

FY 2018 EERE SBIR/STTR Topics Q&A

IMPORTANT: If you want to apply in February, you must [submit a Letter of Intent](#) (LOI) into DOE's [PAMS](#) regardless of whether you are completely sure that the anticipated R&D meets the SBIR FOA Topic description. **LOIs are due January 8, 2018.** We can answer additional questions up to the point that you apply or up to the Full Application Deadline of February 26, 2018 – whichever is earlier.

Topic 6: Advanced Manufacturing I

General Topic Questions

1. Does Topic 6 accept STTR applications?

Yes. Topic 6 does accept STTR applications.

6a Intelligent Systems for Materials Design and Discovery

2. Would enhanced separations be of interest?

Yes, if the application would be to develop or advance software for the design of atomically precise materials (whether for atomically precise membranes, catalysts, or other novel materials) then it would be of interest, particularly if it included a machine learning approach such as genetic algorithms.

6b Novel Energy-Efficient Dewatering Methods for Cellulosic Nanomaterials

3. What are water content targets?

We don't have a specific target at this point. Desired water content would be related to what's economical for shipment and would need to be in a form that users could re-disperse into their manufacturing process.

4. Would a proposal based on mechanical dewatering be of interest?

Maybe. The Topic focus is on a unique drying/dewatering process to produce a shippable and dispersible cellulose nanomaterial primarily for manufacture of reinforced composites using existing composite fabrication techniques for applications such as transportation lightweighting and wind turbine blades. This is meant to be targeting early stage R&D new concept developments that address critical dryer/dewatering technical barriers. If both these conditions are met, the proposal would likely be of interest. Generally, an engineering scale-up of a proven technology is not of interest. Without the full application, however, we cannot provide a firm answer so each applicant must decide if their idea fits the Topic at the LOI concept stage.

5. Is DOE limiting this Topic to nano-particles created by some known and limited number of processes? No. the source is neutral. See below. As long as our process creates quality nano-particles, will our dewatering and drying process be considered on an equal basis?

The Topic is not limited to nano-particles created by some known and limited number of processes. Nano-particles for re-dispersion in reinforced plastic composite manufacturing processes (injection molding, additive manufacturing, compression molding etc.) would be

considered on an equal basis if they produce acceptable products after dewatering/drying and also are applicable to other sources of nano-particles.

6. What is meant by “not be primarily dependent on heat recovery”? If heat recovery helps reduce costs, how much heat recovery can we use and still have an eligible project?

While recognizing that in implementation heat recovery is important, use of heat from an upstream process is not the main focus of this topic but rather it is on the design of the dewatering system/dryer. While there is no set fraction of heat recovery above which the application is ineligible, where feasible, proposed technologies should show non-heat recovery savings compared to an existing baseline process. “Not primarily dependent on heat recovery” means that while the process can include heat recovery, the primary economic benefit must come from innovations in the dewatering/drying technology, not from the use of heat recovery. For example, if the dewatering/drying technology uses existing commercial dryer technology and economic savings are based only on use of process heat from an upstream process, the application is not responsive as there is no savings due to innovation in dewatering/drying technology. The system will be evaluated for drying/dewatering effectiveness and innovation as if heat (if heat is involved) is provided by purchased energy and on its ability to operate with a variety of nano-particle sources.

7. Would a proposal based on [my technology] be of interest?

Per the Topic description, it should be economically feasible without dependence on heat recovery or production of byproduct power. Without the full application, however, we cannot provide a firm answer so each applicant must decide if their idea fits the Topic at the LOI concept stage.

6c Thermal Process Intensification for Productivity Improvements

[No Questions as of January 4, 2018]

6d TECHNOLOGY TRANSFER OPPORTUNITY: Process for the Synthesis of Precision Nanoparticles

8. What types of nanoparticles can be produced using this process?

This process has been demonstrated in the production of general I-III-VI materials such as CuInS_2 , $\text{CuIn}_{0.1}\text{Ga}_{0.9}\text{S}_2$, $\text{CuIn}_{0.9}\text{Ga}_{0.1}\text{S}_2$, etc. The process may be tuned to produce other materials of interest.

9. What are expected properties of I-III-VI nanoparticles?

Tailored I-III-VI nanoparticles can have a broad range of band-gaps for variety of applications such as PV, light emitter, and sensors.

10. What are processes in which I-III-VI nanoparticles can be produced efficiently?

I-III-VI nanoparticles have been produced in solvothermal process using SC CO_2 or microwave irradiation. Both methods are environmentally friendly and energy efficient compared to the conventional heating methods. In addition, above processes can be easily modified to add the continuous flow process.

