Request for Proposals (RFP):

RFP #: NAWI-3-2022 - AMENDMENT 2

Key Dates for this Request for Proposals	
Request for Proposals Released	Wednesday, May 25, 2022
Concept Papers Due	Wednesday, June 29, 2022*
Encourage/Discourage Decision Notification	Week of August 29, 2022
Full Proposals Due	Tuesday October 4, 2022*
Expected Date for Selection Notification	Week of December 12, 2022
Anticipated Project Start Date	April/May 2023

*Due at 5:00 pm PT

- Interested applicants must submit a Concept Paper by the deadline to be eligible to submit a Full Proposal.
- To apply to this RFP, applicants must register with and submit application materials through the online application portal, NAWI Exchange.
- Applicants must designate primary technical and business points-of-contact in NAWI Exchange with whom NAWI will communicate to conduct negotiations. If the application is selected for award negotiations, it is not a commitment to issue an award. It is imperative that the applicant be responsive during award negotiations and meet negotiation deadlines. Failure to do so may result in the cancelation of further award negotiations and rescission of the selection.
- Classification Code: North American Industry Classification System (NAICS) Code: 541715, Research and Development in the Physical, Engineering, and Life Sciences (except Nanotechnology and Biotechnology), and the corresponding size standard is 1,000 or fewer employees.
- The University of California, Lawrence Berkeley National Laboratory ("University" or "LBNL" or "LBL"), managed and operated by The Regents of the University of California ("Contractor"), was selected by the Department of Energy (DOE) under the Funding Opportunity Announcement ("FOA") DE-FOA-0001905 for the Energy-Water Desalination Hub to lead in the establishment and operation of the National Alliance Water Innovation Hub ("NAWI" or "Hub").

Mod #	Date	Description
1	08-09-22	Page 1: 1. Updated Encouraged/Discouraged Notification Date 2. Updated Full Proposal Due Date 3. Updated Expected Date for Selection Notification 4. Updated Anticipated Project Start Date Page 23: Added Full Proposal Technical Narrative as a Required Document
2	09-08-22	Page 23: Added/edited links for the Table in Section 8.7.

Contents

1 Executive Summary

Solicitation Title	National Alliance for Water Innovation Request for Proposals (RFP): Funding #: NAWI-3-2022
Means of Submission	Electronic – NAWI Exchange
Total Amount to be Awarded under this RFP	Up to $5,000,000 federal funds total, with a minimum of 35% cost share (per project).
Anticipated Awards	Between 4 and 8 awards
Period of Performance	Up to 24 months (split into 12-month budget periods)
Limited Submission Eligibility	There are no individual or institutional submission limits.
Performance of Work in the United States	Unless a waiver is provided, the Lead Organization must show that 100% of the direct labor cost for the project (including Participating Organizations labor) will be incurred in the United States and its territories.
Cost Share Requirement	A minimum of 35% cost-share for each project is required.
Application Forms	Required forms are available on the right-hand side of the InfoReady page under, "Supporting Documents".
Questions:	Submit questions to NAWI-RFP@lbl.gov. Questions and answers will be posted on https://NAWI.infoready4.com/.

2 Background

The National Alliance for Water Innovation (NAWI or Hub) was established to support the U.S. Department of Energy's efforts to advance transformational desalination technologies and innovation to meet the nation's need for safe, secure, and affordable water. Lawrence Berkeley National Laboratory ("LBNL"), managed and operated by The Regents of the University of California, was selected to operate NAWI. Details of the NAWI research vision and mission can be found at www.nawihub.org.

RFP respondents are encouraged to view recorded presentations and other material pertaining to the program and research priorities.

- NAWI General Intro – released 02-21-20
- NAWI Research Program – released 06-17-20
- NAWI Alliance Orientation and Discussion – released 06-30-20
- NAWI Introduction to Process Innovation and Intensification (PI&I) – released 07-10-20
- Introduction to Materials and Manufacturing (M&M) – released 08-14-20
- NAWI Roadmaps Series – 05-04-21
- Pilot Program RFI Webinar and Workshop – hosted 02-15-2022
- NAWI Research Briefs of Existing Projects – released as new projects start; on-going

NAWI created this Pilot Program and Request for Proposals (RFP) anticipating that the testing, researching, and developing of *pilot-scale* systems would accelerate innovations in areas of 1)

small-scale desalination and water reuse technologies and 2) systems that have the potential to achieve pipe parity when treating a given non-traditional water source. Pipe parity is defined and discussed in more detail in Section 3.4, below. For the purposes of the Pilot Program, NAWI is defining small-scale desalination systems as systems that treat less than 1 million gallons per day (MGD). Although NAWI is not requiring a minimum pilot-scale system flow rate or system size, the maximum flow rate or system size must not exceed 50 gallons per minute (gpm). Furthermore, the proposed system size must be justified in the context of the proposed application and, results from pilot-scale systems should be translatable to small-scale desalination systems that would be implemented in the field.

The RFP for this Program is being conducted in two stages, the first of which is submission of a Concept Paper and the second will be submission of a Full Proposal. Only applicants submitting Concept Papers judged to sufficiently meet the goals of the project after the first stage will be invited to submit a Full Proposal. The RFP Concept Paper and Full Proposal review criteria are located in Sections 7.2 and 7.4, respectively.

3 Piloting Program Purpose and Objectives

The Pilot Program RFP is seeking proposals from teams to design, build, operate, and test pilot-scale desalination/water reuse treatment systems that treat a "non-traditional" water, which are impaired and presently uneconomical to treat, to standards necessary for an identified beneficial use. As per the NAWI program's Master Technology Roadmap, we define non-traditional waters to be brackish water; seawater; produced and extracted water; and power sector, industrial, municipal, and agricultural wastewaters.

The Technology Readiness Level (TRL) system is a method used to estimate the maturity level of a given technology. NAWI has historically funded early-stage research and development (R&D) projects to generate fundamental and mechanistic understandings of novel desalination systems and processes, (TRL 2 – 4; See Appendix A). The overarching goal of this Pilot Program is to adapt and field novel unit processes and operate them as part of complete treatment systems in relevant treatment environments (TRL 5 – 6). The goal is to both accelerate the development of commercial, small-scale treatment systems that can produce water at pipe-parity from various non-traditional water sources and to identify key technical performance requirements and limitations within novel unit processes and systems that could be addressed through additional research and development. These key technical performance requirements (such as incoming water quality requirements, flow stability, temperature) are often not revealed until a novel unit process is operated within a larger system. To this end, we envision the Pilot Program will:

1. Gather representative cost, energy, water quality, and performance data from pilot systems treating non-traditional water sources (operating as intended). These data will serve as the basis for baselining, understanding the economic feasibility of various systems, and identifying the challenges and opportunities associated with the technology.
2. Translate key technical challenges or requirements that limit unit-processes/systems from achieving pipe parity into research questions that 1) inform the traditional NAWI research portfolio and 2) serve as the basis for prioritizing future NAWI R&D;

3. Accelerate the development and adoption of water treatment systems and strategies that can address the needs of disadvantaged communities.

Examples include (but are not limited to):

- Treatment of cooling tower blowdown water for use in irrigation or industrial purposes,
- Treatment of brackish groundwater for irrigation or potable uses,
- Treatment of groundwater impaired by a natural or synthetic contaminants for potable use or irrigation,
- Treatment of saline agricultural runoff/wastewater for on-farm reuse,
- Treatment of produced water for beneficial reuse outside the oil and gas field,
- Treatment of municipal wastewater (with a desalination focus) for direct potable reuse (DPR).

NAWI is specifically seeking novel and innovative combinations of processes and systems that focus on significantly reducing the levelized cost of water (LCOW) production from small-scale treatment systems. Factors that will lower LCOW include (but are not limited to):

- Lowering capital cost (for example, through the use of novel/high efficiency materials, unit processes, or more efficient overall design);
- Lowering net operating cost (for example, reducing operator cost through the use of automation and advanced fault detection, reducing brine disposal costs through higher water recovery, ZLD/MLD brine post-processing or, conversion of waste streams to economically valuable products);
- Improving energy efficiency (for example, through novel high-efficiency unit processes);
- Utilizing low-cost/low-carbon energy sources (for example, systems powered entirely by renewable energy with/without energy storage);
- Improving overall treatment system resilience and flexibility (for example systems that can flexibly adapt to changes in incoming water volume and composition, systems using unit processes that are more rugged, reliable and fault-tolerant) and enabling treatment systems that can efficiently participate in demand response.

