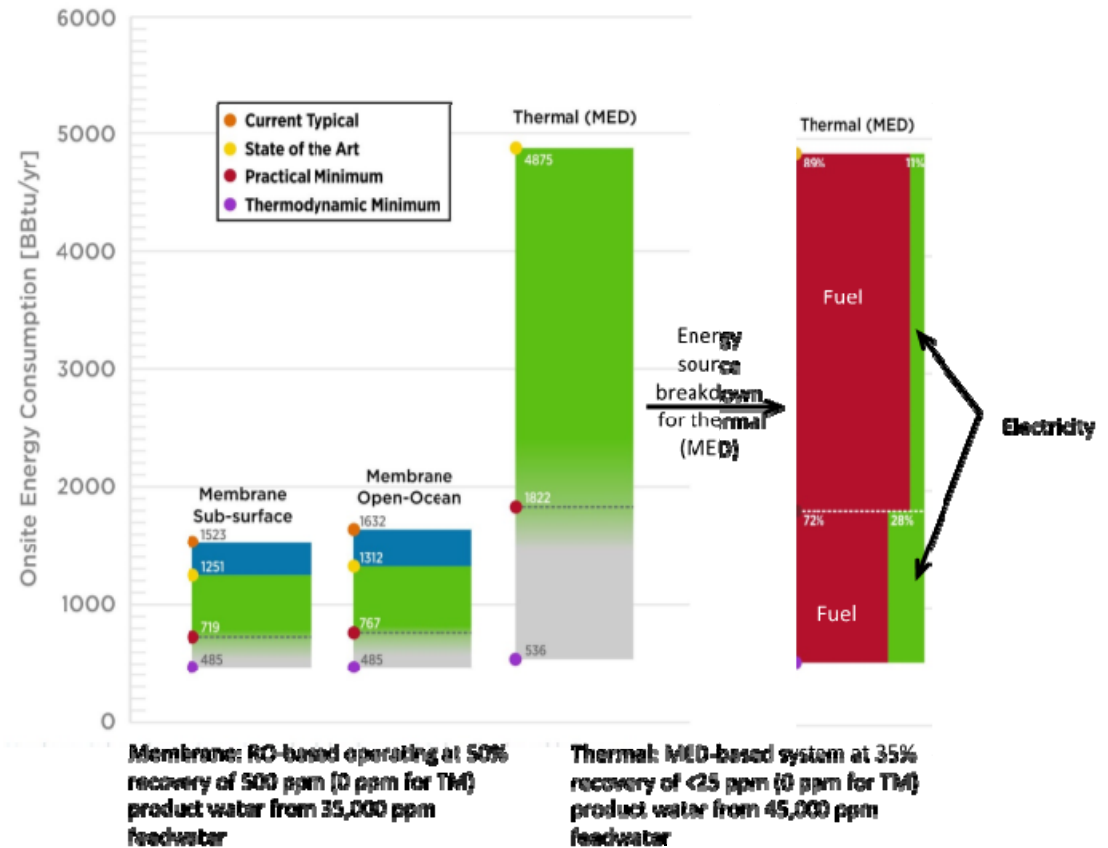


Figure 1. Results from DOE "Desalination Bandwidth Study" Note: TM = Thermodynamic Minimum; MED = Multi-Effect Distillation

FOA Description

The “Desalination Bandwidth Study” provides an example of the level of detail the Hub will need to assess energy usage and costs for other non-fresh water sources, applied and enabling technology options, and end use applications to achieve pipe parity, since each pathway will be inherently different.

The Hub will need to perform additional analysis to evaluate and benchmark all non-fresh water sources to end use applications from a variety of innovative technologies, in order to prioritize the highest impact areas for research. Significant challenges will need to be identified and abated for energy-efficient and cost-effective desalination to be attained.

FOA Description

The Hub will need to prioritize R&D, modeling, and analysis through the development of a Roadmap (see Section I.A.iv). The Roadmap will outline key water source to end use pathways to achieve the most energy/water/cost savings, based on the following performance metrics:

- Energy intensity (energy/m³ water);
- Levelized Cost of Water (\$/m³ water), including assumptions about discount rate, plant life;
- Water intensity (m³/unit of end product);
- Degree of utilization of unconventional water or energy sources, or exploiting synergies between processes/systems; and
- Water system security and resilience (risk of disruption, number of days of lost service).

FOA Description

Hub Organization, Structure, and Operations

DOE conducted three stakeholder workshops and a Request for Information (RFI) from 2015 through 2017 and subsequently released a summary report in 2018, “Advanced Manufacturing Office Clean Water Processing Technologies Workshop Series Summary Report”. Stakeholder feedback as summarized in this report indicates that there are key technology platforms and pre-competitive areas of R&D, modeling, and analysis that cut across the water sources and sectors in an Energy-Water Desalination Hub. These shared technical challenges should be addressed in order to desalinate and clean water at the energy, cost, and other requirements comparable to today’s fresh water purification technologies. However, solutions other than those included in this report are eligible for consideration and not restricted to feedback received to date.

FOA Description

Based on input to date, DOE has organized the Hub into four topic areas:

- 1) Materials Research and Development,
- 2) New Process Research and Development,
- 3) Modeling and Simulation Tools, and
- 4) Integrated Data and Analysis, summarized below:

FOA Description

1) Materials Research and Development (R&D):

Materials R&D has the potential to improve materials used in specific components and in water treatment systems so as to improve energy efficiency and lower costs. Desalination and related water treatment technologies can benefit from materials improvements for a range of products, including membranes, pipes, tanks and pumps that dramatically increase their performance, efficiency, longevity and are durable and corrosion resistant.

FOA Description

2) New Process Research and Development:

Novel technology processes and system design concepts are needed to improve energy efficiency and lower costs for water treatment, including new technologies related to water pre-treatment systems (e.g., upstream from the desalination unit operation). New process technologies are also needed to address associated challenges such as water reuse, water efficiency, and high-value co-products.

FOA Description

3) Modeling and Simulation Tools:

Multi-scale models and simulation tools are needed to inform the R&D via performance forecasting, design optimization, and operation of desalination technologies and related water-treatment systems that will lead to improved energy efficiency and lower cost.

