

FY25 WPTO SBIR/STTR Phase I Topics Webinar

Water Power Technologies Office, U.S. Department of Energy

December 4, 2024



Webinar Logistics

- This webinar is being recorded and will be publicly posted; the slides will be posted soon after the end of this webinar.
- Attendees' microphones are muted and attendees are not visible on video.
- Questions are encouraged during the presentation, and there will be additional time at the end for Q&A.
- To ask questions:
 - Submit question into the Q&A box
 - Questions will either be answered verbally or in the Q&A box
- If you have technical issues, try calling into the webinar via phone.

Agenda



| Topic # | Topic Title |
|---------|---|
| 15a | Municipal and Industrial Conduit Hydropower |
| 15b | Innovations in data collection, analytics, models and tools |
| 15c | Pumped Storage Hydropower Innovative Concepts |
| 15d | Co-Development of Marine Energy Technologies |
| 15e | Development of Standardized Modular Power Electronics for Grid-Compatible Marine Energy Systems |
| 15f | Advances in Overtopping Wave Energy Converters for Coastal Structures |
| 15g | Next-Generation Tidal and River Current Energy Technologies for Arctic/Alaskan Communities |
| 15h | Feasibility of Co-locating Marine Energy and Offshore Wind |
| 16a | BIL STTR Topic - Marine Energy Technologies |
| 16b | BIL STTR Topic - Hydropower Technologies |



SBIR/STTR Program Overview

SBIR/STTR Overview

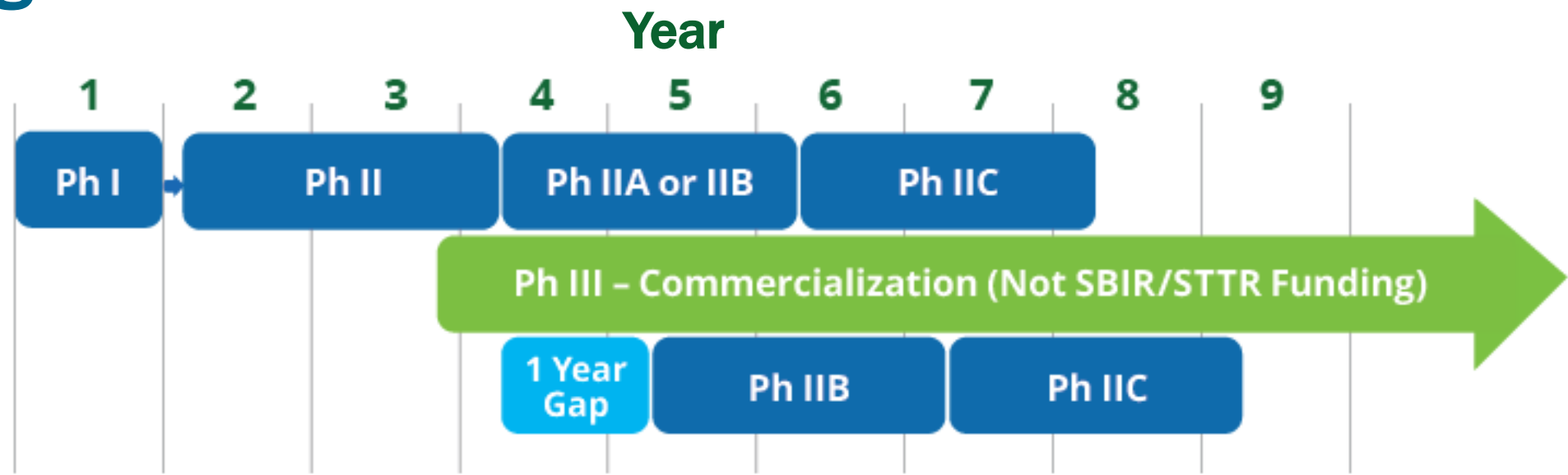


- SBIR: Small Business Innovative Research
 - STTR: Small Business Technology Transfer
 - Federal funding designed to stimulate the commercialization of technologies via small businesses
 - Program provides early-stage, nondilutive R&D funding for ideas that have commercial potential but are too high risk for private sector investment
 - Funded at set percentage of agency R&D budget:
SBIR – 3.2%, STTR – 0.45%
- WPTO 2024 funding:
 - Phase I: 14 awards, ~\$2.8M
 - Fast-Track: 3 awards, ~\$4.0M
 - Phase II: 9 awards, ~\$9.8M
 - Significantly above minimum required amount
 - 2024 funding levels do not influence 2025 funding decisions
 - List of awards publicly available:
<https://science.osti.gov/sbir/Awards>