It is envisioned that projects supported by this program will be executed in three phases:

- Design Phase – Project teams will develop detailed system designs that include sensors and data acquisition systems sufficient to capture the details of unit process performance and systemwide performance. These designs may be reviewed by NAWI reviewers under Non-Disclosure Agreement (NDA) to allow for assessment of proprietary aspects of each system.
- Construction and Shakedown Phase – Project teams will build their systems and conduct sufficient preliminary (i.e., shakedown) testing to ensure reliable operation in the intended location or application. The results of shakedown testing may be reviewed by NAWI reviewers (under NDA) and may constitute a major milestone for the project.
- Performance/Data Acquisition Phase – Project teams will operate their systems in the location or application proposed, conducting a series of experiments and water production "runs" based on an experimental plan previously reviewed and approved by NAWI reviewers (under NDA). NAWI and the project teams may also agree in advance to embargo certain data sets, designs, and experimental details from public release for a predetermined period to preserve proprietary information. The goal of this phase of the

project is to evaluate the overall resilience, flexibility, reliability and efficiency of the system and to gather high-quality data sets for further analysis and modeling.

Because the project teams are not "competing" with one another during the program, NAWI will encourage cooperation, coordination and mutual assistance wherever possible, respecting the need that projects may have to protect proprietary aspects of their design, technology or know-how. Ideally, the project teams participating in this program will form a cohort of peers who will share "best practices" and "helpful tips" with each other during all phases of the program.

This RFP does not require teams to have a specific partnering structure but envisions successful projects may include collaborations among/between industry, academia, national laboratories, trade associations, and other stakeholders that can advance NAWI-relevant technologies, and/or incorporate these technologies into novel systems. NAWI strongly encourages teaming as an effective strategy for the successful advancement of small-scale, distributed desalination/water reuse systems.

3.1 Areas of Interest

NAWI presently supports a portfolio of research projects underway that focus on improving specific water treatment or desalination unit processes (e.g. electrocoagulation, solvent extraction, high-recovery RO) as well as novel automation and fault prediction/detection approaches to enable operation of small-scale desalination systems with minimum operator intervention. Proposed pilots that utilize one or more of these types of unit processes, or variants thereof, are of particular interest. Proposers are encouraged to review the one-page summaries of each of NAWI's research projects at http://www.nawihub.org/research/projects and are encouraged to reach out to the principal investigators of any project to obtain more information or advice.

NAWI's focus is on advancing the forefront of technology innovation in small-scale desalination systems with an emphasis on innovations that address the *A-PRIME + C* challenges identified in NAWI's Master Roadmap. These 7 Challenge Areas are:

- Autonomous Water: *Sensor networks and adaptive process control for efficient, resilient, and secure water treatment systems.*
- Precision Separations: *Targeted removal of trace solutes for regulatory compliance, enhanced water recovery, and resource valorization*.
- Resilient Treatment and Transport: *Enhanced reliability and longevity of water treatment equipment and distribution systems through development of adaptable processes that are not adversely affected by feedwater variability, and robust materials that are resistant to fouling and corrosion.*
- Intensified Brine Management: *Dramatic reductions in the cost and energy intensity of concentrate management by maximizing brine valorization, developing novel processes for brine concentration, and reducing the costs of small-scale brine management systems.*
- Modular and Manufacturable Systems: *Materials and manufacturing innovations that substantially reduce the cost of small-scale desalination and fit-for-purpose reuse applications.*
- Electrified Treatment Processes: *Electrifying water treatment processes and facilitating their integration with a clean energy grid.*
- Circular Water Economy: *Quantifying the benefits of A-PRIME for distributed and*

centralized desalination and water reuse systems.

Diversity, Equality, and Inclusion (DEI) are principles of the NAWI program and often important factors in the successful adoption of new water treatment technologies and systems in disadvantaged, underserved, and underrepresented communities. Previous efforts that sought to develop and field novel water treatment systems in rural, disadvantaged communities have had limited impact because there has been a lack of community representation and poor engagement with the communities where these pilots have taken place. We encourage specific consideration of the DEI principles in the formulation and execution of projects supported by this RFP. Successful DEI components and strategies may include (but are not limited to):

- Including a local community development organization or organizer on the pilot team from the outset;
- Engaging with local community colleges or workforce development centers to have students and interns engaged in the development and operation of the pilot system;
- Aligning project activities and efforts with water operator workforce development efforts at the local or state level;
- Surveying residents of the host community regarding their beliefs about water, water access, and environmental safety; and
- An organized public engagement process that aligns with community resources and values.

RFP applicants are encouraged to consider the spectrum of ways by which place-based scientific research in water treatment and reuse can benefit from effective community and stakeholder engagement (Figure 1) especially as impaired or unreliable water resources are a common issue for disadvantaged communities.

Applicants are also encouraged to review DOE's perspective and resources for place-based initiatives.[1]

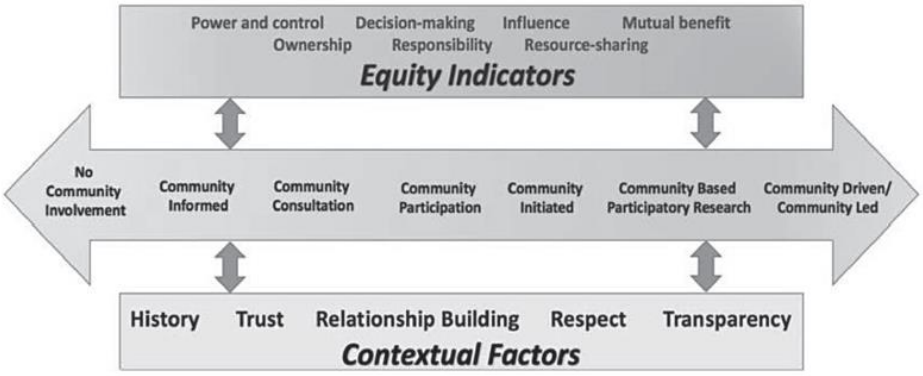

Figure 1. *From Key, et al., 2019*[2] – Continuum of Community Engagement in Research

[1] https://www.energy.gov/lm/place-based-initiatives

[2] Key, K., et al., 2019 The Continuum of Community Engagement in Research: A Roadmap for Understanding and Assessing Progress. Progress in Community Health Partnerships: Research, Education, and Action, Volume 13, Issue 4, Winter 2019, pp. 427-434 DOI: https://doi.org/10.1353/cpr.2019.0064

On February 3rd, 2022, NAWI released an RFI to gain a better understanding of the breadth and depth of pilot-ready (or near-pilot-ready) desalination technologies that were currently, or planning to, test non-traditional source waters. In conjunction with the RFI release, NAWI hosted a webinar/workshop, which took place on February 15th, 2022, to answer prospective questions and allow NAWI Alliance member organizations interested in supporting pilot and demo projects to introduce themselves. Many of the attendees provided contact information and additional details about existing projects, capabilities, and facilities that may be of interest to those seeking partners or other resources. This information was compiled into a PDF document and made available on the www.nawihub.org website, along with the RFI presentation PowerPoint, and RFI FAQ.

Having attended or participated in the workshop is not a prerequisite for submitting a response to this RFP. It was only intended to serve as an optional resource for the community.

3.2 Discouraged Responses

Pilot projects best aligned with NAWI's overall research objectives established in the NAWI Roadmaps and that demonstrate significant novelty will be viewed more favorably in this funding opportunity. In contrast, the following responses will be viewed less favorably and are discouraged from responding to this RFP:

1. Responses that propose a pilot of a fully commercialized systems (TRL ≥ 7 as defined in Appendix A of this RFP) in which none of the unit processes, subsystems, or system represent significant innovation or novelty above current commercial state of the art;
2. Proposed pilots that have little to no R&D aspects and/or that intend to only demonstrate a process or system;
3. Solar-thermal-based desalination systems. While these systems have promise in some applications and areas (and have been eligible for funding under DOE's American Made Challenges™ Solar Desalination Prize), NAWI's focus on electrified treatment processes makes such systems and approaches less attractive for this present funding opportunity
4. Projects that focus on water/wastewater resource recovery of natural gas/methane, nitrogen, and/or phosphorus.

