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

Update

DOE SBIR/STTR Fiscal Year 2013
Phase I Release 2 FOA (DE-FOA-000812)
EERE Topic (2-12) Questions & Answers (Q&A)

The Office of Energy Efficiency and Renewable Energy supports RD&D partnerships that increase energy efficiency and renewable energy in all sectors of the economy. This paper captures questions submitted to EERE to seek clarification on the topics in the above FOA and the answers provided by DOE. Similar questions have been combined and edited for clarity. The topic description herein are not the full topics, but excerpts from the full topics document found at:
http://science.energy.gov/~/media/sbir/pdf/solicitations/FY13PIR2Topics11912Ver3.pdf
For an overview of EERE, see http://www.eere.energy.gov/
For general questions about EERE, see http://www1.eere.energy.gov/office_eere/oe_faqs.html
For general questions about DOE's SBIR/STTR Office, see http://science.energy.gov/sbir
For non-topic questions about this FOA, see http://science.energy.gov/sbir/about/faqs/
EERE SBIR web page: http://www1.eere.energy.gov/office_eere/oe_sbir.html
Topics Webinar recording: http://cc.readytalk.com/play?id=b4anrw

Proposals in response to this FOA are due to DOE February 5, 2013

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Highlighted items have additional Q&A

Crosscutting Q&A

Below are topic-related questions that are relevant to most or all of the topics in this FOA.

	Q	A
EE-1	Is my (specific technical approach) relevant to (this topic)?	We leave the determination of relevance to the expert in your technology—You! Therefore, if you think your technology is relevant, it is up to you to convince us.
EE-2	Many questions involve asking DOE what types of technologies will be most desirable to respond a specific topic area.	You will find the answer your question by careful reading of the topic and subtopic, and references therein. The exceptions are those for which we have posted a Q&A below in what follows.
EE-3	Is the topic focused on implementation/ deployment of existing in-line technologies or to development of new tools?	According to the FOA, Phase I awards such as these are to evaluate, insofar as possible, the scientific or technical merit and feasibility of ideas that appear to have commercial potential. The grant application should concentrate on research that will contribute to proving scientific or technical feasibility of the approach or concept.
EE-4	Is it beneficial to develop technologies for multiple clean tech applications (e.g. solar cells and fuel cells) compared to single industry?	In most cases, cost-competitive solutions for multiple applications are sought.
EE-5	How broadly applicable should the proposal be, and how much of a focus on energy savings.	For energy efficiency topics, energy savings is critical. For renewable energy topics, only slightly less so as increased efficiency helps with cost reduction in most instances.
EE-6	How much background and market research will be required for a successful proposal?	Enough to make the proposal credible. For example, for biomass subtopic 7a), your application should compare your technology to at least one of the existing advanced biofuel, bioproduct, or biopower conversion pathways.
EE-7	What about the teaming requirements between small and large businesses?	This is not a topic question. See http://science.energy.gov/sbir/about/faqs/.
EE-8	Can National Laboratories or other FFRDCs apply under this FOA?	No, not directly, the main applicant must be a small business. The detailed answer is found at http://science.energy.gov/sbir/about/faqs/.
EE-9	Can we provide two proposals for one topic and/or across topics?	Applicants can submit multiple applications, though each application should address only one of the topic/sub-topics for consideration. You may apply to more than 1 topic/sub-topic area. You must submit an application for each topic/sub-topic.
EE-10	Are there requirements that equipment for SBIR grants are purchased from domestic sources?	This is allowed. We encourage the purchase of domestic equipment but do not require it. This action should be reviewed by the Project Manager and the Chicago (Contract Specialist) because there will be changes made to the budget. Also the Project Manager will have to make a determination on the impact on the success of the grant.

Topic 2. Advanced Manufacturing

Topic 2: Advanced Manufacturing (http://www1.eere.energy.gov/manufacturing/) seeks transformational manufacturing process technologies and in-situ metrology and process controls that will reduce energy consumption and cost in manufacturing by 50%. Many of these issues were explained in more detail during the webinar given on November 5, 2012. To access the recorded webinar, go to http://cc.readytalk.com/play?id=b4anrw.