STTR Additional Requirements

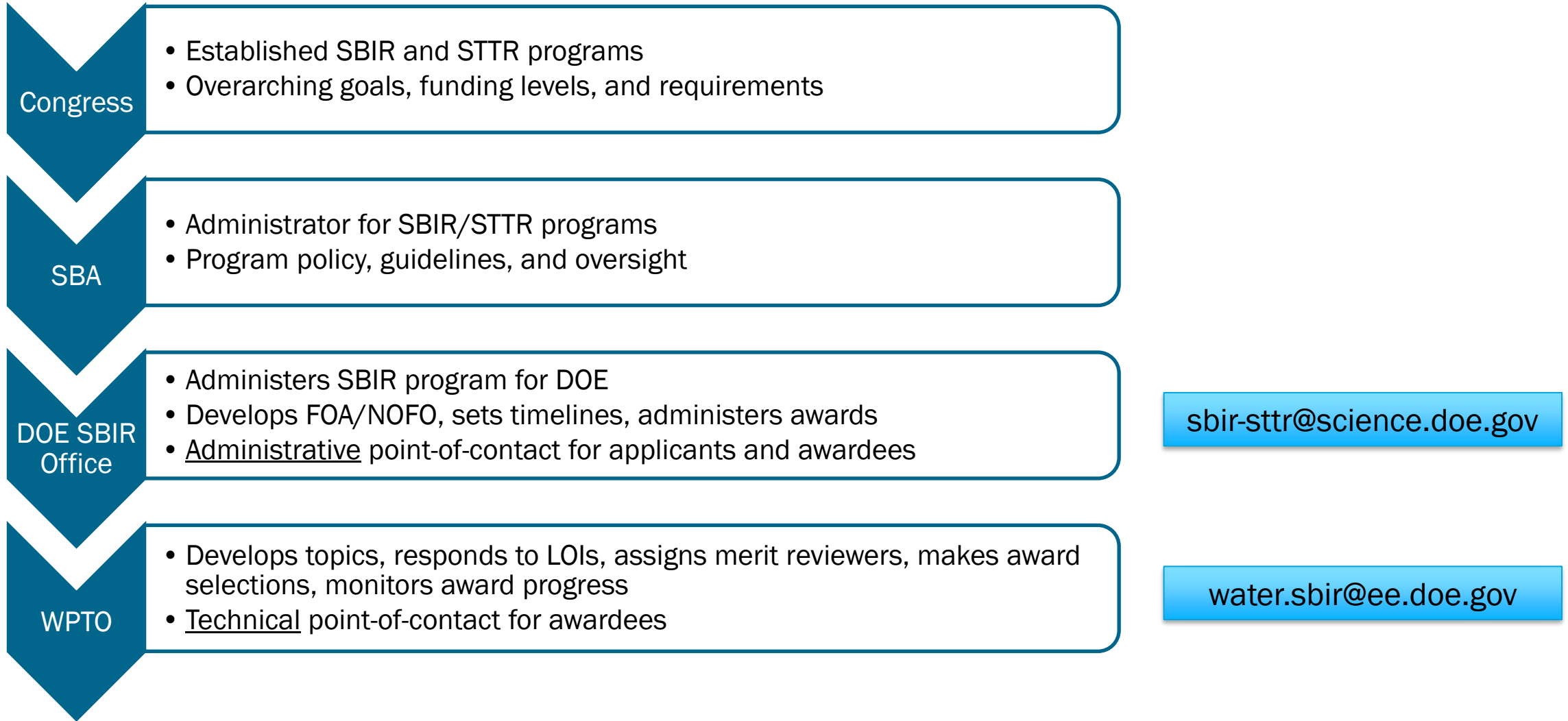
- STTR aims to stimulate cooperative research and foster technology transfer
 - Small business must partner with research institution
 - College/university; nonprofit research organization; or Federally funded R&D center (FFRDC)
 - PI may be employed by the partnering institution
 - Business and partnering institution must establish an IP agreement
 - Business must perform > 40% of R&D; partnering institution >30%.
- You may apply to *both* SBIR and STTR as long as minimum effort levels are satisfied
 - SBIR: 67% small business
 - STTR: 40% small business; 30% research institution
 - Both: 67% small business; 30% research institution
 - The balance may be performed by another partner/subcontractor