FOA Description

4) Integrated Data and Analysis:

In order to consistently define, track, and achieve pipe parity in the highest impact areas, central, strategic, non-biased, integrated data and analysis is needed to align the Hub's project-level activities in each of the four topic areas to the Hub goals and to measure technical success of both project-level activities and the overall Hub. There is also a need to develop information resources, studies, and analysis tools necessary to guide the Hub's strategic R&D portfolio.

FOA Description

The intent of this approach is to assemble the most highly qualified experts across the breadth and scope of the Hub's four topic areas. An ideal Hub application would include multi-disciplinary experts from across industry, manufacturers, university, non-profits, Federally Funded Research and Development Centers (FFRDC), states and municipalities, as well as other key stakeholders with expertise in advanced energy technology applicable to the Energy-Water Desalination Hub.

DOE intends to select and fund one application with the greatest likelihood of achieving the goals of all four topics of this FOA. The applicant selected will negotiate one award with DOE for all Hub activities. DOE will be substantially involved in the management of the award and in the establishment and operations of the Hub, as described in Section VI.B.ix Statement of Substantial Involvement. In selecting an application, DOE may fund the full scope of an application or fund a portion of the project scope of an application at a funding level that will be negotiated with the applicant.

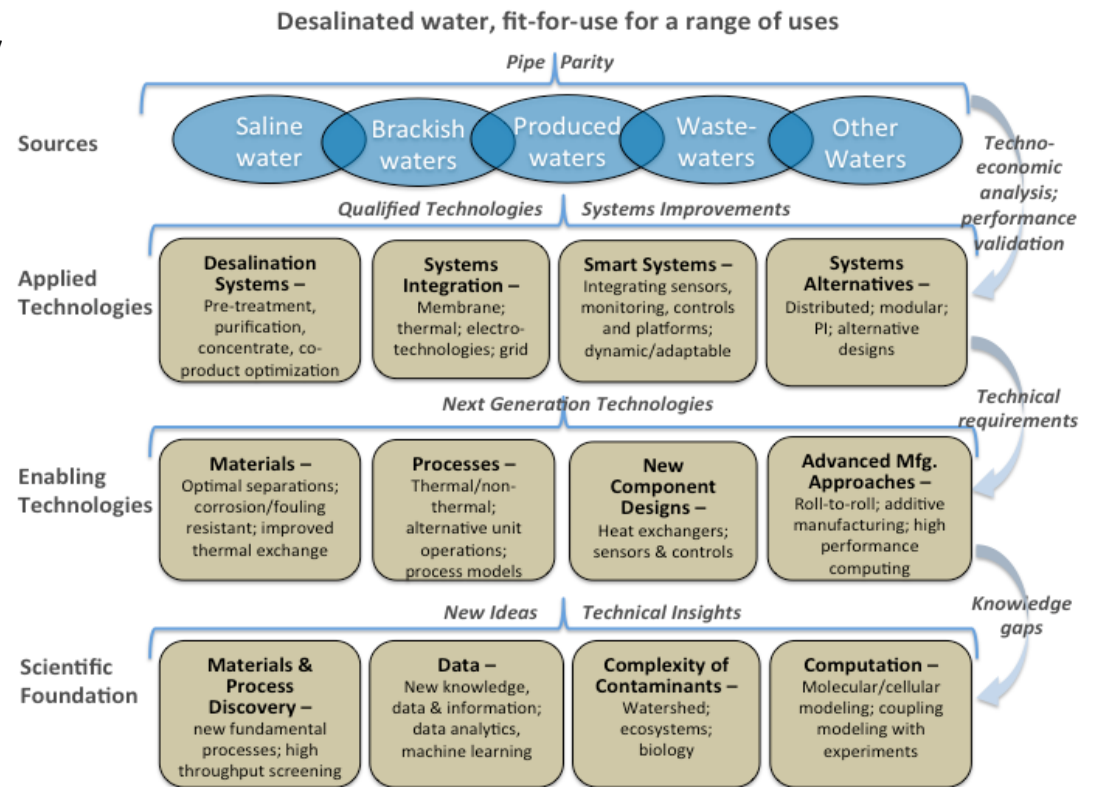
FOA Description

Applicants should further refine the technical challenges and opportunity space for desalination technologies in their applications. Applicants should identify the necessary R&D, modeling, and analysis activities, as well as the technical targets and performance metrics, to meet the Hub's strategic goal of pipe parity. To assist applicants as a starting point for further refinement, DOE has included an illustrative example of the technology opportunity space synthesized from the three workshops and RFI, included in **Appendix B**, though additional technologies and ideas will be considered.

FOA Description

Appendix B - Illustrative Example of the Energy-Water Desalination Hub Technical Opportunity Space

- This is an illustrative example of the Energy-Water Desalination Hub Technical Opportunity Space, based on stakeholder feedback from three workshops and an RFI.
- This example is not meant to be comprehensive or representative of the Hub's defined structure.
- It includes examples of the types of wide-ranging activities that could be addressed by the Hub in each of the four topic areas.
- Moreover, efforts in each technology space must be done in close coordination with others, so that needs in one space can inform R&D work in another.
- The Hub will be expected to span from early to applied R&D, with higher TRL activities informing lower TRL research in order to accelerate the technology development process.



FOA Description

Development of a Roadmap

The Applicant will identify R&D, modeling, and analysis activities which will be further informed by the Hub's roadmapping activities that will be undertaken during the Hub's first year to identify and prioritize the highest impact areas from early-stage to applied R&D for a range of water sources, technology options, and beneficial end-uses. Applicants should include their vision for the development of a Roadmap including how the applicant has the subject matter expertise, resources, and facility capabilities to address the technical challenges and opportunities in the four topic areas.

As an outcome of roadmapping, the Hub will identify specific R&D, modeling and analysis activities and technical targets that align with the Roadmap priorities that would be negotiated with DOE into Budget Periods 2-5. The Hub will develop a consistent process to compete and select projects (e.g., Request for Proposal (RFP) process) to be recommended to DOE for negotiations into the award.

Note, the Hub's scope and budget are subject to change after Budget Period 1 based on year-to-year progress of the Hub's activities and project portfolio as well as ongoing alignment of the Hub's capabilities and expertise to the Roadmap priorities. See Section VI.B.xx Go/No-Go Reviews for more information.