Topic 7: Advanced Manufacturing II: Atomically Precise Manufacturing

7a Molecular Machine Advances

[No Questions as of January 4, 2018]

Topic 8: Bioenergy

8a Biofuels and Bioproducts from Wet Organic Waste Streams at Relevant Scales

[No Questions as of January 4, 2018]

8b Rewiring Biomass Conversion: Novel Strategies to Substantially Enhance Biomass Carbon Conversion Efficiency

[No Questions as of January 4, 2018]

8c Algae Breeding

[No Questions as of January 4, 2018]

8d Solid-Liquid Separations for Algal Systems

11. Are algal turf scrubbers responsive to this subtopic?

Yes, this is responsive to the subtopic.

Topic 9: Buildings

9a Innovations in Opaque Building Envelope Performance

[No Questions as of January 4, 2018]

9b Transparent Conductive Anodes for Solid-State Lighting

[No Questions as of January 4, 2018]

9c Whole-Building Energy Modeling

[No Questions as of January 4, 2018]

9d TECHNOLOGY TRANSFER OPPORTUNITY: Subwavelength Coatings and Methods for Making and Using Same

[No Questions as of January 4, 2018]

Topic 10: Fuel Cells [skipped for now]

General Topic Questions

12. In the absence of an “other” category, do you still have an interest in novel enhanced fuel cell technologies that would deliver significant enhancements in cost and performance?

Those technologies are outside of the 3 subtopic areas. The subtopics cover hydrogen storage, components, and evaluation. The subtopics are not related to fuel cells themselves, but benefit mostly hydrogen delivery and storage.

10a Smart Tanks for Hydrogen Storage

[No Questions as of January 4, 2018]

10b Materials and Components for High-Pressure Hydrogen Gas Service

[No Questions as of January 4, 2018]

10c Non-destructive Evaluation Technologies for Steels**13. Will traditional technologies listed be considered non-responsive?**

No, traditional technologies will be considered responsive if they are enhancement of sensitivity. Applications where enhanced sensitivity might be sought include ultrasonic testing, x-ray imaging, electromagnetic acoustic transducers, and radiography.

14. What types of hydrogen storage vessels are of greatest interest for NDE technology development?

Composite vessels.

Topic 11: Geothermal

11a TECHNOLOGY TRANSFER OPPORTUNITY: Low Enthalpy Geothermal Forward Osmosis

[No Questions as of January 4, 2018]

11b Dispatchable Geothermal Operations**15. Can you clarify the size and other characteristics of dispatchable geothermal sought?**

We're talking utility-scale when we're mentioning dispatchable geothermal, we're not interested in some of the novel, more portable heat engines.

16. Is there a preference for the type of expansion technology on the device? – Do you prefer turbo machinery or positive displacement?

No, we are ambivalent, aside from the preference noted for new development and preference towards flash or steam cycles.

Topic 12: Solar

General Topic Questions**17. Does this funding opportunity include new technologies to combine Solar PV + Storage with thin-film PV?**

Those technologies are not relevant to Topic 12. However, this does not constitute a final determination (which will be made based on all the info provided in the letter of intent). The decision of submitting a letter of intent remains on the applicant.

12a TECHNOLOGY TRANSFER OPPORTUNITY: Devices and Methods for De-Energizing a Photovoltaic System

18. Is there a prototype of the technology and, if so, at which what level of development (Technology Readiness Level) is it? *Yes. There is a prototype IDU (TRL 3-4). We have demonstrated that it works effectively at the module level but additional demonstration at the array level has not been completed at this time.*

19. What are the expected commercial barriers to adoption?

In addition to demonstrating effectiveness at the array level, market intelligence as to where the IDU is optimally integrated into the PV system is necessary. For instance, do the module manufacturers integrate it within the module? Do the inverter manufacturers package it with their inverters? Or do the installers manually install the IDU as part of the installation?

20. What are the most promising markets for the technology?

Commercial rooftops installations are expected to be the most promising market, as commercial rooftop systems typically do not include the module-level power electronics (which may be capable of performing a rapid shutdown function, albeit more expensively) that may be present in residential rooftop installations.

12b Cybersecurity for Solar Energy Devices

21. Will you consider technologies that add new components to the system?

Yes, that would be considered respondent to the subtopic, as long as it is clear how the new components can be integrated in the existing platforms.

22. Are innovations in new secure imbedded processor architectures in scope?

Yes, that would be in the scope of the subtopic.

23. Would new technologies for enhanced efficiency of solar modules be of interest?

Based on the information provided in the question, the project doesn't appear to be responsive to this subtopic. Without the full application, however, we cannot provide a firm answer so each applicant must decide if their idea fits the Topic at the LOI concept stage.

24. Are you open to having a demonstration that uses simulated solar devices as the source/sink of controls messages rather than using actual, physical solar devices for demonstrating cybersecurity capabilities?

Yes, that is acceptable. However, it should be clearly demonstrated that simulated solar devices have similar communication features as actual devices.