3.3 Technical Justification for the RFP

The strategic goal of NAWI is to conduct early-stage applied research leading to a portfolio of technologies that enable pipe parity for 90% of nontraditional water sources. A non-traditional water supply achieves pipe parity when the key metrics (i.e., cost/energy intensity/failure rate/etc.) of supplying water from the non-traditional source is equivalent to that of the next available (marginal) traditional source. Technologies that facilitate fit-for-purpose treatment and local reuse of non-traditional waters will be essential to meeting these pipe parity goals.

Piloting of novel water treatment technologies and systems using real (as opposed to simulated) source waters, and in realistic operating environments, is widely recognized as a critical step in the development and adoption of new treatment technologies. Novel water treatment technologies demonstrated at lab scale often fail to reach successful adoption because of unforeseen technical issues that only reveal themselves at the piloting stage. Technical requirements for a new treatment process that could be easily addressed in early-stage applied research at the bench are often only revealed belatedly during the piloting stage. Finally, the requirements for pre-treatment of source

water, and post-treatment of waste streams are unknowable until a novel treatment process or set of processes are put in a specific operational context.

A second justification for NAWI's Pilot/Demo program is the need to generate high-quality baseline treatment performance data from small-scale desalination/water reuse systems. NAWI's roadmapping program established high-level cost and energy baselines for large-scale desalination plants but did not provide baselines and a performance frontier for small-scale systems (which is NAWI's focus). One of the goals of the NAWI's Pilot Program will be to develop sets of high-quality performance baselines from current best-in-class small-scale desalination/water reuse treatment trains as a benchmark for the pilots NAWI sponsors.

3.4 NAWI Hub Pipe Parity Metrics

Pipe parity is defined as technology solutions for treating and reusing non-traditional water sources that are competitive with the marginal cost of conventional water sources for specific end-use applications. An example of a hypothetical technological solution that moves a system closer to pipe parity would be a sensor and controls algorithm that significantly increases the time between cleanings-in-place (CIP) for a membrane treatment system (saving operational costs and extending the life of the membranes) but whose "all-in" cost is significantly less than the money it saves. An example of a technological solution that does not move closer to pipe parity would be the development of an ion exchange resin with double the capacity, but that costs twice as much to purchase and implement at scale as the current state-of-the-art.

Specific pipe parity metrics of interest include:

- *Cost*: Cost metrics can include levelized costs of water treatment as well as individual cost components, such as capital or operating and maintenance (O&M) costs.
- *Energy Performance*: Energy performance metrics can include the total energy requirements of the water treatment process, the type of energy required (e.g., thermal vs. electricity), embedded energy in chemicals and materials, and the degree to which alternative energy resources are utilized.
- *Water Treatment Performance*: Water treatment performance metrics can include the percent removal of various contaminants of concern and the percent recovery of water from the treatment train.
- *Human Health and Environment Externalities*: Externality metrics can include air emissions, greenhouse gas emissions, waste streams, societal and health impacts, land-use impacts.
- *Reliability and Availability*: System reliability and availability metrics can include factors related to the likelihood of a water treatment system not being able to treat water to a specified standard at a given moment, how quickly the system can restart operations after being shut down for a given reason, confidence in source water availability, the degree to which the process is vulnerable to supply chain disruptions, and the ability to withstand environmental, climate, or hydrological disruptions.
- *Process Adaptability*: Adaptability metrics can include the ability to incorporate variable input water quality; the ability to incorporate variable input water quantity flows; the ability to produce variable output water quality; and to operate flexibly in response to variable energy inputs.

- *Compatibility*: Compatibility metrics can include ease of operation and level of oversight needed, how well the technology integrates with existing infrastructure, how consistent the technology is with existing regulations and water rights regimes, and the level of social acceptance.
- *Sustainability*: Sustainability metrics can include the degree to which freshwater inputs are required for industrial applications, the percentage of water utilized that is reused or recycled within a facility, and watershed-scale impacts.

NAWI's research investment strategy is focused on lowering the levelized cost of water produced from small-scale, distributed desalination and water treatment and reuse systems. Our analysis suggests that, if small-scale systems could produce water at a levelized cost comparable to, or lower than, larger treatment systems, we could accelerate the adoption of distributed water reuse, enabling a greater fraction of non-traditional water sources to be locally treated and reused over and over. Local treatment and reuse of water reduces the (significant) pumping cost and energy associated with moving water and wastewater to and from large-scale centralized treatment facilities and eliminates the cost and embedded carbon associated with building new transmission and collection systems. But, to achieve this goal, new treatment technologies and systems must be developed and optimized for smaller-scale systems. NAWI has identified seven major "*A-PRIME+C*" challenge areas to focus its research program, which can be found in the Master Roadmap.

4 NAWI Exchange Proxies

There can only be one main applicant, but that applicant can use the Proxy functionality to add co-applicants (or Proxies) if it is desirable for those individuals to be able to view the application. This article contains information regarding Proxy help.

If a Proxy submits an application for the main applicant, the main applicant will receive an email confirmation of the submission.

Proxies can be added from the main applicant's profile.

Once added to the user profile, the Proxies can then access the draft by logging in, going to the opportunity, and selecting the main applicant from their "Apply as Proxy" menu. They can then view and make changes (if needed). They can then save as a draft or submit.

If a previously started a draft application was started by the main applicant, or if a draft application was previously saved on their behalf, follow the steps below to return to the draft.

If the Proxy started the application, the steps are the same. The only difference is that the application title will appear next to the main applicant's name in the dropdown (see #3 below).

Steps to Access a Draft Application as a Proxy

1. Go to the competition/opportunity, which is accessible from the homepage of the site or via a direct link.
2. Click the Apply as Proxy button from the local menu on the right side of the screen.
3. From the dropdown in the Proxy section, select the name of the applicant that the application is being submitted on behalf of.
4. If only one application is allowed for the competition, the draft application will then

appear in the fields, and edits can be made.
5. If more than one application is allowed for the competition, select the appropriate draft application title or New Application to begin a brand-new application (shown below).
6. Fill out the application form.
7. Save or submit the application as needed.
8. A confirmation of the submission will appear on the screen.

For Proxies not inputting initial data for the main applicant, go to ***Select Application:** and select from the dropdown options, the application one wants to view.

Questions related to the use of NAWI Exchange website should be submitted to NAWI-RFP@lbl.gov.

Applicants are encouraged to review the posted questions and answers daily. Please be as specific as possible when asking questions to ensure that questions will be adequately addressed. Failure to be specific may result in additional time to address the question or require further correspondence for further clarification regarding the submitted question(s).

All questions and answers related to this solicitation will be posted in a running Frequently Asked Questions (FAQ) document at https://nawi.infoready4.com/. The NAWI will respond to questions within three business days, unless a similar question and answer have already been posted on the InfoReady site**.**

5 Cost Sharing

The cost share must be at least 35% of the total project costs. Cost share must be calculated based on the total allowable costs for the applicable entity and must come from non-Federal sources unless otherwise allowed by law. (See 2 CFR Part 200 for the applicable cost sharing requirements.)

All proposals must meet the required 35% cost share. Proposals that exceed the required cost share will review more favorably.

The Lead Organization is solely responsible for managing cost share contributions by the project team and enforcing cost share obligation assumed by Participating Organizations.

The project as a whole is responsible for meeting the cost-share requirement. Any partner that provides cost share to the project would count towards the overall project cost share.