FOA Description

Hub Consortium Agreement

The Hub should be a consortium of multi-disciplinary experts from across industry, manufacturers, universities, non-profits, FFRDCs, states and municipalities, as well as other key stakeholders with expertise in advanced energy technology applicable to the Energy-Water Desalination Hub. Please see Section III Eligibility for specific eligibility information. The intent of this approach is to assemble the most highly qualified experts across the breadth and scope of the Hub's topic areas of interest.

The Hub must work closely with its members and DOE to establish and operate a coordinated Energy-Water Desalination Hub. To facilitate this collaboration, the Hub must operate subject to a binding consortium agreement entered into by each member of the consortium. The consortium agreement must document the partnership agreement and define the governance and management structure of the Hub.

As part of the Full Application, each applicant must submit a proposed consortium agreement (see Section IV.D.xvii.), such as an articles of collaboration, or similar agreement (See Appendix G for more information on the elements of a consortium agreement). It is expected that the applicant will have circulated the proposed consortium agreement amongst its proposed members prior to submitting it to DOE. Further, the binding consortium agreement must be in place before an award can be made.

The Hub must operate as a nonprofit organization.

FOA Description

Appendix G - Elements of the Binding Consortium Agreement

The Hub will work closely with its members and DOE to establish and operate a coordinated Energy-Water Desalination Hub. To facilitate this collaboration, the Hub must operate subject to a binding consortium agreement entered into by each member of the consortium. The consortium agreement documents the proposed partnership between the Hub and its members and defines the Hub's governance and management structure.

As part of the Full Application, each applicant must submit a draft consortium agreement, such as an articles of collaboration, or similar agreement. The draft consortium agreement will be evaluated as part of DOE's rigorous merit review procedures.

To help the applicants prepare a consortium agreement, below is a list of key elements that should be included:

1. The rights and responsibilities of the Hub and the members;
2. The governance and management structure of the Hub;
3. The charter and mission of the Hub;
4. How the Hub and members will work together to collaborate to achieve the overall Hub mission and goals;
5. Provisions for members' cost sharing contributions;
6. Means of ensuring and overseeing members' efforts for the Hub;
7. Data Sharing and publication policies (the draft consortium agreement can incorporate the Data Management Plan submitted with the Full Application or at the very least needs to be consistent with the Data Management Plan submitted with the Full Application); and
8. Other terms or articles the consortium deems necessary.

Additional Reminders listed in Appendix G.

FOA Description

Required Actions Prior to Award

Before DOE can issue an award under this FOA, the following actions related to the Hub's governance and management documents need to be completed. As further described in Appendix G, one of the activities includes putting a binding consortium agreement in place. Some of the actions described below will be separate plans incorporated into the consortium agreement by reference or, in lieu of creating a separate plan, they may be included as specific provisions in the agreement itself. The Hub and its members have some flexibility to determine what structure makes sense for a particular Hub. Note, the agreement and associated documents are subject to DOE review and approval. Because the activities listed below are required prior to the issuance of an award and are not part of the activities performed under the award, the costs associated with these activities are not allowable for reimbursement (or allowable as cost share) under the award.

The following agreements, plans and procedures must be completed and in place prior to DOE issuing an award:

- Binding consortium agreement that documents (a) the partnership between the Hub members and (b) the Hub's governance and management structure;
- Conflict of Interest (COI) procedures with a consistent approach to identifying and mitigating COIs across the Hub and in agreement with DOE's procedures. See Appendix E – Key Elements of a COI Plan and Section VI.B.xii for more information;
- Intellectual Property Management Plan (IPMP) between the Hub and the members per Section VI.B.x;
- Final Data Management Plan for sharing data and software tools across the Hub and with the public;
- Export Control Plan for the Hub;
- Communications Plan for the Hub;
- Updated COI Statement as per Section VI.B.xi (due no later than seven (7) business days after notice of selection for award negotiations); and
- Foreign Entity Participation Plan per Section VI.B.xv.

FOA Description

Expected Hub Activities During Budget Period 1

During the Hub's first year of operation, the Hub will work on a Roadmap and a number of start up activities with DOE as follows:

- Identify key representatives to participate in Hub meetings with DOE;
- Work closely with DOE to create, develop and make available to the public a Roadmap with prioritized R&D, modeling, and analysis activities;
- Develop and execute a competitive RFP process to solicit and secure new projects that support the Roadmap priorities;
- Map specific R&D, analysis, and modeling projects into the Roadmap;
- Develop project-level technology baselines, performance metrics, and technical targets that align with the Hub goal of pipe parity;
- Establish consistent guidelines, policies, agreements, processes, and strategy documents for the Hub, including but not limited to a conference management directive as discussed in Appendix H;
- Identify joint projects and develop a plan for implementation across the Hub;
- Support the Integrated Data and Analysis topic area in the development of consistent technology baselines, performance metrics, and technical targets to define and achieve pipe parity that will be used across the Hub; and
- Develop a continuation application with DOE for incorporating specific R&D, analysis, and modeling projects' scopes of work and budgets into the award for Budget Periods 2 including scope that will continue into Budget Periods 3, 4 and 5.

FOA Description

Expected Hub Activities During Budget Periods 2-5

In subsequent budget periods, the Hub will work in a collaborative manner on R&D, modeling, and analysis priorities defined by the Roadmap and provide progress updates. The Hub will provide data to update the Roadmap, based on the outcomes of R&D, modeling, and analysis activities.

The Hub will provide a detailed outline and budget estimate for the R&D, modeling, and/or analysis activities for the remainder of the project period (Budget Periods 2-5). Note, the Hub's scope and budget are subject to change after Budget Period 1 based on year-to-year progress of the activities and project portfolio as well as ongoing alignment of the capabilities and expertise to the Roadmap priorities.

The Roadmap and supporting analysis conducted by the Integrated Data and Analysis topic area will track technological progress and inform how the Hub is performing against the technical baseline, track technological progress to targets, and performance metrics identified in this FOA and further developed during roadmapping to achieve pipe parity. DOE will use this information to assess how the Hub should adjust R&D, modeling, and analysis priorities. See Section VI.B.xx Go/No-Go Reviews for more information.

The DOE and Hub will work together to maintain a single Roadmap for the Hub as progress is made and various aspects evolve. The Hub must align and map R&D, modeling, and analysis activities and projects into the Roadmap.

Data and software tools generated by the R&D, modeling, and analysis activities conducted by Hub members must be shared with other members and, ultimately, the public. The data and software tools will be used by the Integrated Data & Analysis area to evaluate the Hub's R&D, modeling, and analysis activities and to disseminate the results of the Hub activities within the Hub and to the public. This includes updates to technology baselines, technological targets, and the Roadmap.