12c Peer-to-peer Energy Transactions

25. How is c different from other types of energy-electricity transactions?

The focus of this subtopic is on peer-to-peer transactions. Any solution within this kind of transactions likely will be responsive to the subtopic.

26. Do peer-to-peer transactions have to be completely peer-to-peer, or can there be a counterparty between? May a Renewable Energy Credit (REC) provider act as a purchasing counterparty from the prosumer that can then sell to another consumer?

Correct, renewable energy credits would work.

27. Does “third-party independent” imply block chain and other similar technologies?

Yes, it does.

28. Would a software only solution (without integrating with the power distribution system) be a permissible response option?

Yes, that likely would be considered responsive to the subtopic, as long as it clearly addresses the challenges and metrics discussed in the subtopic language.

29. Subtopic 12c lists eight different challenging issues, from scalability to transaction transparency and load distribution. Is it expected that all these issues are to be addressed or just a selected few?

The proposed research project does not need to address all the issues/areas of interest listed in the subtopic language. However, the application should clearly discuss the impact of the proposed technology in as many of these areas as appropriate, and whether or not other issues can or could be addressed in a future development of the project.

30. Would DOE and/or NREL provide help with match-making between distribution operators and small businesses?

DOE-SBIR does not provide support with stakeholder engagement during the application and review process. It is the applicant's responsibility to build up the necessary connections and form a strong team to successfully execute the proposed research project. EERE's SBIR staff will provide information on other relevant Tech-to-Market programs to successful applicants.

31. Is it DOE's intention that applicants use/extend/improve VOLTTRON or are other platforms acceptable?

No, the goal of this topic is not to further develop VOLTTRON, although applications leveraging VOLTTRON functionalities are welcome. The research project can build upon any existing technology platform. Please clearly discuss in the application the state of the art and how the proposed research project will advance it.

32. Would a solution be permissible and of interest that would only focus on the processes to connect DER solar PV projects to the grid?

Yes, that would be permissible and of interest, as long as the proposed solution addresses all the metrics stated in the subtopic and the application clearly explains the advantages and innovation provided by this solution compared to the state of the art.

33. Would a solution be permissible and of interest that would cover both, the development, as well as the commercialization stages, including field testing with initial pilot clients?

Yes, field testing with pilot clients is permissible and of interest. However, given the small budget available for a Phase I project, that would not be required. A clear path to conduct field testing in a Phase II of the project, if awarded, is encouraged.

12d Research in autonomous and augmented systems to reduce solar LCOE

- 34. References cited in the subtopic imply that the focus should be cost efficiencies and reliability – Can you elaborate on that?**

Current installation costs vary between residential and utility scale installations, but they are always a relatively large percentage of the total cost, so we're looking for significant decreases in that section of the overall price tag.

- 35. Will automation technologies for reducing the installation costs of residential solar roof systems be of interest?**

Yes – Automation technologies for roofs and ground-mounted systems as well are of interest.

- 36. When looking at major cost reductions would, you consider a completely new approach to photovoltaic tech?**

No. The focus of this subtopic is automation of the installation process. New approaches to the photovoltaic technologies would not be responsive to this subtopic.

- 37. Is reducing soft costs allowable?**

Yes, as long as the soft cost reduction is related to the installation procedures and achieved to automation of processes.

- 38. Is there anything you can elaborate on about the human augmented technologies related to this subtopic?**

The language of this subtopic is quite broad because we do not have any specific preferred technology. Human augmented technologies applied to the installation process could be considered responsive to the subtopic.

- 39. Is automated reliability testing for variable climate conditions and in-situ performance monitoring of interest?**

Based on the information provided in the question, the project does not appear to be relevant to subtopic 12d. However, this does not constitute a final determination. Without the full application, we cannot provide a firm answer so each applicant must decide if their idea fits the Topic at the LOI concept stage.

- 40. Is funding available for solar projects that create electricity but also produce commercial solar space heating?**

Perhaps. Based on the information provided in the question, a project focused on solar-based heating systems could be of interest. However, we recommend reading the subtopic description, especially the technical and cost metrics that DOE expects all projects will meet.

- 41. Would a company focusing on software that reduces the cost of solar development through expediting siting processes be considered? Yes, see below. Does research into automation of project management for residential installations fall under the scope?**

Yes, if that implies substantial improvement of the installation processes compared to the current state of the art. Automation of siting processes/project management/workflow with no impact on installation procedures and costs would not be of interest within this subtopic.

Topic 13: Vehicles

13a Electric Drive Vehicle Batteries

42. Is DOE interested in LCO-based batteries?

Perhaps. We would encourage the applicant to submit a Letter of Intent for any technology that helps the program meet the USABC battery goals.

13b Exploratory Low Cost Motor Designs for Electric Drive Vehicles

43. Are there specific performance targets being sought, for example power density efficiency, constant power speed range?

