Building Energy Efficiency Frontiers and Innovation Technologies (BENEFIT)-2015

Funding Opportunity Announcement: DE-FOA-0001166

Webinar 2: Dec 1, 2014

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

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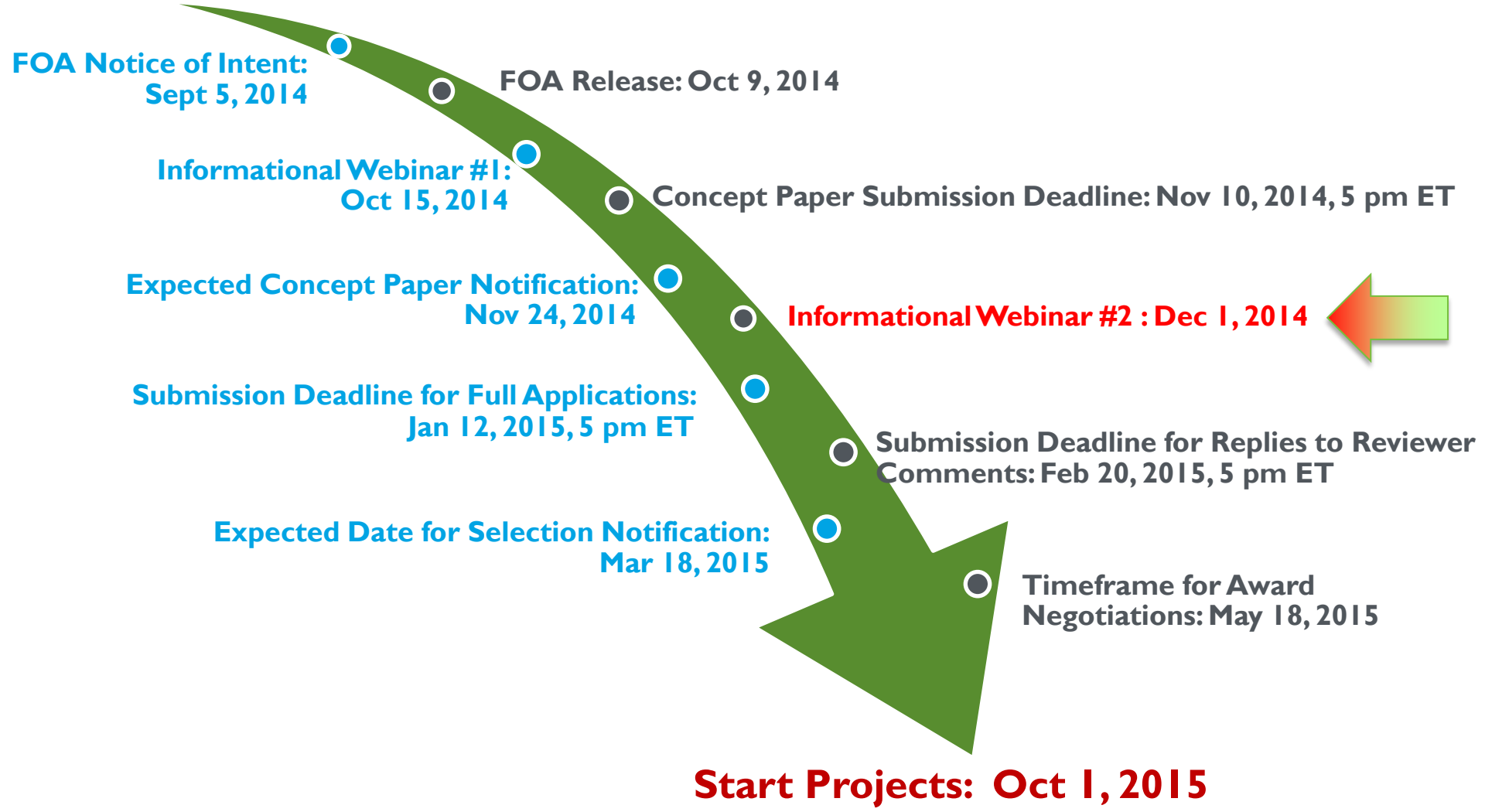
None of the information presented here is legally binding. The content included in this presentation is intended only to summarize the contents of funding opportunity DE-FOA-0001166. Any content within this presentation that appears inconsistent from the FOA language is superseded by the FOA language. All Applicants are strongly encouraged to carefully read the FOA guidelines and adhere to them. Neither the U.S. Department of Energy (DOE) nor the Federal employees associated with DOE working on this presentation shall be held liable for errors committed by applicants based on potentially incorrect or inaccurate information presented herein.