Topic Areas

Applicants will apply to the entire Hub by submitting an application that addresses all four of the topic areas and the other requirements.

DOE intends to select and fund one applicant with the greatest likelihood of achieving the goals of the FOA. For a description of what should be included in a Hub application, see Section IV.D.ii Technical Volume.

There are four interdependent topic areas for the Energy-Water Desalination Hub: 1) Materials Research and Development, 2) New Process Research and Development, 3) Modeling and Simulation Tools, and 4) Integrated Data and Analysis. Applicants are expected to develop their plan of work to address the progress they can make in these four topic areas as a portfolio of activities within the Hub. Other activities may be proposed, provided they are justified as being relevant to the Hub. All work under EERE funding agreements must be performed in the United States. See Section IV.J.iii and Appendix C.

Topic Areas

Materials Research and Development:

Materials discovery has the potential to improve the performance and longevity of various components and processes in desalination applications, including water treatment, separations technologies, piping, tankage and pumps. This includes materials discovery for new processing technologies, such as improved membranes with high permeability that do not sacrifice water quality (i.e., highly selective membranes) and are resistant to fouling. Additional material needs are for pipes, tanks, and pumps that do not corrode and can withstand higher pressures and offer lower friction.

Materials innovations could improve heat transfer properties and thermal management in water purification desalination technologies. Opportunities to develop next generation heat exchanger materials could use lower cost materials leading to lower cost compact heat exchangers, as well as innovations to reduce chemical scaling on heat exchanger surfaces.

Advanced manufacturing technologies can be implemented towards the production of low cost and reliable water purification components. Structural materials such as piping systems that are lighter, stronger, and longer-lasting; that eliminate or greatly reduce the development of biofilms, corrosion, and scaling; and that cost less and are more efficient than currently used technologies are needed. There are several technologies being investigated to enable this, some of which were highlighted in the Multi-Year Program Plan (MYPP) published by the DOE Advanced Manufacturing Office. Such technologies include roll-to-roll processing, smart manufacturing, electrotechnologies, additive manufacturing, materials for harsh service conditions and others.

Technology solutions will not be limited to those identified in the MYPP. R&D in these new materials will be validated in industrially-relevant, integrated systems and provide data or other information in coordinated interface tasks and activities with other topic areas in the Hub as outlined in the roadmapping effort that would be conducted during Budget Period 1.

Topic Areas

New Process Research and Development:

Novel technology concepts at lower cost and lower energy are needed for water desalination as well as treatment, water reuse, water efficiency, water replacements, and high-value co-products. This R&D will enable use of more water resources for industrial, agricultural, utility, and municipal end uses – including sources such as produced and extracted waters; seawater and brackish groundwater; and other non-traditional water sources.

To do this, a molecular level understanding of the complexity of non-traditional water sources is needed to inform approaches to their treatment through physical, chemical, or biological processes. The scope of this topic area includes the recovery of potentially valuable waste streams for co-product development. Additionally, the scope of this topic area includes advanced technologies needed for sensors and controls used in water purification systems.

Process control and monitoring are essential to enable optimal system-wide performance (intake, purification, power supply). It is desired to have energy-efficient, cost-effective, real-time, in-situ monitoring and control of water at all processing stages. Sensing of contaminant levels and types, temperature, pressure, and other operating parameters is critical to improve component resilience towards fouling, corrosion, clogging and allows for operation under optimized conditions for a given location, time, or water source.

Water purification can be optimized utilizing tools akin to those being developed for manufacturing processes in the Smart Manufacturing Section of the MYPP published by the DOE Advanced Manufacturing Office. Water optimization tools are not be limited to those identified in the MYPP.

Data collection and analysis from sensors will be required for thorough process model development for feedback and enabling of dynamic adjustments for process optimization. Sensing and control components could also be a vital tool for optimizing performance and energy consumption. If multiple energy sources are used (solar, waste heat, grid), the variability may need to be compensated for in a smart way (e.g., sensing to schedule maintenance and part replacement resulting in more efficient operations and reduced down time).

This topic area also includes water efficiency improvements or water replacements in industrial, agricultural, utility, and municipal sectors. R&D of these novel technologies will be validated in industrially relevant, integrated systems and provide data or other information through interface tasks and activities with the other topic areas in the Hub as outlined in the roadmapping effort.

Topic Areas

Modeling and Simulation Tools:

Multi-scale models to simulate processes need to be developed to predict performance and optimize design of new technology approaches. This work will ultimately provide feedback to researchers that will enable better quality and more cost effective materials and process development. The coupling of experimental outputs for multi-scale modeling is needed to assess R&D results and inform future R&D. The development of these experimental data-driven models are needed to understand and describe the properties and behaviors of complex processing systems.

Aqueous solution modeling and simulation tools can inform the Hub's ongoing and future R&D that will lead to advances in new energy-efficient and low-cost materials, separations, and other advanced processes for desalination. Multi-scale modeling is expected to extend from fundamental materials and process advancements to system-scale modeling that can address technology options at scale.

System-scale modeling is needed to assess the economies-of-scale implications of modular system designs versus large centralized system designs. The broader systems modeling and simulation will be expected to include system advances and technology integration implications resulting from advances in processes such as separations and treatment; fluids pumping; heat transfer and heat integration; and smart technologies.

It is of paramount importance that the Hub manage the interconnectedness of this topic area to provide data or other information through interface tasks and activities with the other topic areas in the Hub as outlined in the roadmapping effort.

As a condition for funding, an applicant must agree to make any model or simulation tool developed under the award available to the public through an open source license. DOE can approve an alternative to an open source license if the applicant can demonstrate that it has another method that would promote the dissemination and use of the modeling and simulation tools. As discussed in Section IV.D.xv, the Data Management Plan submitted with the application must discuss the applicant's plan for making the modeling and simulation tools available to the public.

Topic Areas

Integrated Data and Analysis:

In order to consistently define, track, and achieve pipe parity performance metrics for desalination in the highest impact areas, central, strategic, non-biased, integrated data and analysis is needed to track the project level technical targets and the overall Hub performance metrics, and thus the Hub's success.