Funding Phases



| Phase I | Phase II | Phase IIA/IIB |
|--|--|--|
| <ul style="list-style-type: none">• Exploratory R&D; preparation for larger Phase II projects• \$200,000• 6 - 12 months duration | <ul style="list-style-type: none">• Phase I awardees apply for Phase II the following year• Focus on prototype, demonstration, and commercialization• \$1,100,000• 2 years duration | <ul style="list-style-type: none">• For projects that require additional R&D funding to transition to commercialization• \$1,100,000• 2 years duration |

SBIR Program Implementation at DOE





SBIR/STTR Support Options

Phase 0, Phase Shift, TABA, American Made Network

Phase 0 Assistance Program

- Apply for free assistance for *first time* DOE SBIR/STTR Phase I applicants
 - Business coaching
 - Technical consulting
 - IP consulting
 - Developing budget & rate structures
- DOE encourages women-owned, as well as socially and economically disadvantaged small businesses to take advantage of this service
- Tutorials and webinars freely available
- <https://doephase0.dawnbreaker.com>

DOE PHASE 0

SBIR/STTR ASSISTANCE PROGRAM

Contracted Support through American Made Network Power Connectors



- WPTO and SETO are working with American Made Network Power Connectors to provide additional guidance and connections for SBIR applicants
- Freely available events related to application prep, teaming, commercialization, etc.
- Resources offered:
 - Webinars
 - Office Hours
 - Educational Opportunities
 - Recruitment
 - Applicant Support
- Explore the American Made Network to find potential partnerships:
<https://americanmadechallenges.org/network/>



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Technical and Business Assistance (TABA) Program

- Up to \$6,500 in additional funds for commercialization-related assistance
 - Market research, customer discovery, go-to-market strategy, sales strategy, fundraising prep, IP services, regulatory research, Phase II commercialization plan
- Use default DOE vendor (Larta Institute) or use your own commercialization assistance provider
 - If you want to use a different vendor, you are required to include this as a subcontract or consultant in your budget and to provide a detailed budget justification
- For Phase II: Up to \$50,000 in TABA funds. No default vendor.
- <https://science.osti.gov/sbir/Commercialization-Resources/Technical-and-Business-Assistance>