The targets for this subtopic are ones that are set forth in the presentation that's referenced in the subtopic description. Those don't go as far as constant power speed range.

44. In the topic description, reference is made to a 100 kW (peak) motor design. This is a departure from the FreedomCar spec of 55 kW peak (for 18 seconds) and 30 kW continuous. However, the kW/kg and kW/l goals are still the same for 2020. Is this based on the belief that the proposed technology can be simply scaled? With a peak power output of 100 kW, what would be the desired continuous rating?

This subtopic only refers to a 100 kW peak power target and the cost target of \$3.30/kW for motor concepts. There is not a power density, specific power, or continuous power target. You're welcome to use previous targets scaled up on a per kW basis if you need to reference targets or if you'd like a baseline for comparison.

13c Research on Energy Efficiency in Emerging Mobility Systems

45. Are you looking at innovative computing systems that can reduce power consumption for autonomous driving?

Yes, that would be within scope as long as the applicant can display a direct link between the computing system and the energy impact.

46. Would you consider research in vehicle mechanical systems that will allow development of ultra-compact and lightweight vehicles that will reduce traffic congestion?

Yes, but we are not specifically interested in projects that are focused on vehicle design. A larger transportation system that incorporates new and novel vehicle designs could be of interest. We don't want to duplicate any power train research that is going on within any of the other programs in VTO. It has to be unique and separate from those programs.

47. Would this subtopic only be restricted to EV systems or all transportation types?

All transportation types.

48. Would a lubricant-based research to reduce friction be applicable?

We would discourage submitting a Letter of Intent on lubricants for this subtopic.

49. Can you please articulate further, what demonstrating energy impact means?

There are several ways to do that, but the most effective demonstration of the energy impact would have to be done through an accepted model and simulation approach. There are free software packages online and through the National Labs that can help with this.

Topic 14: Wind

14a Innovations in Distributed Wind System Design

50. Would an advanced electric generator technology that can be scaled for a range of wind turbine sizes be of interest?

The Office of Energy Efficiency and Renewable Energy's Wind Energy Technologies Office (WETO), seeks applications for innovations that significantly reduce the cost of energy from U.S. wind power resources for land-based, offshore, and distributed wind turbines. WETO is seeking proposals for technology innovations with the potential to enable wind power to generate electricity offshore and in all 50 states cost competitively with other sources of generation. The SBIR/STTR Phase I subtopics 14a, "Innovations in Distributed Wind System Design," is intended to fund technologies directly associated with extracting energy from natural winds. Scaled design may be considered of interest, if it leads to a significant reduction in costs of wind energy without compromising reliability.

14b Innovations in Utility-Scale Performance (1MW or larger)

51. Is an offshore wind turbine substructure considered as part of the foundation?

For the purposes of subtopic 14b, the term "foundation" refers to the substructure, whether floating or bottom fixed, supporting the tower and turbine. The offshore foundation will typically be partially above, and partially below the waterline.

52. Would technologies for deep-water applications that apply to BAWTs and get a COE below those projected for HAWTs be responsive?

It is not clear what the term "BAWTs" refer to in the question. However, technologies considered under Subtopic 14b should be applicable to commercially available, MW-scale wind turbines. It is not the intent of this subtopic to support research and development related to experimental turbine configurations.

14c Other

53. Is a methodology to increase market penetration for utility systems by improving the efficiency and reliability on the power grid side rather than the wind farm itself in scope?

WETO seeks applications for innovations that significantly reduce the cost of energy from U.S. wind power resources for land-based, offshore and distributed wind turbines. WETO is seeking proposals for technology innovations with the potential to enable wind power to generate electricity offshore and in all 50 states cost competitively with other sources of generation. The SBIR/STTR Phase I subtopics 14 c, "Other," is intended to fund technologies directly associated with extracting energy from natural winds. If you have any further questions, please reach out to Mike Derby.

54. Would the subtopic include secure SCADA technologies, software or hardware?

WETO seeks applications for innovations that significantly reduce the cost of energy from U.S. wind power resources for land-based, offshore and distributed wind turbines. WETO is seeking proposals for technology innovations with the potential to enable wind power to generate electricity offshore and in all 50 states cost competitively with other sources of generation. The SBIR/STTR Phase I subtopics 14 c, "Other," is intended to fund technologies directly associated with extracting energy from natural winds. SCADA technologies, software or hardware technologies may be of interest, if it leads to a significant reduction in costs of wind energy without compromising reliability. Please reach out to Mike Derby with any additional questions.

Topic 15: Water

15a Development of Environmentally-Acceptable Lubricants for Hydropower Applications

55. What is the standard baseline hydropower lubricant that is used now?

The lubricants we use in hydropower range widely depending on which component you're talking about. Look at the component and determine what the existing lubricant is. Typically, petroleum-based lubricants are being used at this time.