Key performance metrics such as energy efficiency, water efficiency, and cost listed in Section I.A.ii Technology Space and Strategic Goals are critical to planning, developing, tracking, and decision making by DOE and the Hub. The scope of this topic area includes developing state of technology baselines for each of the highest impact pathways, which will be used to identify the Hub's R&D, modeling, and analysis priorities during roadmapping. There is also a need to develop information resources, studies, and analysis tools necessary to guide the Hub's strategic R&D portfolio.

It is critical that technology roadmapping include integrated analysis to assess not only material and new process technologies separately, but their collective impact as pathways through the Hub; therefore, these efforts will require close coordination with the modeling and simulation activities. As such, the Integrated Data and Analysis technical focus area will also be responsible for supporting the Roadmap efforts.

The integrated data and analysis effort will be used to inform Hub decisions in the evaluation of the R&D, modeling, and analysis portfolio by tracking project level technical targets and performance metrics (for Individual Hub Activity Go/No-Go decisions made by DOE) using a consistent methodology and identifying R&D, modeling, and analysis gap areas. Given the interconnectedness of this topic area, interface tasks and activities will be coordinated with other topic areas in the Hub and DOE as outlined in the roadmapping effort.

The Hub's Integrated Data and Analysis topic area will share data and software tools developed with DOE and the public. The Integrated Data and Analysis topic area must develop the means for effectively receiving and sharing data and tools with the Hub, DOE, and the public.

Topic Areas

Information for all Topic Areas

An effective application will address the challenges and opportunities related to desalination, as described in Section I.A. To achieve pipe parity, the Hub will need to prioritize R&D, modeling, and analysis through the development and publication of a Roadmap, outlining key water resources to end use pathways to achieve the most energy/water/cost savings, based on the performance metrics outlined in Section I.A.ii. Technology Space and Strategic Goals. Specifically, the applicant must explain how the activities in each topic area would address the scientific and technical challenges to advance the current state of technology for low-cost, energy-efficient desalination for a broad set of water source to end use applications. The applicant must develop technology baselines, performance metrics, and technical targets for the specific activities conducted in the topic areas that align with the Hub's goal to achieve pipe parity.

An effective application will include multi-disciplinary experts from industry, manufacturers, universities, non-profits, FFRDC, states, municipalities, and other key stakeholders with expertise in advanced energy technology applicable to the Energy-Water Desalination Hub that have the facility capabilities, and expertise to address the broad set of challenges. See Section III for specific eligibility information. The applicant must propose a governance and management structure, including technical leadership positions, for the Hub. This should include key representatives to participate in coordinating R&D, analysis and modeling activities across the Hub and with DOE.

The Hub must develop a consistent RFP process that will be used across the Hub to compete projects to address high priority R&D, modeling, and/or analysis identified in the Roadmap. This process should be discussed and agreed to by the Hub and DOE. An effective RFP process will have the flexibility to adjust activities based on the Roadmap.

Topic Areas

Information for all Topic Areas (continued)

The Hub must agree to work cooperatively with other members in order to create an innovation ecosystem in the energy-water community. The application must include a proposed consortium agreement that documents the key elements of the consortium's partnership and defines the governance and management structure for the Hub (see Appendix G for further guidance). Among other things, the Hub members must agree to share data and software tools resulting from the R&D, modeling, and analysis activities under the award with the other Hub members, DOE, and the public. An effective application will explain how the data and tools will be received and shared with the Hub, DOE, and the public, through newly created or existing repositories and protocols.

The Hub must agree to work with members on general coordination activities including convening Hub related workshops and meetings, developing overall communications and publications, organizing quarterly technical updates of R&D, modeling, and analysis to assess progress against Roadmap priorities. The Hub must agree to work with subrecipients to establish consistent project-level reviews, tracking and reporting of progress and with members to establish consistent guidelines, policies, agreements, processes, and strategic documents for the Hub.

Teaming Partner List

An effective application will include multi-disciplinary experts from industry, manufacturers, universities, non-profits, FFRDCs, states, municipalities, and other key stakeholders with expertise in advanced energy technology applicable to the Energy-Water Desalination Hub that have the facility capabilities, and expertise to address the broad set of challenges.

EERE is compiling a Teaming Partner List to facilitate the widest possible national participation in the formation of the Hub for this FOA. The list allows organizations who may wish to participate in an application, but do not wish to apply as the Prime applicant to the Hub, to express their interest to potential applicants and to explore potential partners.

The Teaming Partner List will be available on EERE Exchange at <https://eere-Exchange.energy.gov> under FOA DE-FOA-0001905 during the time of its release through its closing. The Teaming Partner List will be updated at least weekly until the close of the Full Application period, to reflect new Teaming Partners who have provided their information. Any organization that would like to be included on this list should submit the following information to AMOWaterHub@ee.doe.gov, with the subject line “Teaming Partner Information”:

- Organization Name, Contact Name, Contact Address, Contact Email, Contact Phone, Organization Type, Area of Technical Expertise, and Brief Description of Capabilities.

By submitting a request to be included on the Teaming Partner List, the requesting organization consents to the publication of the above-referenced information. By facilitating this Teaming Partner List, EERE does not endorse or otherwise evaluate the qualifications of the entities that self-identify themselves for placement on the Teaming Partner List. EERE will not pay for the provision of any information, nor will it compensate any applicants or requesting organizations for the development of such information.

Applications Specifically Not of Interest

The following types of applications will be deemed nonresponsive and will not be reviewed or considered (See Section III.D of the FOA):

- Applications that fall outside the technical parameters specified in Section I.A and I.B of the FOA.
- Applications for proposed technologies that are not based on sound scientific principles (e.g., violates the laws of thermodynamics).
- Applications that are outside Technology Readiness Levels (TRL) 2 – 4. See Appendix I for more information.
- Applications that only propose a single R&D project. As an example – an application that only includes one R&D project such as for a specific membrane technology for desalination to be conducted by a single Principal Investigator.