5.1 How Cost Sharing is Calculated

As stated above, cost sharing is calculated as a percentage of the Total Project Cost. Following is an example of how to calculate cost sharing amounts for a project with $500,000 in federal funds with a minimum 35% non-federal cost sharing requirement:

Formula: Federal share ($) divided by Federal share (%) = Total Project Cost

Example: $500,000 divided by 65% = $769,231

Formula: Total Project Cost ($) minus Federal share ($) = Non-federal share ($)

Example: $769,231 minus $500,000 = $269,231

Formula: Non-federal share ($) divided by Total Project Cost ($) = Non-federal share (%)

Example: $269,231 divided by $769,231= 35%

5.2 Cost Share Allocation

Each Project Team is free to determine how much each partner organization will contribute towards the cost share requirement. The amount contributed by an individual Organization may vary, as long as the cost share requirement for the project as a whole is met. We are defining the following terms for clarification:

- Participants: The Principal Investigator (PI), co-PI's/researchers/team members, industry partners, advisors, cost-share partners, and site-partners.
- Project Team: The collection of individual participants that form the team.
- Organizations: The entity (business, university, non-profit, etc.) that a given participant is employed under or associates with.

5.3 Cost Share Types and Allowability

Every cost share contribution must be allowable under the applicable Federal cost principles.

Project teams may provide cost share in the form of cash or in-kind contributions. Any partial donation of goods or services is considered a discount and is not allowable.

Cash contributions include, but are not limited to personnel costs, fringe costs, supplies and equipment costs, indirect costs, and other direct costs.

In-kind contributions are those where a value of the contribution can be readily determined, verified and justified but where no actual cash is transacted in securing the goods or services comprising the contribution. Allowable in-kind contributions include but are not limited to the donation of volunteer time, the donation of space, or use of equipment.

Project teams may use funding or property received from state or local governments to meet the cost share requirement, so long as the funding was not provided to the state or local government by the federal government.

The 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 (e.g., federal grants, equipment owned by the federal government); or
- Expenditures that were reimbursed under a separate federal program.

Project teams may not use the same cash or in-kind contributions to meet cost share requirements for more than one project or program.

Cost share contributions must be specified in the project budget, verifiable from the organization's records, and necessary and reasonable for proper and efficient accomplishment of the project. As all sources of cost share are considered part of the total project cost, the cost share dollars will be scrutinized under the same federal regulations as federal dollars to the project. Every cost share contribution must be reviewed and approved in advance and incorporated into the project budget before the expenditures are incurred.

Because Federally Funded Research and Development Centers (FFRDCs) are funded by the Federal Government, costs incurred by FFRDCs generally may not be used to meet the cost share requirement. FFRDCs may contribute cost share only if the contributions are paid directly from the contractor's Management Fee or another non-Federal source. The cost share must be at least 35% of the total project costs including FFRDC costs.

The cost share partner does not have to be firmly established at the time of the concept paper but must be firmly in place at the time of the full proposal. Proposers are strongly encouraged to be in discussions with potential cost share partners prior to concept paper submittal. Note, the criteria for rating concept papers are shown in the InfoReady/NAWI Exchange.

The Period of Performance for a proposed project is up to 24 months (split into 12-month budget periods). Cost share should be spent/incurred during the period of performance of the proposed research.

5.4 Cost Share Verification Commitment Letters

Cost share must be verified with a cost share commitment letter from the partner/entity providing the cost share upon submission of the Full Proposal. Upon selection for award negotiations, applicants may be required to provide additional information and documentation regarding their cost share contributions.

6 Application and Submission Information

6.1 Application Process

The application process will include two stages: A Concept Paper phase and a Full Proposal phase.

Only applicants who have submitted an eligible Concept Paper and are encouraged to submit a Full Proposal will be eligible to submit a Full Proposal. Discouraged Concept Papers are not eligible to submit a full proposal.

All submissions must conform to the form and content requirements, including maximum page lengths, and must be submitted via NAWI Exchange. Acceptance of late submissions will be at NAWI's discretion. NAWI reserves the right to reject any submission, to waive any minor irregularities, or to cancel this RFP at any time prior to award without cost to NAWI. NAWI will not reimburse any firm for preparation costs or other costs related to the participation in this RFP.

6.2 Pre-Selection Clarification

NAWI may determine that pre-selection clarifications are necessary from one or more applicants. These pre-selection clarifications will solely be for the purposes of clarifying the application and will be limited to information already provided in the application documentation. Information provided by an applicant that is not necessary to address the pre-selection clarification question will not be reviewed or considered. A pre-selection clarification will be carried out through written responses.

The information provided by an applicant to NAWI through pre-selection clarifications is incorporated in its application and contributes to the merit review evaluation and NAWI's selection decisions. If NAWI contacts an applicant for pre-selection clarification purposes, it does not signify that the applicant has been selected for negotiation of award or that the applicant is among the top ranked applications. Applicants will have at least five (5) business days to respond.

NAWI will not reimburse applicants for expenses relating to the pre-selection clarifications, nor will these costs be eligible for reimbursement as pre-award costs.

If NAWI determines that revised proposals are necessary, NAWI may solicit them from only those applicants deemed (based upon evaluation of the current submission) to have a reasonable chance to be selected for award. NAWI reserves the right to make no awards, a single award, multiple awards, award a part or portion of a proposal, or reject any and all proposals in whole or in part as a result of this solicitation, if it is in the best interest of NAWI.

6.3 Restriction on Disclosure and Use of Proposal Data

LBNL will safeguard any commercial or financial data or information contained in proposals from disclosure, when marked in accordance with paragraph (e) of Federal Acquisition Regulation clause 52.215-1, from dissemination outside LBNL or the Government. Such data or information includes (i) trade secrets or (ii) commercial or financial information which is privileged or considered business confidential, either of which is developed at private expense.

LBNL will endeavor to properly maintain such data and information to the same degree as its own data and information and not disclose such data or information to individuals other than those involved in the evaluation of the submission or involved with the award negotiations. These individuals will be bound by an obligation of confidentiality to use such data or information solely for the purpose of evaluation of the proposal or negotiating the award. Submission material received will be retained and disposed of in accordance with requirements in LBNL's prime contract with DOE.

6.4 Use of Product or Process with Patent Position

If an applicant intends to use a product or process in which there is a patent position, the proposal should so indicate and list patent applications and/or patents granted (including dates, numbers, and descriptions), and whether the Government has rights related to the patents.

6.5 Submission Format Requirements

The Concept Paper and Full Application must conform to the following requirements:

1. Each must be submitted in PDF format unless stated otherwise.
2. Each must be written in English.
3. The Concept Paper page limit is 8 pages.
4. All pages must be formatted to fit on 8.5 x 11-inch paper with margins not less than one inch on every side.
5. Use Times New Roman typeface, a black font color, and a font size of 12 point or larger (except in figures or tables, which may be 10-point font). A symbol font may be used to insert Greek letters or special characters, but the font size requirement still applies. Line spacing should not be less than single-spaced.
6. References must be included as footnotes or endnotes in a font size of 10 or larger. References are NOT counted toward the maximum page requirement.
7. For Concept Paper and Full Proposal documents, the lead technical point-of contact's last and first name AND the lead organization's name should appear in the upper right corner of the header of every page ("Last Name, First Name; Org"; Example: Smith, Jane; University of State).
8. Page numbers must be included in the footer of every page.
9. Each submission must not exceed the specified maximum page limit, including charts, graphs, maps, and photographs, when printed using the formatting requirements set forth above and single-spaced. If applicants exceed the maximum page lengths, NAWI will review only the authorized number of pages and disregard any additional pages.
10. Applicants are responsible for meeting each submission deadline. Applicants are strongly encouraged to submit their Concept Papers and Full Proposal at least 24 hours in advance of the submission deadline.

All Concept Papers and Full Proposals that pass the eligibility review will undergo comprehensive technical merit review according to the criteria identified in the solicitation.

Note the maximum file size that can be uploaded is 10MB. Files in excess of 10MB cannot be uploaded, and hence cannot be submitted for review. If a file exceeds 10MB but is still within the maximum page limit specified in the solicitation, it must be broken into parts and denoted to that effect.