Larta's services



Phase Shift for SBIR/STTR

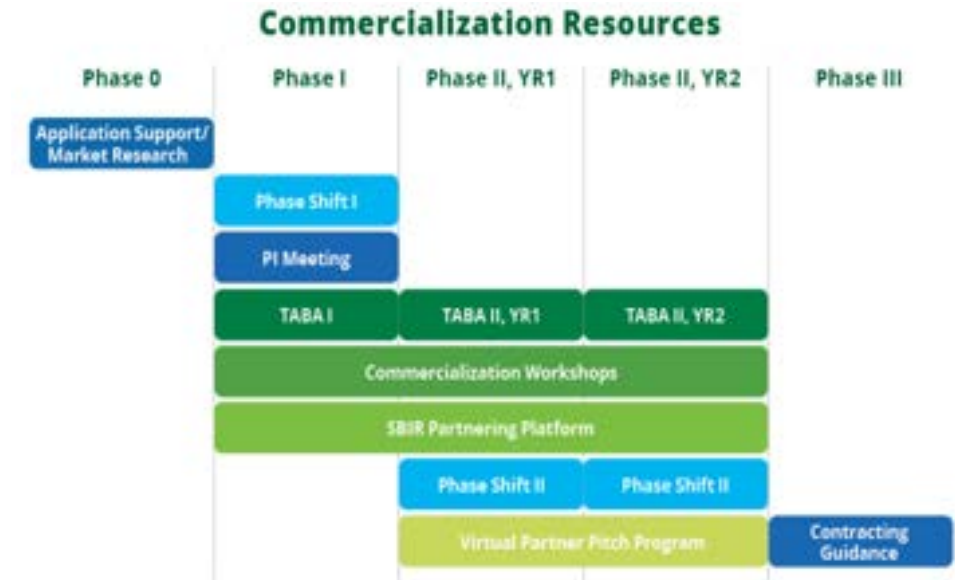


- Training program for awardees to learn hypothesis-driven customer discovery
- Phase Shift I
 - Eligibility: Phase I awardees
 - Intensive 8-week program, 4–8 hours/week
 - Workshops, coaching sessions, 30+ customer interviews, final pitch presentation
 - Lean startup methodology
 - Validate assumptions about market and customer needs
 - Develop business model (direct sales, service, licensing)
 - Identify competitive advantages; assess alternative approaches (“Pivot”)
- Phase Shift II
 - Eligibility: Phase II awardees who have completed Phase Shift I or Energy I-Corps (former name of Phase Shift)
 - 5 months, 4–8 hours/week
 - 80+ customer interviews, 2 in-person workshops, 8 virtual workshops
 - Build on Phase I to fully develop and validate a company’s business model
 - Focus on plans for revenue generation, cash flow management, and scaling (manufacturing and hiring)
 - Preparation for raising outside capital
- <https://science.osti.gov/sbir/Commercialization-Resources/Phase-Shift>



Additional Support

- DOE SBIR/STTR Phase I Proposal Prep Site
 - <https://science.osti.gov/SBIRLearning>
 - Tools and tutorials to help you prepare a proposal
- Explore additional information, application support, and commercialization services on the SBIR site
 - <https://science.osti.gov/sbir/Commercialization-Resources>
 - <https://science.osti.gov/sbir/Applicant-Resources>
- FY2025 SBIR/STTR Phase I FOA Webinar
 - Thursday, December 19, 2024 (Webinar) & Friday, December 20, 2024 (Q&A)
 - Hosted by the DOE SBIR Office
 - General information SBIR/STTR application/award process
 - Registration Information will be posted a week before the webinar:
<https://science.osti.gov/sbir/Funding-Opportunities>



Key Dates and Deadlines

- **SBIR FOA Released:** Monday, December 16, 2024
- **SBIR FOA Webinar:**
 - Thursday, December 19, 2024 (Webinar)
 - Friday, December 20, 2024 (Q&A)
- **Letter of Intent Due Date:** Tuesday, January 7, 2025
- **Application Due Date:** Wednesday, February 26, 2025
- **Award Notification Date:** Tuesday, May 27, 2025
- **Start of Grant:** Tuesday, July 8, 2025

All dates subject to change. Please refer to DOE's SBIR website for up-to-date information:
<https://science.osti.gov/sbir/Funding-Opportunities>

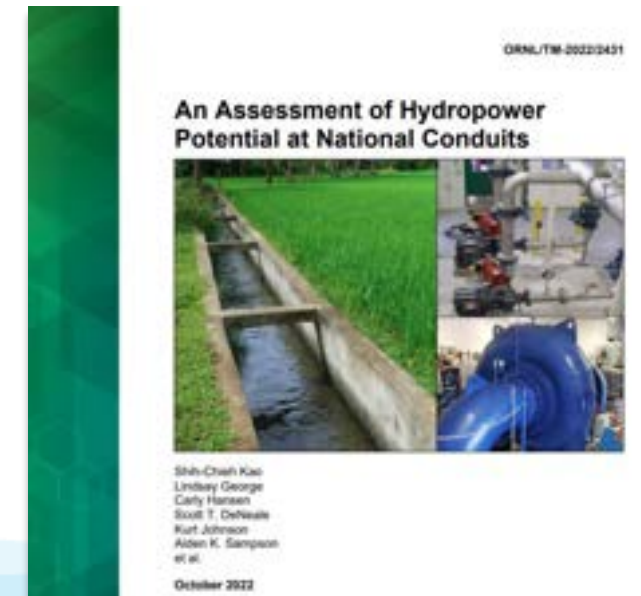
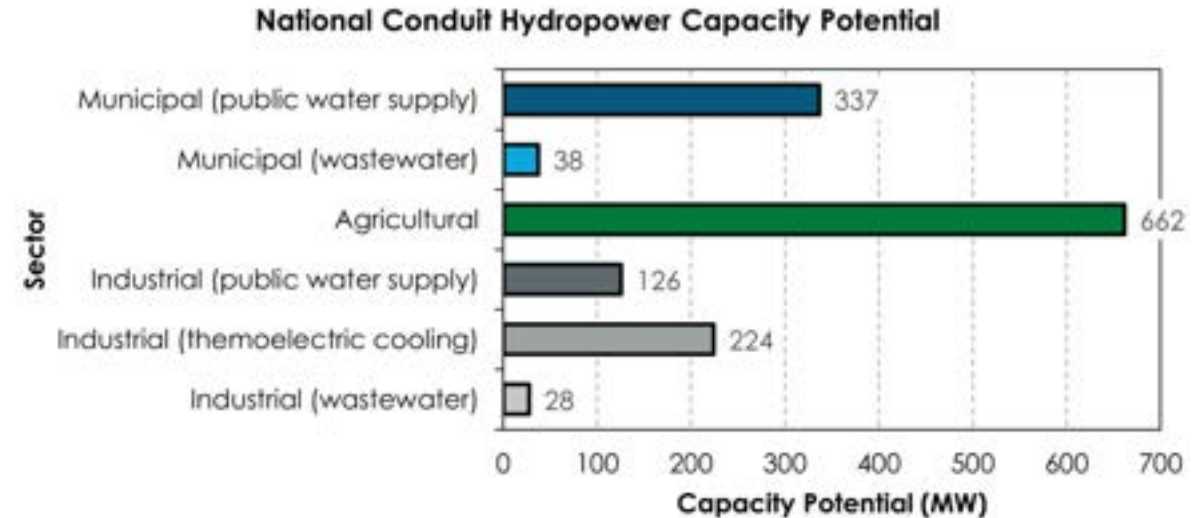