Award Information

Total Amount to be Awarded	\$100,000,000*
Average Award Amount	EERE anticipates making one award
Types of Funding Agreements	Cooperative Agreements, Funding Agreements with FFRDCs, Interagency Agreements
Period of Performance	60 months
Cost Share Requirement	20% of Total Project Costs

*Subject to the availability of appropriated funds

Award Information (continued)

- EERE will establish 5 budget periods for the award, however only funding for Budget Period 1 will be authorized initially. Budget Period 1 will have a duration of approximately 12 months of the overall 5 year project period. The first budget period will provide resources, including supporting analysis, for roadmapping and other efforts to identify near and longer term R&D, modeling, and analysis efforts to be conducted by the Hub.
- The following activities must not be included in the Statement of Project Objectives (SOPO) or budget for Budget Period 1: Any costs associated with the formation of an entity to become the Prime Recipient, including the entity's policies and procedures or with the formation of an accounting system. These activities must be completed before or during negotiations and must be in place prior to the Contracting Officer approving the award.
- Applicants must propose a budget and SOPO to accomplish Budget Period 1 activities as discussed in Section I.A. Applicants should include a high level summary for the following 12 month (approximate) budget period for proposed initial technical work (Budget Period 2) (subject to change based on roadmapping outcomes). In addition, the application should include an outline of the SOPO and budget for the remaining budget periods (Budget Periods 3-5). All budget periods will be 12 months (approximate) in length. Additional detail will be required in the proposed SOPO and budget submitted as part of the continuation application required 90 days prior to the end of each budget period.
- A total of up to \$20,000,000 in Federal funds is anticipated to be available for the award for each budget period. Funding for Budget Periods 2-5 is not guaranteed. Before the expiration of each budget period, EERE will perform a Project-Wide Go/No-Go decision review (See Section VI.B.xx).
- The Hub's continuation applications must include proposed R&D, modeling, and analysis activities that align with the Roadmap priority areas. R&D, modeling, and analysis activities proposed that are not deemed high priority as a result of roadmapping would be re-scoped or removed.

Statement of Substantial Involvement

EERE has substantial involvement in work performed under awards made as a result of 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 the 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 the Project-Wide Go/No-Go decision point(s).
4. EERE may redirect or discontinue funding for individual Hub Activities based on the outcome of EERE's evaluation of those activities at the Individual Hub Activity Go/No-Go decision points.
5. EERE participates in major project decision-making processes to include but not limited to:
 - a. Completion of Roadmap;
 - b. Selection of Hub Activities;
 - c. Individual Hub Activity Go/No-Go reviews; and
 - d. Project redirection based on progress reviews.
6. EERE will appoint DOE Federal Government representatives to participate in any Hub governance or management entities that may be established.
7. The Recipient will provide EERE the opportunity to participate in the planning of technical, strategic, and operations events such as Workshops and roadmapping activities.
8. The Recipient will obtain a positive compliance recommendation from EERE prior to adopting any Hub-related documents and subsequent changes to such documents. The Recipient will provide EERE with a minimum of five business days to review for compliance with the award. This includes but is not limited to Strategic Plans, RFP processes, CRADAs, the consortium agreement, the IPMPs, the Data Management Plan, the COI Plan, the Export Control Plan, the Communication Plan, NDA/COI form, Foreign Entity Participation Plan, conference management directive, planning documents listed in the SOPO, and other key documents or policies for the Hub.

Statement of Substantial Involvement (continued)

9. The Recipient will notify EERE of Hub related publicity information regarding the Recipient's organization and the Hub and provide a minimum of five business days to review and offer input. Related publicity information includes materials developed by the Recipient, subrecipient, or other participant.
10. The Recipient will provide EERE a minimum of five business days to review any Project and Hub Activity-specific risk mitigation and corrective action plans.
11. To adequately monitor project progress and provide direction to the Hub, the Recipient must provide EERE the opportunity to participate in the Hub's activities including Hub meetings, key reviews and experiments, and project management and monitoring activities. The Recipient must notify EERE a minimum of ten business days before the Hub activity and provide all appropriate documentation for EERE review.
12. EERE may choose to engage a private, independent engineering (IE) firm or third party consultant to assist in assessing the progress of the project and provide timely and accurate reports to EERE. The Recipient will ensure that the IE or consultant has access to any and all relevant documentation sufficient to allow the IE or consultant to provide independent evaluations to EERE on the progress of the project. The Recipient may require the IE or consultant to sign a NDA and will negotiate the agreement in good faith and in a timely manner. Consultants to EERE may not provide technical direction to the Recipient.
13. In addition to the list above, the Recipient must obtain Government Approval in the following situations:
 - a. Scope changes, including but not limited to, any change in plans that may result in a need for additional Federal funding;
 - b. NEPA-related documents and compliance activities;
 - c. Requests for Proposals for Hub Activities funded under the Hub;
 - d. Selection of new Hub Activities;
 - e. Selection of Key Personnel; and
 - f. Foreign Entity Participation and Foreign Work Waivers.
14. EERE reserves the right to make modifications and/or additions to this list based on future risk assessments and/or the specific Hub management approach enlisted by the Recipient.

Cost Sharing Requirements

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.)

To assist applicants in calculating proper cost share amounts, EERE has included a cost share information sheet as Appendix A to this FOA.

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 selection for award negotiations.
- 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

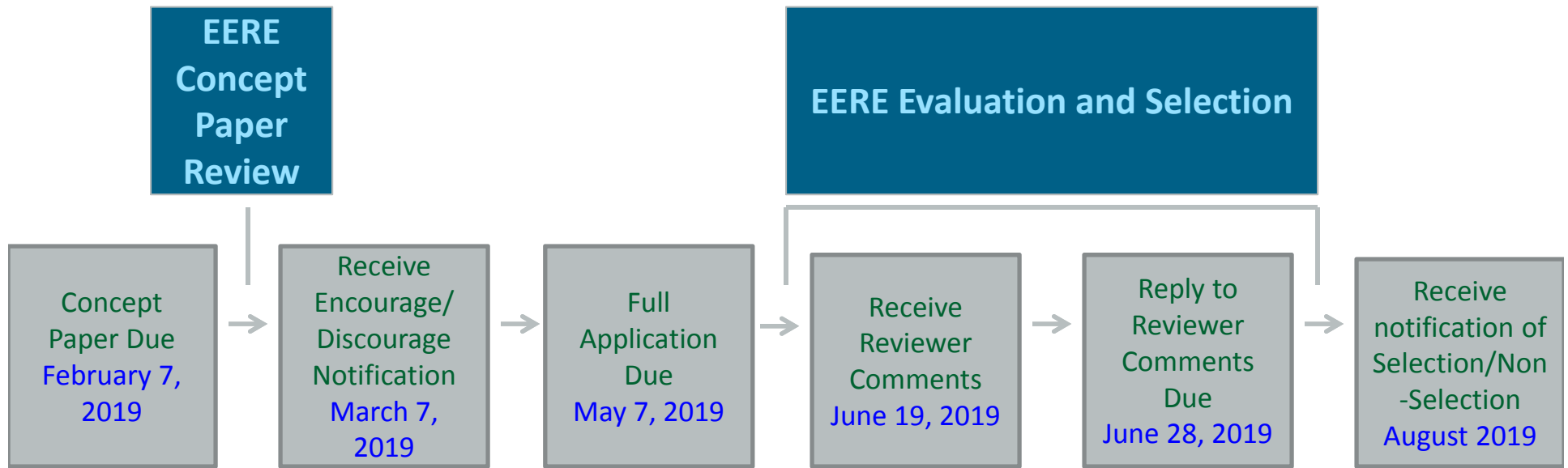
Unallowable Cost Share

- 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.vi of the FOA.