For example:

ApplicationID_LeadOrganization_XXX_Part_1

ApplicationID_LeadOrganization_XXX_Part_2

6.6 Concept Paper, Full Proposal, and Financial Templates

The application forms, templates, and instructions are available at https://nawi.inforeadv4.com. Two Appendices to this RFP are also included in NAWI Exchange, Section 11 (Appendix B) contains the Technical Narrative outline for a Concept Paper while Section 12 (Appendix C) contains the information regarding the Full Proposal.

7 Application Review Information

The evaluation process consists of multiple phases; each includes an initial eligibility review and a thorough technical review. Rigorous technical reviews of eligible submissions are conducted by reviewers that are subject matter experts. Ultimately, the Source Selection Committee considers the recommendations of the reviewers based on their evaluation of the proposal submitted against the evaluation criteria in Sections 7.2 and 7.4, along with other considerations such as Other Selection Factors (Section 7.4.2), in determining which applications to select. The following adjectival ratings will be used to rate the evaluation factors:

Superior	10	• Comprehensively addresses all aspects of criterion • Contains significant strengths • Has no notable weaknesses • Leaves no doubt of applicant's capability to perform the criterion
	9	• Comprehensively addresses all aspects of criterion • Has significant strengths • Contains only a few easily corrected weaknesses • Strengths far outweigh the weaknesses • Leaves no doubt of applicant's capability to perform the criterion
Good	8	• Addresses all aspects of the criterion • Contains only a few easily correctable weaknesses • Strengths outweigh the weaknesses • Demonstrates applicant's capability to perform the criterion
	7	• Addresses all aspects of the criterion • Contains several correctable weaknesses • Strengths outweigh the weaknesses • Demonstrates applicant's capability to perform the criterion
Satisfactory	6	• Most aspects of the criterion addressed • Strengths slightly outweigh the weaknesses • Applicant will likely be able to perform the criterion
	5	
Marginal	4	• Some aspects of the criterion not addressed • Has one or more strengths and weaknesses • Weaknesses outweigh the strengths • Some doubt as to the ability to perform the criterion
	3	
Unsatisfactory	2	• Most aspects of the criterion not addressed • Contains significant weaknesses that would require a major revision • Applicant's ability to perform the criterion not demonstrated
	1	

7.1 Concept Papers

Concept papers will be evaluated against the technical criteria described in this RFP. This technical evaluation process will produce a list of encouraged Concept Papers. NAWI will consider the overall evaluation results and other selection factors as listed in Section 7.4.2 to select a final set of encouraged Concept Papers to provide a Full Proposal. Note that discouraged Concept Papers will not receive feedback as to why their projects were not selected to move forward. All criteria and sub-criteria are of equal weight.

7.2 Concept Paper Review Criteria

1. Relevance and Impact:
1.1 Alignment: The proposed project aligns with the Pilot Program Areas of Interest as defined in Section 3 of the RFP. The envisioned the Pilot system includes one or more unit-processes currently or previously funded by NAWI.
1.2 Value Proposition/Business Case: The concept proposed clearly describes the value for treating water in the envisioned manner, including the real-world problem(s) being solved, and the end-use for the treated water and waste streams.
1.3 State of the Art: The current state-of-the-art (SOTA) for a given treatment system is clearly described, as well as how the envisioned work improves upon state-of-the-art deficiencies.
1.4 Pipe Parity: The Applicant clearly and explicitly describes how the envisioned work improves on one or more pipe parity metrics without significantly compromising other pipe parity metrics.
1.5 DEI: The concept clearly describes how the project would incorporate the principles of Diversity, Equality, and Inclusion (DEI) and manifests demonstrable DEI elements.

2. Innovation and Technical Merit
2.1 Innovation: The proposed work explores original concepts or system designs or addresses critical technical challenges in an original manner.
2.2 Approach: The concept and approach are explained clearly and are technically sound. The size of the system is clearly rationalized in the context of the desired end-use/application.
2.3a Technical Merit: A process flow diagram is provided along with a flow balance and all components are clearly labeled.
2.3b Technical Merit: Water chemistry of the envisioned non-traditional source water is provided, including concentrations of all relevant constituents.

3. Resources:
3.1 Qualifications: The team is qualified to conduct the proposed R&D and to field the pilot in the environment described.
3.2 Funding: The requested resources are adequate for successfully completing the proposed activities and the cost share is well-aligned and sufficient.
3.3 Commercial Partnership: There is a plausible pathway for commercial partnership and 35% cost share acquisition.
3.4 Teaming: The proposal leverages unique strengths of each team member and includes collaborative research (e.g., collaboration between multiple organizations where there is a combination of unique expertise that produces an improved research result).

7.2.1 Compliance Review of Concept Papers

NAWI will perform a compliance review to determine that (1) the information required by this RFP has been submitted; and (2) all mandatory requirements are satisfied. Only Concept Papers meeting these review criteria will be considered during the Concept Paper scientific/technical review process.

7.2.2 Scientific/Technical Review Criteria of Concept Papers

NAWI will perform a scientific/technical review of Concept Papers based on the review criteria. All applications will be reviewed and evaluated in an encourage/discourage manner on an individual basis.

7.3 Full Proposal

Multiple peer reviewers will independently evaluate the applications in accordance with the technical review evaluation criteria described in this solicitation. Also, NAWI will complete a program relevancy/priority review process in accordance with the criteria described above. The Source Selection Committee will consider the overall evaluation results and other selection factors as listed in Section 7.4.2 to ultimately select proposals for award negotiations.

All Full Proposals submitted will be reviewed by NAWI for 1) compliance and 2) for direct relevancy/priority to NAWI's mission and work scope. Additionally, each application will be evaluated and reviewed for technical merit as described in this solicitation by a panel of reviewers. Review of full applications shall be based on how well the applications meet or exceed the technical evaluation criteria provided below. All criteria and sub-criteria are of equal weight.

7.4 Full Proposal Review Criteria

1. Relevance and Impact:
1.1 The proposed project aligns with the Pilot Program Areas of Interest as defined in Section 3 of this RFP. The Pilot system will include one or more unit-processes currently or previously funded by NAWI.
1.2 The current state-of-the-art for the given treatment challenge is clearly described, as well as how the proposed work improves upon state-of-the-art deficiencies and, in particular, would improve upon the economics of small-scale, distributed desalination/water treatment systems.
1.3 The Applicant clearly and explicitly describes how the proposed pilot demonstrates performance improvement relative to one or more pipe parity metrics without significantly compromising other pipe parity metrics.
1.4 The Applicant clearly describes how the proposed pilot will be instrumented to provide operational data that is sufficient to determine normalized operational cost, energy, and performance of the system and individual unit-processes.
1.5 The proposal clearly describes how this project incorporates DEI principles and is directly partnering/coordinating with relevant community members.

2. Innovation and Technical Merit:
2.1 The proposed work explores original concepts or approaches critical technical challenges in an original and transformative manner.
2.2 The technical approach and treatment system are clearly defined and described, is credible, and is it likely to achieve the goals of the research. A method for streaming performance data in real-time is described for system monitoring/control of the pilot, and a method for data logging performance data into the Water Data and Analysis Management System (Water-DAMS) is also provided.
2.3.1 A process flow diagram is presented in sufficient detail with a corresponding mass balance estimate for relevant constituents.
2.3.2 A table of the anticipated influent water chemistry is provided with concentrations of all contaminants/constituents of interest.
2.4 Project Deliverables, Timeline, and Milestones are clearly described and described in sufficient detail.
2.5 The Applicant clearly describes how the proposed pilot system (TRL 5-6) will be used to further develop NAWI relevant technologies that are incorporated into the pilot system.
2.6 Technical risk elements are clearly defined, and mitigation strategies are provided.
2.7 Suggestions and questions provided in the Concept Paper stage were addressed in the Full Proposal Stage.
2.8 The technologies and/or system proposed has synergies with existing technologies in the NAWI research portfolio.