Topics C60-15 a, b, c

Hydropower Topics

15a - Municipal and Industrial Conduit Hydropower

- **Goal:** increase deployment of conduit hydropower in municipal and industrial systems
- **Motivation:** on-site conduit hydro can improve water and energy reliability while supporting modernization initiatives
- **Target:** technologies or approaches to improve the development process and project success rate
- **Scope:**
 - Phase 1: testing and scoping activities
 - Phase 2: demonstration/deployment
- **Recommendations:**
 - Have demonstration partnerships in place
 - Indicate an understanding of the licensing and permitting process
 - Describe application to the larger hydro industry



<https://info.ornl.gov/sites/publications/Files/Pub176069.pdf>

15b - Innovations in data collection, analytics, models and tools

The goals of this hydropower topic are to support and encourage startups and other small business to:

- Solve challenges in sensors, instruments, or monitoring systems designed to collect data that supports the development, longevity, efficiency, or resilience of hydroelectric generation. This includes new approaches to data collection like AUVs, sensor platforms, or remote sensing.
- Solve gaps and challenges in the synthesis of existing hydropower-related data through advancements in data analytics.
- Develop advanced models that meet the evolving needs of hydropower owners and operators, or other relevant stakeholders seeking insights into hydropower operations and management, and/or,
- Process data and models for decision-making, assimilation, or other innovative data science tools. This can include novel commercial or open-source software or platforms that benefit hydropower industries by incorporating new or existing data types into decision-making (e.g., social or economic data), simplifying data or model interpretation (e.g., data visualization), or increasing information collation, access, and equity (e.g., in applications of hydroinformatics).

Areas of interest include but are not limited to the following hydropower applications: eDNA, modeling, inflow forecasting, fish passage, asset management, water quality, quantity, or demand modeling; and, artificial intelligence and machine learning

15c - Pumped Storage Hydropower Innovative Concepts

- Solicit PSH innovative technologies to accelerate deployment that reduce PSH costs and/or improve the value of PSH systems.
- Innovative technologies will address one or more of the following:
 - Reduce initial capital costs and/or operation and maintenance (O&M) costs
 - Increase operational revenue and value to the grid
 - Increase development and deployment speed
 - Reduce negative environmental and community impacts
- Innovations may also address unconventional PSH configurations, examples of unconventional PSH configurations:
 - Argonne National Lab's "Review of Technology Innovations for Pumped Storage Hydropower"
 - The International Forum on Pumped Storage Hydropower report "Innovative Pumped Storage Hydropower configurations and Uses"



Topics C60-15 d-h

Marine Energy Topics

15d - Co-Development of Marine Energy Technologies

- Multi-year (since FY20) relatively open topic to spur innovation and deployment in Powering the Blue Economy Markets
 - Continue to provide reliable pathway to marine energy developers
- Develop marine energy prototypes specific to the needs of an identified end user in the blue economy.
- Expect partnership with an end-user/customer, specific marine energy resource and deployment location, description of how customer needs will be converted to design requirements, performance and assessment metrics



15e - Development of Standardized Modular Power Electronics for Grid-Compatible Marine Energy Systems

- Lack of standardized power electronics for marine renewable energy systems that can meet grid connection requirements.
- Aim is to develop a modular and standardized power electronics architecture with specification that can be adapted to various marine energy converters.
- Proposals should ensure grid code compliance, enhance fault ride through capabilities, and optimize power quality as address in IEC TS 62600-30.
- Proposals should evaluate different control strategies and semiconductor materials that support standardization of cost-effective power electronics system.