FOA Timeline



EERE anticipates making an award within 90 days of selection notification

Pre-Selection Interviews

- 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

- Applicants must submit a Concept Paper
 - The ideas and technologies proposed in a Concept Paper must all be relevant to the objectives of the FOA for Energy-Water Desalination Hub as described in Section I of the FOA.
- The Concept Paper must include the following (See Section IV.C of the FOA):
 - Technology Description and Impacts description (limited to 5 pages);
 - Hub and Resources description (limited to 5 pages); and
 - Operations and Management Approach description (limited to 3 pages).
- Concept Papers must be submitted by February 7, 2019 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

Concept Papers are evaluated based on consideration of the following factors. All sub-criteria are of equal weight.

Criterion 1: Technical Description and Impacts (40%)

- Demonstrates knowledge of the key technical opportunities and challenges associated with the Energy-Water Desalination Hub (discussed in Section I.A and Appendix B) and how the applicant will approach those challenges in the four topic areas;
- The applicant's understanding of the current state-of-technology, including key opportunities and challenges;
- Innovativeness of the proposed R&D, modeling, and/or analysis approach and likelihood that they will overcome the shortcomings, limitations, and challenges; and
- Extent to which the proposed R&D, modeling, and/or analysis approach will impact the FOA performance metrics and goals.

Criterion 2: Hub and Resources (30%)

- Extent to which the roles and responsibilities are well-defined and organized around the key technical challenges;
- Whether the proposed Hub has the skill, qualifications, and relevant experience needed to successfully execute on addressing the technical challenges related to the four topic areas of the Hub; and
- Whether the proposed Hub has adequate access to equipment and facilities necessary to accomplish the effort and/or clearly explains how they intend to obtain access to the necessary equipment and facilities.

Criterion 3: Operations and Management Approach Description (30%)

- Extent to which the proposed management and operations structure and approach will support the Hub's goals;
- Ability and willingness to collaborate with other stakeholders in order to create an innovation ecosystem within the Hub; and
- Ability and willingness to share data, software tools, or other results within the Hub, with DOE, and with the public.

Full Applications include:

- Technical Volume
- Statement of Project Objectives
- SF-424 Application for Federal Assistance
- Budget Justification Workbook (EERE 335)
- Summary for Public Release
- Summary Slide
- Subrecipient Budget Justification (EERE 335) (if applicable)
- Budget for DOE/NNSA FFRDC (if applicable)
- Authorization for non-DOE/NNSA FFRDCs (if applicable)
- Authorization from Director of Laboratory Policy (SC-32), (if applicable)
- SF-LLL: Disclosure of Lobbying Activities (required)
- Waiver Requests: Foreign Entities and Performance of Work in the United States (if applicable)
- U.S. Manufacturing Commitments
- Data Management Plan
- Conflict of Interest (COI) Statement
- Consortium Agreement
- Communications Plan
- Compliance Matrix

Full Applications: Technical Volume Content

Technical Volume: the key technical component of the Full Application

The Technical Volume to the Full Application may not be more than **100 pages**, including the cover page, table of contents, and all citations, charts, graphs, maps, photos, or other graphics, and must include all of the information in the table below. The applicant should consider the weighting of each of the evaluation criteria (see Section V.A.ii of the FOA) when preparing the Technical Volume.

Content of Technical Volume	Suggested % of Technical Volume
Cover Page	
Overview, Strategy, and Alignment to the Hub	20%
Technical Description, Innovation, and Impact	30%
Technical Qualifications and Resources	20%
Operations and Management Approach	30%

Full Application Eligibility Requirements

- Applicants must submit a Full Application by **May 7, 2019**
- 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](#);
 - The Full Application is responsive to the FOA [Section III.D of FOA](#);
 - The entity meets the limitation on the number of Concept Papers and Full Applications Eligible for Review [Section III.F of the FOA](#); and
 - The Full Application meets any other eligibility requirements listed in Section III of the FOA.

Who's Eligible to Apply?

The Hub is intended to be a consortium of multi-disciplinary experts. All members of the Hub consortium must meet the definition of “Qualifying Entities” provided in Section III.A.ii. The consortium does not need to be formally incorporated as a legal entity. If the consortium is an unincorporated group of qualifying entities working together, the consortium must designate one member to serve as the Prime Recipient/consortium lead. The consortium lead must be the entity that submits the Full Application. The Prime Recipient/consortium lead must be incorporated (or otherwise formed) under the laws of a State or territory of the United States with majority domestic ownership or control and have a physical place of business in the United States.

If the applicant is an incorporated consortium or formally organized consortium, the consortium must be incorporated (or otherwise formed) under the laws of a State or territory of the United States with majority domestic ownership or control and have a physical place of business in the United States. The applicant must provide a copy of the articles of incorporation or other organization documents with its Full Application.

Who's Eligible to Apply?

Consortium

The Hub must be established and operated by a consortium of qualifying entities. To be eligible to receive an award for the establishment and operation of the Hub, a consortium must:

1. Be composed of not fewer than two qualifying entities, as defined below;
2. Operate subject to a binding agreement, entered into by each member of the consortium; and
3. Operate as a nonprofit organization.

Each applicant must provide its proposed consortium agreement as part of its Full Application that addresses the elements stated in Appendix G. The binding consortium agreement does not need to be executed at the application stage, but it must be in place before an award can be made.

Who's Eligible to Apply?