3. Resources:
3.1 The team is qualified to conduct the proposed R&D and has experience designing, building and operating small-scale water treatment systems in real-world environments.
3.2 The requested resources are adequate for successfully completing the proposed activities.
3.3 The project meets the required 35% NAWI cost share requirements. Projects with higher cost-share will be reviewed more favorably.
3.4 The proposal leverages unique strengths of each team member and include collaborative research (e.g., collaboration between multiple organizations where there is a combination of unique expertise that produces an improved research result).
3.5 The anticipated contracting process is low risk based on (but not limited to) the number of project team members and partners, whether or not the project team members are NAWI Consortium members, and whether or not work will be performed within or outside the USA.
3.6 A test site has been identified and a Letter of Support has been provided that acknowledges the test site's ability to house and support the operation of the pilot system, and that acknowledges that the Pilot's operation will be in compliance with all relevant environmental, health, and safety requirements.

7.4.1 Compliance Review of Full Applications

Prior to a comprehensive merit evaluation, NAWI will perform a compliance review to determine that (1) the named applicant and PI have not changed from the concept paper or, if they have, NAWI has been notified and provided approval; (2) the information required by the RFP has been

submitted; and (3) all mandatory requirements are satisfied. Only applications meeting these review criteria will be considered during the merit review and award selection decision.

7.4.2 Other Selection Factors

The Source Selection Committee may consider the following program policy factors during the Concept Paper and Full Proposal selection processes:

4. Other Selection Factors:
4.1 Degree to which proposed project optimizes/balances/maximizes use of available NAWI funding to achieve multiple NAWI program goals and objectives.
4.2 Research portfolio diversity, geographic distribution and/or how the projects support other complementary efforts that, when taken together, will best achieve program research goals and objectives.
4.3 Application selection may optimize appropriate mix of projects to best achieve NAWI and/or water research goals objectives.
4.4 Cost/Budget considerations, including availability of funding. While being an important factor, Cost/Budget is not in and of itself the determining factor in the selection. Cost/Budget is not weighted; rather, each budget will be evaluated for realism, reasonableness, and completeness.

Any of the above factors may be independently considered by the Source Selection Committee in determining the optimum mix of applications that will be selected for support. These factors, while not indicators of the application's merit, may be essential to the process of selecting the application(s) that, individually or collectively, will best achieve the program objectives. Such factors are often beyond the control of the applicant. **Applicants should recognize that some very good applications might not receive an award because of program priorities and available funding.** Therefore, the above factors may be used by the Source Selection Committee to assist in determining which applications shall receive funding support.

8 Award Administration Information

8.1 Concept Paper Notifications

NAWI will notify applicants of its determination to encourage or discourage the submission of a Full Proposal via a notification letter by email or through the NAWI Exchange to the technical and business points of contact designated by the applicant in NAWI Exchange.

A notification encouraging the submission of a Full Proposal does not authorize the applicant to commence performance of the project.

Full Proposals will not be accepted from entities that were notified that their Concept Paper was discouraged.

For Concept Papers that are encouraged, participants can be changed, added, or modified for the Full Proposal stage.

8.2 Full Proposal Notifications

NAWI will notify applicants of its determination via a notification letter by email or through the NAWI Exchange to the technical and administrative points of contact designated by the applicant in NAWI Exchange. The notification letter will inform the applicant whether or not its Full Proposal was selected for award negotiations. Alternatively, NAWI may notify one or more applicants that a final selection determination on particular Full Proposals will be made at a later date, subject to the availability of funds or other factors.

8.3 Successful Applicants

Receipt of a notification letter selecting a Full Proposal for award negotiations does not authorize the applicant to commence performance of the project. If an application is selected for award negotiations, it is not a commitment by LBNL to issue an award. Applicants do not receive an award until award negotiations are complete and the LBNL executes the funding agreement.

We anticipate that the award negotiation process will take approximately 90 days. Applicants must designate a primary and a backup point-of-contact with whom LBNL will communicate to conduct award negotiations. The applicant must be responsive during award negotiations (i.e., provide requested documentation) and meet the negotiation deadlines. If the applicant fails to do so or if award negotiations are otherwise unsuccessful, LBNL will cancel the award negotiations and rescind the selection. LBNL reserves the right to terminate award negotiations at any time for any reason.

8.4 Alternate Applicants

NAWI may designate certain Full Proposals as alternates. Applicants that fall into this category will be notified by email that a final selection determination on particular Full Proposal will be made at a later date, subject to the availability of funds or other factors.

8.5 Unsuccessful Applicants

NAWI shall promptly notify by email each applicant whose application has not been selected for award or designated as an alternate.

8.6 Type of Award Instrument

For selected projects receiving federal funds, the anticipated award type will be a cost reimbursement, no fee, subcontract with cost-share provisions using the DOE-approved NAWI Standard Research Subcontract and Intra-University Transaction Agreement templates. Cost reimbursement subcontracts establish an estimate of total cost for the purpose of obligating funds and establishing a ceiling that the subcontractor may not exceed (except at its own risk) without the approval of the LBNL Procurement Representative. This subcontract type is best suited for the effort as the cost to complete the requirement cannot be estimated with sufficient certainty for the subcontractor to accept the risk associated with a fixed price subcontract. Cost-share provisions are incorporated as flow down requirements of the funding source.

Recipients of funding for projects as a result of this solicitation could include for-profit and non-profit educational research institutions and FFRDC contractors. DOE will fund DOE/National Nuclear Security Administration (NNSA) FFRDC contractors directly through an EERE AOP (Annual Operating Plan) via a work authorization and non-DOE/NNSA FFRDCs through an interagency agreement with the sponsoring agency.

LBNL will negotiate a subcontract or CRADA (Cooperative Research and Development Agreement) with each organization that is part of a project team. Subcontracts will be issued to organizations that are receiving federal funds from LBNL. CRADAs will be issued to organizations that are performing work scope and only providing cost share (not receiving federal funds from LBNL). The subcontract/CRADA will include mandatory flow-down terms. The R&D project Applicant's Lead Organization will not issue agreements to the Participating Organizations. All organizations will execute a subcontract or CRADA directly with LBNL. Organizations receiving federal funds will execute a subcontract. Cost share only partners (not receiving federal funds) will execute a CRADA.

This negotiation is governed by procurement policies and procedures established under the LBNL's Prime Contract No. DE-AC02-05CH11231 with the U.S. Government, represented by the Department of Energy (DOE), for management and operation of LBNL.

Each organization must execute the Research Consortium Agreement by the time of award. A link to the Research Consortium Agreement can be found below.

Each member must also become an Alliance Member and execute the Alliance Membership Agreement. Alliance Membership is free. A link to the Alliance Membership process and forms can be found below.

8.7 Summary of Required Documents

Document requirements at the **Concept Paper** phase. Applicants shall complete and submit the following enclosures in their Application in InfoReady. Documents are available for download in InfoReady. See Appendix B.
1. Two-Slide Overview 2. Summary Budget 3. Concept Paper Technical Narrative (8-page limit) 4. Project Overview (enter in the text box in NAWI Exchange; 250-word limit)
Document Requirements at the **Full Proposal** phase. Applicants shall complete and submit the following enclosures. See Appendix C.
1. Two-Slide Overview (see template) 2. Detailed Budget (see template) 3. Full Proposal Technical Narrative (see template) 4. Cost Share Commitment Letters (see examples) 5. Biographical Sketches (2 pages max per key participant (Principal Investigators (PIs)/co-PIs, team members, industry partners); compiled into one document) 6. Project Overview (enter in the text box in NAWI Exchange; 250-word limit)

Document requirements **AFTER a Full Proposal is selected for negotiations.** NAWI and LBNL will work with organizations selected for negotiation to determine exactly which documents are required.			
Overall Team	Subcontract Organizations (Orgs. that will receive NAWI/Federal Funds) **Please see the Subcontract Business Management Volume for complete details.**	Cost Share Only Organizations (Orgs. that are only providing cost share. Orgs. will NOT receive NAWI/Federal Funds)	FFRDCs
1. Milestone Table and Statement of Project Objectives (SOPO)	1. Representations & Certifications Form (Rep-Cert Form) 2. Pre-award Survey of Prospective Subcontractor's Accounting System or last two (2) year of Single Audit Reports 3. Cost Proposal 4. Employee-Vendor Relationships Certification 5. Small Business Subcontracting Plan (Required only from the successful non-small business offeror) 6. Cost Accounting Standards (CAS) Notices and Certification of Exemptions 7. Certificate of Current Cost or Pricing Data (COPD) 8. Alliance Membership Agreement 9. Consortium Agreement 10. Subcontract and its Incorporated Documents 11. Approved Intra-University Transfer Agreement which includes NAWI program requirements (Only for University of California) 12. Insurance Certificate, as needed	1. Sample CRADA and its Incorporated Documents, if needed 2. Alliance Membership Agreement 3. Consortium Agreement	1. Alliance Membership Agreement 2. Consortium Agreement 3. EERE AOP (Annual Operating Plan) or Interagency Agreement

9 Other Information

9.1 Foreign Entity Participation (Federally funded and/or providing cost share)

It is the goal of the NAWI program to foster U.S. domestic innovation and economic growth in the water technology industry, and NAWI research funding is intended to be directed toward U.S. institutions. DOE invests in research and development as part of a broad portfolio approach to addressing our Nation's energy and environmental challenges. Specific to the Energy-Water Desalination Hub, DOE seeks to address water security issues in the U.S.