2(a) Manufacturing Process: Multi-material joining techniques (especially joining different and novel materials) are becoming increasingly important in industrial processes in a wide variety of industries. Joined structure materials challenges include (i) thermal expansion mismatch, (ii) reduced temperature and load ranges, and (iii) increased directionality.

2(b) In-Situ Metrology and Process Control: The ability to characterize materials and monitor processes in real time allows for tighter process control, which can contribute to reducing cost, halving energy use, and improving the quality of final products. Projects are sought that could contribute to >50% energy savings in the manufacturing sector if deployed at a substantial number of the nearly 200,000 manufacturing plants in the U.S.

2(a) Manufacturing Process		
	Q	**A**
2(a)-1	What are the size ranges being targeted by DOE for multi-material joining techniques?	There are no specific limits on multi-material joining techniques. At the Phase I level, we do not expect to see projects that will make multi material joining for airplanes. The technology need only be demonstrated at this stage. There was an example of a car given during the topics webinar held on November 5, 2012. The URL for the recording of the webinar is above in the topic 2 introduction.
2(a)-2	Is development of laser welding or composite joining of interest?	Yes provided it reduces (1) thermal expansion mismatch, (2) temperature and load ranges, and (3) directionality.
2(a)-3	Can topic 2a also be applied to non-novel materials if improved performance is expected?	Novel materials are preferred but not required.

2(b) In-Situ Metrology and Process Controls		
	Q	**A**
2(b)-1	How does DOE define “in real time?”	“Real time” means during the manufacturing process. Processes have to be controlled so that measurements can be made on-line, in real time, while manufacturing. This example was provided during the webinar: **“**The need to measure thickness while the material is being produced.”
2(b)-2	What enhancements to nano-mechanical metrology instruments are needed to help develop solutions to these problems?	Those that meet the energy reduction requirement—especially those featuring real-time, non-contact, and non-destructive measurement, incorporating numerical techniques (e.g. statistical analysis) and demonstrate value to industry are needed.

Topic 3. Biomass

Topic 3: Biomass (http://www1.eere.energy.gov/biomass/) supports research, development, deployment, and demonstration activities to support diverse, cost-effective bioenergy technologies including:

3(a) Measuring and Improving Biomass Quality throughout the Feedstock Supply Chain: Raw feedstock sub optimality includes (i) low bulk density and (ii) low energy density, (iii) lack of compatibility with the existing grain and other crop transportation infrastructure, (iv) poor handling characteristics, and (v) potential instability during long periods of storage. Transforming raw biomass into a high quality, on-spec, uniform, commodity feedstock that enables cost-effective feedstock supply systems will require innovations in harvest, storage, preprocessing, and transportation steps. The feedstock specifications to be measured must be directly linked to a specific downstream conversion process to adequately assess the impact of each step, for example, a measuring ash content that affects gasification or measuring sugar content that affects fermentation.

3(b) Design and Fabrication of Solids Handling for Biomass Conversion Systems: Robust systems are needed to continuously introduce feedstock from ambient conditions into a controlled reactor environment and to remove and upgrade solids such as ash, char, and lignin. Consideration will be given to ideas that would allow for multiple feedstocks, easy manufacturability—including use of non-specialized materials of construction, or other features that would appeal to multiple conversion technology providers. Background information on several of the more common processes can be found in Office of Biomass sponsored reports: (http://www1.eere.energy.gov/biomass/key_publications.html#DESIGN_REPORTS_CASE_STUDIES), Idaho National Lab (INL) design reports: (https://inlportal.inl.gov/portal/server.pt?open=512&objID=421&PageID=5806&cached=true&mode=2&userID=1829), or other peer-reviewed literature.