Qualifying Entities

The term “qualifying entities” includes:

1. An institution of higher education;
2. An appropriate State or Federal entity, including a DOE/NNSA Federally Funded Research and Development Center (FFRDC);
3. A nongovernmental organization with expertise in advanced energy technology research, development, demonstration, or commercial application related to the Energy-Water Desalination Hub; or
4. Any other relevant entity the Secretary determines appropriate.

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.

Who's Eligible to Apply?

Foreign Entities

The Prime Recipient, subrecipients and Hub members must be incorporated (or otherwise formed) under the laws of a State or territory of the United States with majority domestic ownership or control and have a physical place of business in the United States. If a foreign entity applies for funding as a Prime Recipient, it must designate in the Full Application a subsidiary or affiliate incorporated (or otherwise formed) under the laws of a State or territory of the United States to be the Prime Recipient. The Full Application must state the nature of the corporate relationship between the foreign entity and domestic subsidiary or affiliate.

Foreign entities may request a waiver of the requirement to designate a subsidiary in the United States as the Prime Recipient in the Full Application (i.e., a foreign entity may request that it remains the Prime Recipient on an award). To do so, the applicant must submit an explicit written waiver request in the Full Application. Likewise, if the applicant seeks to include a foreign entity as a subrecipient or Hub member, the applicant must submit a separate explicit written waiver request in the Full Application for each proposed foreign subrecipient or Hub member.

Appendix C lists the necessary information that must be included in a Foreign Entity Participation waiver request. The applicant and any proposed subrecipients do not have the right to appeal EERE's decision concerning a waiver request.

Multiple Applications

Limitation on the Number of Concept Papers and Full Applications Eligible for Review

An entity may only submit one Concept Paper and Full Application for this FOA.

If an entity submits more than one Concept Paper and Full Application, EERE will request a determination from the applicant's authorizing representative as to which application should be reviewed.

Any other submissions received listing the same entity as the applicant will not be 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 applicant on one Concept Paper and Full Application submitted 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 (40%)

- Degree to which the technical approach and R&D, modeling and/or analysis priorities have been clearly described and thoughtfully considered to address the necessary gaps in the four topic areas of the Hub;
- The scientific and technical quality of the proposed R&D, modeling, and/or analysis activities, including:
 - Degree to which it is comprehensive, well-balanced, and at the forefront of the current state of technology;
 - Degree to which the current state of the technology and the proposed advancements are clearly and convincingly described;
 - Ability to overcome scientific, engineering, and technical obstacles/risk to achieve the objectives outlined in the FOA; 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.
- The degree to which the application includes specific performance parameters and technical targets informed by key industry partnerships to facilitate and expedite further development and commercial deployment of the proposed technologies.

Technical Merit Review Criteria - Continued

Criterion 2: Technical Qualifications and Resources (30%)

- The clarity of the organizational structure, roles and responsibilities, and adequacy of the roles and intellectual contributions of the Principal Investigator(s) and the proposed senior/key personnel;
- The quality of the Principal Investigator(s) and the proposed members to address all aspects of the proposed work with a high probability of success. This includes the qualifications, relevant expertise, and time commitment of the individuals;
- The demonstrated record of success in R&D, modeling, and/or analysis in the four topic areas of the Hub;
- The degree of access to, and quality of, existing research facilities and instrumentation at the applicant and Hub members that will be provided for Hub activities;
- Previous experience in management of multidisciplinary teams, in efforts of comparable scope and magnitude including the administrative and financial capabilities necessary to support the management of a Federally-funded complex, multi-year applied research effort; and
- The reasonableness of the requested operating budget for the proposed R&D, modeling, and/or analysis activities, including the ability of the requested budget to establish the Hub in a cost-effective manner, such as the costs of acquiring and preparing the space to house the Hub and any required equipment and instrumentation.

Technical Merit Review Criteria - Continued

Criterion 3: Operations and Management Approach (30%)

- The degree to which the management approach articulates an organizational structure with clearly delineated roles and responsibilities of senior/key personnel;
- The ability of the management plan to encourage synergy and cohesion among the Hub's principal investigators, particularly those from multi-disciplinary fields across the breadth and scope of the Hub's technology opportunity space described in Section I.A, and to encourage a high-risk, high-reward R&D, modeling, and/or analysis program;
- The ability to adapt its R&D, modeling, and/or analysis focus based on roadmapping, including annual and other relevant updates to the Roadmap;
- Ongoing commitment to coordinate across the Hub, with DOE, and Hub members;
- The extent the proposed binding consortium agreement documents (a) the partnership between the Hub members and (b) the Hub's governance and management structure (See Appendix G);
- The extent there is a reasonable path to gain member acceptance of the binding consortium agreement and to execute the agreement with the members in a timely manner so as not to delay award execution;
- The extent the Communications Plan ensures close coordination and integration of Hub activities (if Hub members will not be located at one centralized location);

Technical Merit Review Criteria - Continued

Criterion 3: Operations and Management Approach (30%) (continued)

- The adequacy of plans for external collaborations and partnerships, including the leveraging of DOE and other Federal user facilities;
- The adequacy and appropriateness of the plan for recruiting Hub members and additional scientific, engineering and technical personnel;
- The adequacy of the submitted Data Management Plan to make the results of the R&D, analysis and modeling tools activities available within the Hub, with DOE, and with the public and, in the case of modeling and simulation tools, the commitment to make such tools available through an open source license or another method that promotes widespread use of such tools;
- The appropriateness and adequacy of the approach to measuring the Hub's R&D, modeling, and analysis progress against the technical targets and performance metrics;
- The adequacy of the performance monitoring systems to ensure the overall project is operated within proposed scope, cost and schedule; and
- The extent to which the applicant has existing business relationships and/or the ability to seamlessly initiate new business relationships.

Replies to Reviewer Comments

- EERE provides applicants with reviewer comments
- Applicants are not required to submit a Reply - it is optional
- Applicants should anticipate having approximately seven (7) business days to submit Replies to Reviewer Comments.
- To be considered by EERE, a Reply must be submitted by June 28, 2019 5:00 pm ET and submitted through EERE Exchange
- EERE has not established separate criteria to evaluate Replies to Reviewer Comments. Instead, Replies to Reviewer Comments are attached to the original applications and evaluated as an extension of the Full Application.

Content and form requirements:

Section	Page Limit	Description
Text	9 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

In addition to the 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 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, or group of projects, represent a desired geographic distribution (considering past awards and current applications).

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 AMOWaterHub@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