Please see Appendix I in the Consortium Agreement for more details. All participants in the Hub 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. Entities who do not meet these requirements are considered foreign entities.

A foreign entity may become eligible to participate in a project if the entity obtains a foreign entity participation waiver approved by DOE. To obtain a waiver, the foreign entity must demonstrate to the satisfaction of NAWI and DOE that: 1) its participation is in the best interest of NAWI, U.S. industry, and U.S. economic development; 2) adequate intellectual property and data protection protocols exist between the U.S. subsidiary and its foreign parent organization; 3) the work is conducted within the U.S. and the entity acknowledges the U.S. Manufacturing Plan; and 4) the entity will comply with any other conditions that may be deemed necessary by NAWI and DOE to protect U.S. government interests. The U.S. Manufacturing Plan is Appendix H in the Consortium Agreement.

Certain characteristics make some Foreign Entities more likely to meet the waiver criteria to the satisfaction of DOE and the NAWI Hub than others. For example, foreign companies that have current U.S. manufacturing capacity and major facilities within the U.S. that operate and employ people in the U.S. and can readily implement manufacturing improvements or provide significant R&D capabilities have greater potential benefit to the Institute and its mission than an entity with no U.S. presence. Foreign Entities with small or no current U.S. presence could be considered for participation but may be less likely to meet the Foreign Entity participation criteria. Commitments to locate in the U.S. or expand U.S. operations could be a positive consideration depending on the strength of the commitment, and any demonstrated unique value or resources.

One of the primary purposes of the Hub is to increase U.S. manufacturing competitiveness by strengthening the security and economic resilience of U.S. manufacturing. This purpose may be frustrated by unauthorized transfer of scientific and technical information to foreign government entities. Participation in a foreign government talent recruitment program could conflict with purposes of NAWI. Therefore, no individual on a project team for NAWI may participate in foreign government talent recruitment programs of countries designated by DOE as a foreign country of risk. The purpose of this requirement is to ensure the continued flow of scientific and technical information consistent with DOE's broad scientific mission, while also ensuring protection of U.S. competitive, economic and national security interests and DOE program objectives; and limiting unauthorized transfers of scientific and technical information.

9.2 Foreign Work Waiver (Federally funded and/or providing cost share)

Please see Appendix I in the Consortium Agreement for more details on the Foreign Work Waiver.

All NAWI Work must be performed in the United States. This requirement does not apply to the purchase of supplies and equipment, so a waiver is not required for foreign purchases of these items. However, Consortium Members should purchase supplies and equipment within the United States in accordance with their Project agreement terms. There may be limited circumstances where it is in the interest of NAWI or a Project to perform a portion of the work outside the United States. To seek a waiver of the Performance of Work in the United States requirement, the applicant must submit an explicit waiver request. A separate waiver request must be submitted for each entity proposing performance of work outside of the United States.

Unless a waiver is provided, Lead Organization must show that 100% of the direct labor cost for the project (including Participating Organizations labor) will be incurred in the United States and its territories. If any project work will be done in a foreign country, NAWI will work with the project team to complete a Foreign Work Waiver (FWW) that will be submitted to DOE for review and approval.

9.3 U.S. Manufacturing Plan

Please see Appendix H in the Consortium Agreement for the complete U.S. Manufacturing Plan. A goal of the NAWI Hub is to provide benefit to the U.S. manufacturing sector, including the ability to deploy and refine methods, materials and processes that are developed by the Research Consortium members through NAWI Funding awards (receiving federal funds and/or providing cost share). NAWI Research Consortium members will agree to the following commitment as a condition of their receipt of federal funding and/or providing cost share:

Any products embodying any Subject Invention or produced through the use of any Subject Invention will be manufactured substantially in the United States. “Subject Invention” means any Invention of a Consortium Member that is conceived or first actually reduced to practice in the performance of NAWI Work or under NAWI Funding. This requirement will be binding on any sub-awardee and any assignee or any entity otherwise acquiring rights to any Subject Invention including subsequent assignees.

NAWI Consortium Members may propose an alternate U.S. Manufacturing Plan with more specific commitments that would be beneficial to the U.S. economy and competitiveness. For example, an applicant may commit specific products to be manufactured in the U.S., commit to a specific investment in a new or existing U.S. manufacturing facility, keep certain activities based in the U.S. or support a certain number of jobs in the U.S. related to the technology.

DOE will review such plans and will determine at its sole discretion if the more specific commitments would provide a sufficient benefit to the U.S. economy and industrial competitiveness. If accepted, the alternate U.S. Manufacturing Plan together with the specific commitments will become part of the terms and conditions of that NAWI Project agreement.

9.4 Statement of Project Stewardship

NAWI will exercise normal stewardship in overseeing the project activities performed under NAWI awards. Stewardship activities include, but are not limited to, conducting site visits; reviewing performance and financial reports; providing assistance and/or temporary intervention in unusual circumstances to correct deficiencies that develop during the project; assuring

compliance with terms and conditions; and reviewing technical performance to ensure that the project objectives are being accomplished during and after the project.

9.5 Post Award Technical Performance Monitoring & Reporting

NAWI will monitor the technical and cost performance of each project. NAWI Project Control Specialists will oversee the Hub-awarded projects and work with the PIs to ensure projects are executed on time, on budget, and consistent with the project statement of project objectives (SOPO) proposed by successful applicants. Project teams will submit the reports listed below to their identified Topic Area Lead and the NAWI Project Control Specialists to fulfill their reporting requirements.

Monthly Report – The Lead Organization will prepare a monthly report which will include high-level information.

Quarterly Technical Status Report & Financial Reports – The Lead Organization will prepare a Quarterly Report based upon the Quarterly Reporting Template. This information will be incorporated to the Quarterly report that NAWI submits to DOE.

Quarterly Technical Reviews (QTR) – The Lead Organization may be required to prepare a Quarterly Presentation which must include a Technical Status and a Financial Status to include detailed technology development status, schedule status and/or schedule modifications, project issues, budget expenditure, and cost share, etc.

Annual Reports – The Lead Organization may be required to prepare an annual report that will be presented at the Annual NAWI Hub Meeting.

Final Technical Report – At the completion of the NAWI Project, the Lead Organization will submit a Final Technical Report, which will provide a comprehensive, cumulative, and substantive summary of the progress and significant accomplishments achieved during the total period of the NAWI Project effort.

9.6 Generated Data

Data generated under the award that will be made public must be uploaded to the Water Data and Analysis Management System (Water-DAMS) repository. The Prime Recipient must upload data to NAWI no later than 60 days after the end of the quarter in which a complete data set is generated. The data must be sufficiently complete, in a format acceptable to DOE, and include all files required for an independent analyst to reproduce and verify the work. The data will be submitted to NAWI at [www.nawihub.org/waterdams]. While most data formats may be uploaded to the NAWI Water-DAMS repository, DOE prefers reusable, structured data that supports conclusions communicated in project quarterly and other reports. If the data are protected or subject to a moratorium, they will not be made publicly available until the moratorium has expired, and they will be held in a secure section of the NAWI WATER-DAMS repository. Protected Data will be treated according to the Intellectual Property Provisions.