Submit Questions to: BENEFIT2015@ee.doe.gov

What is a Funding Opportunity Announcement?

1. Contains instructions for potential applicants;
2. Provides the objectives of the funding opportunity;
3. Outlines directions for successfully submitting the application:
   - Eligibility,
   - Required documents,
   - Technical objectives,
   - Review Criteria and scoring; and
4. Includes conditions associated with federal funding.

Schedule



*Questions to: BENEFIT2015@ee.doe.gov

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Funding Opportunity

Summary

- $7.75 million available
- 2 topics, Innovation and Frontiers
- Mandatory concept papers, followed by full applications
- Cooperative Agreements with substantial involvement between EERE and Recipient
- 20% cost share: universities, nonprofits, FFRDCs, and local governments
- Innovation: DOE total of ≤ $1.5 million, up to two years
- Frontiers: DOE total of ≤ $ 1 million, up to three years

Main Objectives

Reduce primary energy consumption in USA buildings (residential and commercial) through

Innovation:

- Non-vapor compression HVAC technologies

Frontiers:

- Advanced vapor compression HVAC technologies

Metrics and Performance Targets

Topic 1: NON-VAPOR COMPRESSION HVAC TECHNOLOGIES

The successful applicant will develop non-vapor compression HVAC technologies that provide some or more of the following capabilities:

1) Good LCCP (Life Cycle Climate Performance), continuous response to part-load conditions;
2) Integrated thermal storage potential;
3) Grid integration capabilities;
4) Minimal to zero water consumption (energy water nexus issues addressed);
5) Cost effective (potential to achieve a 5-year payback period if fully deployed by 2030);
6) Potential to result in reduced size (if located on the ground) and/or weight (if located on the top of a building) than today's high efficiency units;
7) Readily available materials and energy savings (BTO's goals).

Metrics and Performance Targets

Topic 1: NON-VAPOR COMPRESSION HVAC TECHNOLOGIES

Table 1 BTO Targets for Non-Vapor Compression HVAC Systems			
	2015	**2017**	**2020**
Primary Seasonal COP	2.30	2.28	2.28
Installed Cost Premium per kBtu/hr, (2013 dollars)	$98.90	$89.59	$80.07

Notes for Table 1 and 2: The Coefficient of Performance (COP) for heat pumping technology is a ratio of heating or cooling provided to energy consumed. We are extending this definition to include primary energy as our energy input and seasonal effects. This aids in mapping HVAC equipment targets to BTO's goals which are primary energy based. The Primary Seasonal COP is the ratio of the output provided by the HVAC equipment over a season to the total primary energy consumed. The "Installed Cost Premium per kBtu/hr, (2013 dollars)" is defined as the installed cost premium per kBTU/hr of capacity using 2013 dollars with respect to the base case. This base case estimates the typical efficiency for the current HVAC stock. This base case is a bit better than Federal minimum standards overall.

Metrics and Performance Targets

Topic 2: ADVANCED VAPOR COMPRESSION HVAC TECHNOLOGIES

Advanced vapor compression HVAC technologies include but are not limited to:

1) Advanced vapor compression compressors
2) Regional HVAC solutions, Separate Sensible and Latent Cooling (SSLC) AC Systems or cold climate heat pump systems (cost reduction only)
3) Hybrid technologies that may include non-vapor compression elements that enable Separate Sensible and Latent Cooling (SSLC) AC Systems
4) HVAC systems with embedded energy and thermal storage that boosts the energy efficiency of the total system

Metrics and Performance Targets

Topic 2: ADVANCED VAPOR COMPRESSION HVAC TECHNOLOGIES

Applicants are required to provide their own analysis and discussion of how they will address the following desirable characteristics for an advanced vapor compression HVAC technology/system:

1) Good LCCP (Life Cycle Climate Performance)
2) The use of a low-GWP refrigerant
3) Potential response to part-load conditions
4) Integrated thermal storage potential
5) Grid integration capabilities
6) Minimal to zero water consumption (energy water nexus issues addressed)
7) Cost effective (potential to have 5 years payback period if fully deployed in the near term)
8) Potential to result in reduced size (if located on the ground) and/or weight (if located on the top of a building)
9) Use of readily available materials.