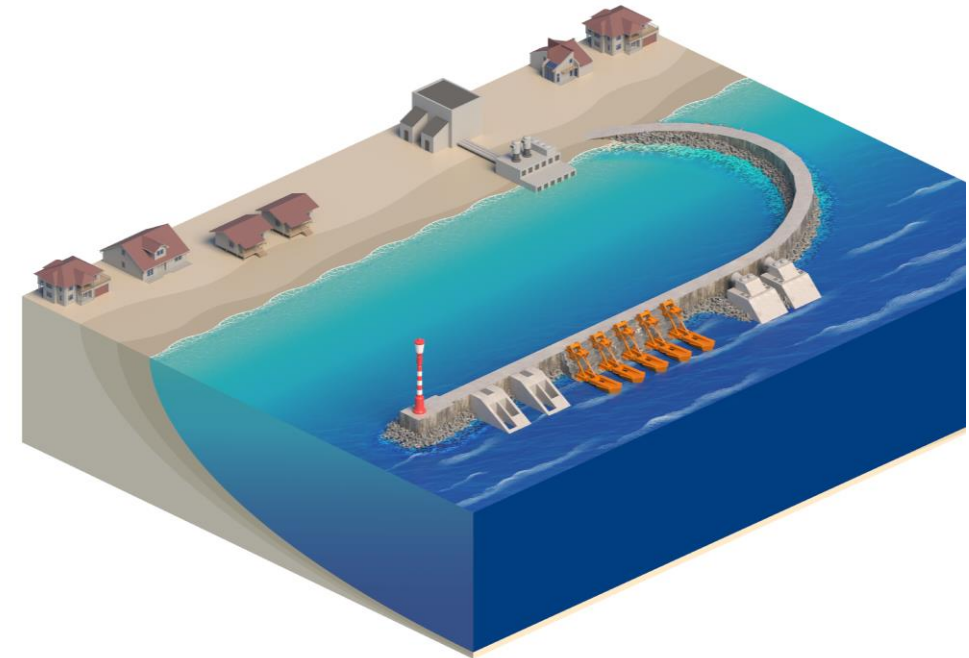


15f - Advances in Overtopping Wave Energy Converters for Coastal Structures

Coastal structure integrated (CSI) WECs generally fall under three archetypes, oscillating water column (OWC), wall-mounted heave, and overtopping devices (OT). This topic focuses on overtopping devices that typically harness energy through the runup of a wave onto a coastal structure to fill a reservoir that empties through a low-head turbine (or a set of turbines).

The goals of this Overtopping CSI-WEC topic include:

- Create innovative OT-CSI-WEC designs for integration into both new and existing coastal infrastructure that maximize energy production and resiliency
- Assist startups and entrepreneurs who have novel CSI-WEC concepts in further developing these into viable solutions
- Utilize innovative construction and or integration techniques for installing these systems onto new or existing infrastructure. This can include modular prebuilt systems, 3D printing technologies, etc.