9.7 Go/No-Go Review

Each project selected under this solicitation will be subject to a periodic project evaluation referred to as a Go/No-Go Review, which will be determined during award negotiations. Go/No-Go decisions will be made at each stage (at least one Go/No Go decision point for every 12 months). At the Go/No-Go decision points, project performance, project schedule adherence, meeting milestone objectives, compliance with reporting requirements, and overall contribution to the NAWI program goals and objectives will be evaluated. Funding beyond the Go/No-Go decision point (continuation funding) is contingent upon; (1) the availability of future-year budget authority; (2) Recipient's technical progress compared to the Milestone Summary Table of the award; (3) Prime Recipient's submittal of required reports; (4) Prime Recipient's compliance with the terms and conditions of the award; (5) The Go/No-Go decision; and (6) written approval of the next budget period.

As a result of the Go/No-Go Review, the following actions may be authorized: (1) continue to fund the project; (2) recommend redirection of work within the general scope under the project; (3) place a hold on funding for the project, pending further supporting data or funding; or (4) discontinue funding the project because of insufficient progress, change in strategic direction, or lack of funding.

The Go/No-Go decision is distinct from a non-compliance determination. In the event a Recipient fails to comply with the requirements of an award, NAWI may take appropriate action, including but not limited to, redirecting, suspending, or terminating the award.

9.8 Amendments

Amendments to this solicitation will be posted on the NAWI Exchange. However, if registered for email notifications for this solicitation in NAWI Exchange, applicants will only receive an email when an amendment for the solicitation is posted. NAWI recommends that the applicant register as soon after the release of the solicitation as possible to ensure notifications are received in a timely manner.

9.9 Evaluation and Administration of Non-LBNL/NAWI Personnel

In conducting the merit review evaluation, NAWI may seek the advice of qualified non-LBNL/NAWI personnel as reviewers. The Applicant, by submitting its application, consents to the use of non-LBNL/NAWI reviewers/administrators. All reviewers will sign conflict of interest and non-disclosure agreements prior to reviewing an application.

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10 Appendix A: Technology Readiness Level Definitions

TRL 1:	Basic principles observed and reported
TRL 2:	Technology concept and/or application formulated
TRL 3:	Analytical and experimental critical function and/or characteristic proof of concept
TRL 4:	Component and/or breadboard validation in a laboratory environment
TRL 5:	Component and/or breadboard validation in a relevant environment
TRL 6:	System/subsystem model or prototype demonstration in a relevant environment
TRL 7:	System prototype demonstration in an operational environment
TRL 8:	Actual system completed and qualified through test and demonstrated
TRL 9:	Actual system proven through successful mission operations

11 Appendix B: Concept Paper Requirements

11.1 Concept Paper Technical Narrative Requirements

The Concept Paper must be submitted through the NAWI Exchange (nawi.infoready4.com). The information below is provided for planning and information purposes.

- The Concept Paper (CP) Technical Narrative submission is limited to eight (8) pages using the template provided in Section 11.2.
- All pages must be formatted to fit on 8.5 x 11-inch paper with margins not less than one inch on every side.
- Use Times New Roman typeface, a black font color, and a font size of 12 point or larger (except in figures or tables, which may be 10-point font). A symbol font may be used to insert Greek letters or special characters, but the font size requirement still applies.
- References must be included as footnotes or endnotes in a font size of 10 or larger.
- References, the Two-Slide Overview, and the Budget Template are NOT counted toward the maximum page limit.
- Letters of support should NOT be included as part of the Concept Paper submission.
- Upload the Concept Paper as a PDF to the InfoReady site, as part of the Application, not as a Word, or other, document (nawi.infoready4.com).
- Upload the Budget Summary as an Excel to the InfoReady site, as part of the Application.
- Upload the Two-Slide Overview as a PowerPoint to the InfoReady site, as part of the Application.

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11.2 Concept Paper Template

NOTE: This Concept Paper Template is provided here in the RFP as a reference only. Please download and fill out the template from InfoReady (right-hand column under Supporting Documents).

Using the template below, delete blue font text (and the next sentence). **Do not delete black font text**. Black text font must remain in the submission to be compliant.

TITLE: (Use Title Capitalization. Do not use all Caps).

WHAT IS THE NOVEL PROCESS AND THE "BUSINESS CASE"?

1. Describe the real-world problem(s) and/or challenge(s) that you are aiming to solve.
2. Describe, the envisioned your treatment process/system and how this solves the aforementioned problem(s).
    a. Please provide a Figure or diagram of the envisioned process.
        i. Clearly describe (and label in the Figure) all inputs into the system (influent water, chemicals, recycle loops, waste heat, etc.) as well as all the system outputs (product streams, waste streams, off-gassing, etc.),
        ii. Denote the system size and describe how the system size is appropriate for the envisioned Piloting efforts.
    b. What is the novelty and what are the advantages of producing water in this way?
    c. What are intended end-use(s) for the water and the "waste" products?
3. What is the primary target non-traditional water source and what is the range in raw water quality that the system described above would be able to treat? Please provide a table that includes the envisioned water chemistry (constituent and concentration) for all relevant constituents.
4. Given NAWI's interest in promoting DEI in water treatment research and development (as described in Section 3.1 of this RFP) what would be effective means of incorporating DEI aspects into a pilot or demo project?

STATE-OF-THE-ART AND PIPE PARITY

1. What is the current state-of-the-art treatment process for non-traditional water sources as listed above in #2, and what are the advantages over current state-of-the-art solutions?
2. What pipe parity metrics would the proposed solution improve upon?
3. What magnitude improvement in state-of-the-art and pipe parity metrics most urgently need to be demonstrated at the pilot/demonstration scale?

RESOURCES

1. High-Level Budget: Please include a high-level budget using the Budget Summary Template provided in the RFP call. This does not count towards the page limit.
2. Describe the proposed the test site or test sites you plan to run the pilot at. Letters of Support are not required, or encouraged, at the Concept Paper stage, but will be at the Full Proposal stage.

REFERENCES

11.3 Project Overview

There is a 250-word limit for the Project Overview. Paste the Project Overview text into the designated text box in NAWI Exchange. The Project Overview should only be uploaded in the designated text box in NAWI exchange. Do not include the Project Overview in the 8-page Concept Paper PDF.

Provide an overview of the proposed project. Include general background, challenges and knowledge gaps being addressing, key outcomes, general benefits, etc. The project overview should not include any proprietary/business sensitive information.

11.4 Two-Slide Overview

This two-slide overview is not part of the 8-page Concept Paper page limit. Upload as Microsoft PowerPoint into NAWI Exchange. The template is available in NAWI Exchange and the Notes section of the template describes all the required information.

Include the following information:

- First Slide (High-Level Information)
    - Project Title and Application #
    - Team Members and their respective roles
    - Industry Partner(s)
    - Problem Summary
    - Process Flow Diagram
- Second Slide (Quad Chart)
    - Challenges and Value Proposition
    - Envisioned Treatment Process
    - Research Plan
    - Impact and Benefits

11.5 Budget Summary

This is not part of the 8-page Concept Paper page limit. Upload as Microsoft Excel into NAWI Exchange. The template is available in NAWI Exchange.

The Full Proposal budget may differ from the Concept Paper. The budget should align with the scope of work proposed. There is not a limit on the percentage by which it can vary.

There is not a limit to the percentage of cost-share that can be met with in-kind contributions.

Although there is no maximum federal funding limit, we anticipate projects' total federal cost to be around $500,000, on average. There is not a minimum amount of funding that needs to be requested. Budgets should reflect the propose work scope.

Please use the indirect rates that are approved for your organizations. NAWI will pay indirect rates that are approved for your organizations. If no indirect rates are established for you or your organizations, please do not include an indirect rate. In this case, all budget items should be directly charged.

12 Appendix C: Full Proposal Requirements

12.1 Full Proposal Technical Narrative Requirements

The Full Proposal must be submitted through NAWI Exchange (nawi.infoready4.com).

The Full Proposal Technical Narrative requirements will only be provided to teams who submitted a Concept Paper and were invited to submit a Full Proposal.

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