Metrics and Performance Targets

Topic 2: ADVANCED VAPOR COMPRESSION HVAC TECHNOLOGIES

Table 2 BTO Targets for Advanced Vapor Compression Technologies			
	2015	**2017**	**2020**
Primary Seasonal COP	2.20	2.30	2.01
Installed Cost Premium per kBtu/hr, (2013 dollars)	$103.80	$93.33	$82.61

Notes for Table 1 and 2: The Coefficient of Performance (COP) for heat pumping technology is a ratio of heating or cooling provided to energy consumed. We are extending this definition to include primary energy as our energy input and seasonal effects. This aids in mapping HVAC equipment targets to BTO's goals which are primary energy based. The Primary Seasonal COP is the ratio of the output provided by the HVAC equipment over a season to the total primary energy consumed. The "Installed Cost Premium per kBtu/hr, (2013 dollars)" is defined as the installed cost premium per kBTU/hr of capacity using 2013 dollars with respect to the base case. This base case estimates the typical efficiency for the current HVAC stock. This base case is a bit better than Federal minimum standards overall.

Required Contents for the Full Application

SUBMISSION	COMPONENTS	FILE NAME (IF NECESSARY)
Full Application (PDF, unless stated otherwise)	Technical Volume (See Chart in Section IV.D.2)	ControlNumber_LeadOrganization_TechnicalVolume
	SF-424 (**no page limit**)	ControlNumber_LeadOrganization_App424
	Budget Justification (EERE 159) (**no page limit**, Microsoft Excel format. Applicants must use the template available in EERE Exchange)	ControlNumber_LeadOrganization_Budget_Justification
	Summary for Public Release (**1 page max**)	ControlNumber_LeadOrganization_Summary
	Summary Slide (**1 page limit**, Microsoft PowerPoint format)	ControlNumber_LeadOrganization_Slide
	Subaward Budget Justification (EERE 159)) (**no page limit**, Microsoft Excel format. Applicants must use the template available in EERE Exchange)	ControlNumber_LeadOrganization_Subawardee_Budget_Justification
	Budget for Federally Funded Research and Development Center Contractor File, (if applicable)	ControlNumber_LeadOrganization_FWP
	Authorization from cognizant Contracting Officer for FFRDC, if applicable	ControlNumber_LeadOrganization_FFRDCAuth
	SF-LLL Disclosure of Lobbying Activities	ControlNumber_LeadOrganization_SF-LLL
	Foreign Entity and Performance of Work in the United States waiver requests (if applicable)	ControlNumber_LeadOrganization_Waiver
	U.S. Manufacturing Plans	ControlNumber_LeadOrganization_USMP

***Note**: The maximum file size that can be uploaded to the EERE Exchange website 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 FOA it must be broken into parts and denoted to that effect.*

Technical Volume (15 pages total)

Section	Description	Page Limit
Cover Page	Project title, topic area, POCs	1 page
Project Overview	Background, project goal, DOE impact	~ 10%
Technical Description, Innovation, & Impact	Relevance and Outcomes Feasibility Innovations and Impacts	~ 25%
Workplan	Project Objectives Technical Scope Summary Work Breakdown Structure and Task Descriptions Milestones Go/No-Go Decisions Points Project Schedule Project Management Market Transformation/Commercialization Plan	~ 50%
Technical Qualifications and Resources	Unique qualifications, existing equipment & facilities (one-page CVs attached as an Appendix; no page limits)	~ 15%
FOA-Specific Requirement	Applicants for Topic 1 should include primary energy savings technical potential and simple payback	

Example Milestone Summary Table

Milestone Summary Table							
Recipient Name:							
Project Title:							
Task Number	Task Title or Subtask Title (If Applicable)	Milestone Type (Milestone or Go/No-Go Decision Point)	Milestone Number* (Go/No-Go Decision Point Number)	Milestone Description (Go/No-Go Decision Criteria)	Milestone Verification Process (What, How, Who, Where)	Anticipated Date (Months from Start of the Project)	Anticipated Quarter (Quarters from Start of the Project)

*Milestone numbering convention should align with Task and Subtask numbers, as appropriate. For example, M1.1, M3.2, etc.