3(a) Measuring and Improving Biomass Quality throughout the Feedstock Supply Chain		
	Q	**A**
3(a)-1	What types of benchmarks does DOE seek?	Please review the design reports from Idaho National Lab with respect to herbaceous or woody biomass (URL referenced above).
3(a)-2	Would transgenic crops engineered for better processing be applicable?	Yes, though their relationship to feedstock supply chain variables should be discussed in the application. For example, crop X will provide improvement of Y over existing crop Z (where Y could be one of the variables defined in the Idaho National Lab (INL) herbaceous design report or draft woody biomass report such as yield/acre, or harvester efficiency, referenced above.)
3(a)-3	Would developing a high sugar feedstock for optimal biomass processing be appropriate?	Yes. To help reviewers quantify the improvement, the application should estimate the increase in yield/ton for a sugar conversion process. Baselines are available in Office of Biomass sponsored reports, INL design reports, or other peer-reviewed literature (URLs referenced above).

3(a) Measuring and Improving Biomass Quality throughout the Feedstock Supply Chain (cont'd.)		
	Q	**A**
3(a)-4	What does on-spec biomass mean?	It means meeting the specifications of an advanced biofuel, bioproduct, or biopower conversion process. Since each conversion process is slightly different, applications should identify the process and the target specifications. Some examples include sugar content, % moisture, ash content, or density.

3(b) Design and Fabrication of Solids Handling for Biomass Conversion Systems		
	Q	**A**
3(b)-1	What is the DOE definition of continuous biomass solids handling?	Continuous biomass solids handling is into or out of the biomass conversion reactor. No batch process is applicable.
3(b)-2	Are lab-on-a-chip manufacturing processes for catalysis of biomass conversion covered under this topic?	Subtopic 3b is focused on the solids interfaces at the front end and back end of the conversion reactor, not the conversion process itself, so this does not seem to be applicable.

Topic 4. Buildings

Topic 4 Building Electric Lighting: (http://www1.eere.energy.gov/buildings/) All successful applications must:

- Be consistent with and have performance metrics linked to the DOE SSL Multi-Year Program Plan (MYPP) available for download at: http://apps1.eere.energy.gov/buildings/publications/pdfs/ssl/ssl_mypp2012_web.pdf;
- Clearly define the proposed application and innovation; and
- Include quantitative projections for price and/or performance improvement that are tied to representative values included in the MYPP or in comparison to existing products.

4(a) Energy Conservation Applications for Solid-State Lighting (OLEDs) Approaches to encourage and accelerate SSL adoption in buildings and other lit spaces, such as parking lots or roadways, by identifying innovations whose commercial successes are likely to have a profound impact on the evolution of SSL. Applications of emerging OLED technology specifically applied to energy conservation (Efficient and Practical OLED luminaries, panels, or constituents) are sought Examples:

—Commercial OLED panels purchased from manufacturers worldwide used to create novel lighting products that compete in efficiency/value with LEDs or incandescent counterparts

—Incorporation of existing and proven materials and components into practical and cost-effective products whose performance and value can be quantitatively compared to other competing solutions

—Key enabling, and even disruptive applications of OLED technology to improve their market share in the overall LED market (display case lighting; advertisement, etc.).

4(a) Energy Conservation Applications for Solid-State Lighting (OLEDs)		
	Q	**A**
New	4(a) Is building exterior envelope design and analysis for energy efficiency a topic under this solicitation?	This does not fit under Buildings Topic 4 or Buildings-Solar Topic 11 building solar cogeneration. There is no building topic in the exterior envelope area this year. There are, however, non-SBIR FOAs that may be of interest. I suggest the applicant check EERE's eXchange website: https://eere-exchange.energy.gov/
4(a)-1	Our LED's are at 135 lumens per watt. Why bother with the OLEDs?	Not all applications are suited to LEDs and this FOA seeks to identify market entry points and novel applications that would be ideally suited to the unique attributes and performance of OLEDs rather than LEDs. A direct replacement of an OLED for a LEDs is not always practical nor energy efficient.
4(a)-2	Is OLED technology the only focus of topic 4 Can it be any other LED based system that saves a lot of energy for 'Buildings'?	OLED technology applications are the only ones accepted for this subtopic. Only OLED.
4(a)-3	If the innovation will work with an OLED luminaire, is it acceptable?	Yes. Please follow the instructions in the topic description and include as much detail as possible in the LOI.