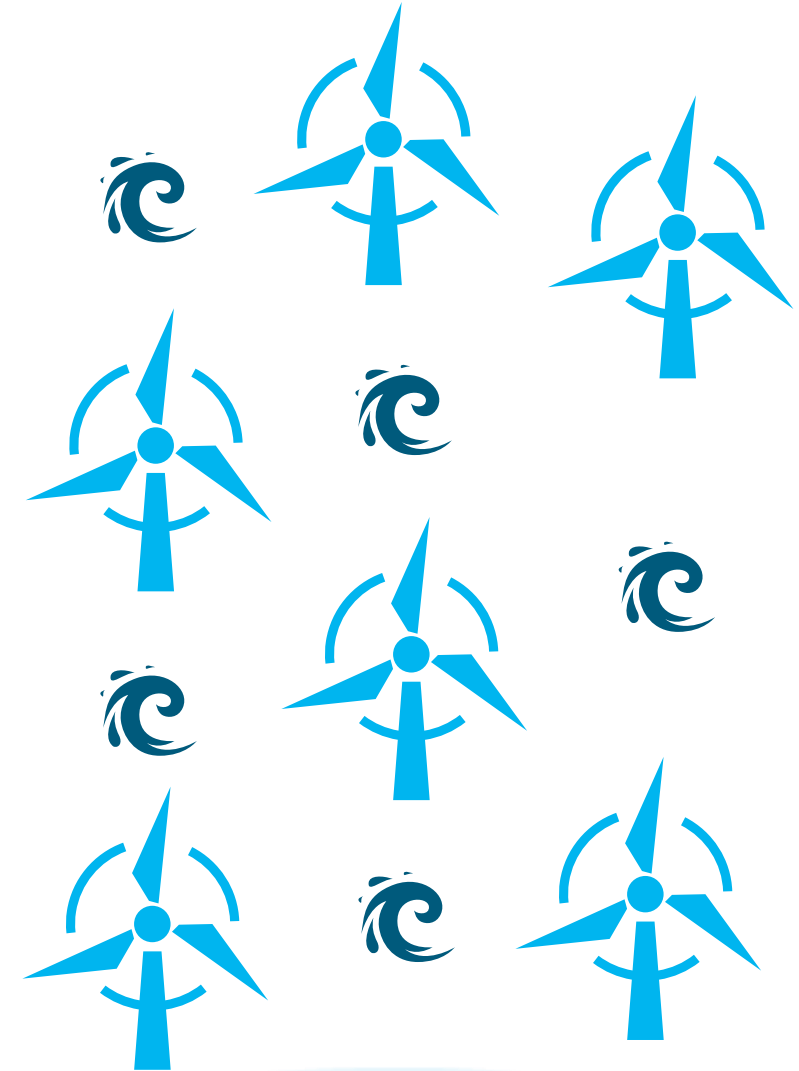
15g - Next-Generation Tidal and River Current Energy Technologies for Arctic/Alaskan Communities

Key Focus Areas

- **Regional Adaptation and Challenges:** Address the environmental and operational conditions specific to regions like Alaska and the Arctic
- **Modular and Scalable Technology Development:** Prioritize modular designs with a focus on solutions that are easy to install, durable and require minimal maintenance.
- **Tidal-Stream Technology Innovations:** Develop tidal-stream energy devices that harness power from shallow stream resources and confined channels.
- **Distributed Generation for Local Loads:** Focus on technologies that can be sited close to communities as part of a distributed energy generation scheme
- **Environmental and Resource Diversity:** Encourage exploration of diverse locations for energy capture, including shallow tidal streams and arctic river environments.
- **Novel Approaches:** Explore emerging, high-potential designs such as those advanced by ARPA-E's SHARKS program.

15h - Feasibility of Co-locating Marine Energy and Offshore Wind

- Benefits:
 - Reduce cost of electricity generation due to shared space while leveraging existing infrastructure.
 - Reduction in power variability and increased power density and energy yield.
 - Decrease spatial footprint of offshore energy projects.
- Aim of this topic area: demonstrate the feasibility for co-location through economic analysis, industry engagement and assessment of the integration challenges including siting and permitting.
- Applicants should demonstrate knowledge, experience and capabilities in advancing marine technologies, and have a coherent plan for the project duration in Phase I and Phase II





Topic C60-16

BIL STTR Topics

BIL STTR Topics 16a and 16b

Innovations in Marine Energy Technologies & Innovations in Hydropower Technologies

| Maximum Phase I Award Amount: \$200,000 | Maximum Phase II Award Amount: \$1,100,000 |
|--|--|
| Accepting SBIR Phase I Applications: NO | Accepting STTR Phase I Applications: YES |
| Accepting SBIR Fast-Track Applications: NO | Accepting STTR Fast-Track Applications: NO |

- Open topic for STTR proposals only
- Any topic directly relevant to hydropower, marine energy, or both
- Limited funding that must be used; unlikely to have any Phase II funding



WPTO SBIR Inbox: water.sbir@ee.doe.gov
DOE SBIR Inbox: sbir-sttr@science.doe.gov



SBIR program, deadlines, and application portal: <https://science.osti.gov/sbir/Funding-Opportunities>



WPTO homepage: energy.gov/eere/water



WPTO's SBIR program:
energy.gov/eere/water/small-business-innovation-research-sbir-and-small-business-technology-transfer-sttr