Note 1: It is required that each project have at least one milestone per quarter for the entire project duration. it is not necessary that each task have one milestone per quarter.

Note 2: It is required that each project have at least one project-wide go/no-go decision point each year. If a decision point is not specific to a particular task, then you may leave the task information blank for those decision points.

Note 3: All milestones should follow the SMART rule of thumb: Specific, Measureable, Achievable, Relevant, and Timely

Full Applications: Technical Review Criteria

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

Technical Merit and Innovation

- Extent to which the proposed technology or process is innovative and has the potential to advance the state of the art;
- Degree to which the current state of the technology and the proposed advancement are clearly described;
- Extent to which the application specifically and convincingly demonstrates how the applicant will move the state of the art to the proposed advancement; and
- Sufficiency of technical detail in the application to assess whether the proposed work is scientifically meritorious and revolutionary, including relevant data, calculations and discussion of prior work in the literature with analyses that support the viability of the proposed work.

Impact of Technology Advancement

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

Full Applications: Technical Review Criteria

Criterion 2: Project Research and Market Transformation Plan (30%)

Research Approach and Workplan

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

Identification of Technical Risks

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

Baseline, Metrics, and Deliverables

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

Market Transformation Plan

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

Full Applications: Technical Review Criteria

Criterion 3: Team and Resources (20%)

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

Full Applications: Review Process

- All compliant applications will be evaluated by a review panel that includes external (non-federal) reviewers
- Applicants will have the opportunity to respond to the reviews in writing, before the panel meets
  - Panelists submit written reviews into Exchange
  - Applicants are given access to the reviews, and provided an opportunity to submit a written response
  - Panelists will have access to both the reviews and the written responses prior to the panel meeting

Program Policy Factors

- The degree to which the proposed project, including proposed cost shares, optimizes the use of available EERE funding to achieve programmatic objectives;
- The level of industry involvement and demonstrated ability to commercialize energy or related technologies;
- Technical, market, organizational, and environmental risks associated with the project;
- Whether the proposed project is likely to lead to increased employment and manufacturing in the United States;
- Whether the proposed project will accelerate transformational technological advances in areas that industry by itself is not likely to undertake because of technical and financial uncertainty;
- The degree to which the proposed project directly addresses EERE's statutory mission and strategic goals.

Cost Share

1. Must be eligible under the award conditions;
2. Verifiable from the recipient's records;
3. Not included as contributions for any other federally-assisted project or program;
4. Necessary and reasonable for proper and efficient accomplishment of project or program objectives; and
5. Allowable under the cost principles applicable to the type of entity incurring the cost.
6. Every cost share contribution must be reviewed and approved in advance by the Contracting Officer and incorporated into the project budget before the expenditures are incurred

See Appendix B

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Allowable Cost Share

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

Entity	Cost Principles
Educational Institutions	2 CFR Part 220
State, Local, and Indian Tribal Governments	2 CFR Part 225
Non-profit Organizations	2 CFR Part 230
For-profit Organizations	FAR Part 31

Key Points

We recommend that you-

- Double check your entries in EERE Exchange
  - Submissions could be deemed non-compliant due to an incorrect entry
- Make sure you hit the submit button
- Follow formatting criteria and page lengths stated in the FOA
- Use the tables provided in the FOA to help construct a compliant application
- Suggested 48 hours before the due date (*note 5 pm ET*)
  - Avoid last-minute rush with EERE Exchange. EERE will not accept submissions that are late due to heavy network traffic.

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Logistics

Data Produced Under the Award

- The Government normally retains unlimited rights to technical data produced under Government financial assistance awards, including the right to distribute to the public.
- "Protected data" may be protected from public disclosure for up to 5 years.
- Invention disclosures may be protected from public disclosure for a reasonable time in order to allow for filing a patent application.

Annual Compliance Audits

- For-profit prime recipients: an annual compliance audit by an independent auditor may be required if expenditures of Federal funds > $500,000 during a fiscal year
- Other recipients: A-133 audit is required if expenditures of Federal funds > $500,000 in a fiscal year

- Submit Questions to *BENEFIT2015@ee.doe.gov.*
- Answers posted at https://EERE-Exchange.energy.gov , DE-FOA-0001166

Effective 12/26/2014, the DOE Financial Assistance regulations contained in 10 CFR 600 will be superseded by the Financial Assistance regulations contained in 2 CFR 200 (codified in Part IX of 2 CFR)