4(a) Energy Conservation Applications for Solid-State Lighting (OLEDs) (cont'd.)		
	Q	**A**
4(a)-4	LEDs have temperature constraints for outdoor applications. Are solutions for overcoming it appropriate? What about harmonic distortion mitigation in power supplies.	There are no temperature constraints for the OLED products envisioned for this FOA since none exist to date. Power supply considerations for OLEDs are expected to be similar to those used for LEDs.
4(a)-5	What are the year ranges DOE is interested in for the price and performance projections?	There are different price points for different years up to 2020 as defined in the Roadmap. Please consult the multiyear program plan (MYPP) (URL above).
4(a)-6	What [O]LED cost reductions are sought?	We seek applications that further reduce OLED cost (economies of scale) and results in a market entry for OLEDs.
4(a)-7	Where is a resource of benchmarks for post-instillation performance reporting for lighting projects?	See the 2012 update to the Manufacturing Roadmap http://apps1.eere.energy.gov/buildings/publications/pdfs/ssl/ssl_manuf-roadmap_august2012.pdf

Click here to go to Topic 11. Buildings-Solar Joint Topic (Solar Cogeneration)

Topic 5. Geothermal

Topic 5: Geothermal: (http://www1.eere.energy.gov/geothermal/) The Geothermal Technologies Office (GTO) works to establish geothermal as an economically competitive contributor to the U.S. energy supply. Information on GTO's focus areas in technologies that reduce the risk and cost of finding new geothermal resources are at www.eere.energy.gov/geothermal/pdfs/iet_needs_assessment_06-2011.pdf.

5(a) Non-Prime Mover Technologies that Reduce Energy Costs: The GTO seeks non-prime mover technologies that have the potential to contribute to reducing the levelized cost of electricity from new hydrothermal development to 6¢/ kWh by 2020 and Enhanced Geothermal Systems (EGS) to 6¢/ kWh by 2030.

5(a) Non-Prime Mover Technologies that Reduce Energy Costs		
	Q	**A**
New	What if the Geothermal Electricity Technology Evaluation Model (GETEM) does not have a field for my specific technology?	You can make some reasonable, ballpark, back-of-the-envelope calculations that change relevant GETEM input fields and compare them to current industry standards. You could also provide a few different scenarios for various baseline cases and parameters.
5(a)-1	This topic seems very broad; does mean that GTO is interesting in anything within these large target areas? Is anything other than "prime mover" specifically excluded?	GTO is casting a wide net with this SBIR FOA. We are only specifically excluding prime mover technologies; however, any technology must clearly result in lowering the LCOE to 6¢/ kWh on the time scales listed in the FOA.
5(a)-2	What are some examples of acceptable technologies?	Technologies that identify geothermal resources, assist with creating/accessing the resource (e.g., drilling), and those that help reduce resource degradation (i.e., those that address sustainability) are acceptable.
5(a)-3	Are there minimum depth or temperature requirements for these applications?	While we do not have explicit requirements, the technology should be able to operate at temperatures and depths that are realistic to reduce the LCOE to 6¢/ kWh.
5(a)-4	Since Geothermal is high temp, would thermal barrier coatings be applicable as an application to turbine generators using steam from geothermal vents?	This technology does not appear to be a "Prime Mover" (defined for this topic as any technology that generates electricity from geothermal heat and fluid resources), and therefore would be not considered.

Topic 6. Hydrogen and Fuel Cells

Topic 6: Hydrogen Dispenser Technologies: (http://www1.eere.energy.gov/hydrogenandfuelcells/) We are looking only for applications focused on hydrogen dispenser systems. In order to be competitive with gasoline dispensers, the cost, safety, and maintenance of hydrogen dispensers should be equivalent to or better than current commercial gasoline dispensers which see approximately 70 fills per day or 25,550 fills per year.

6(a) Hydrogen Dispenser Hose Assemblies: This subtopic seeks proposals to develop hose assemblies which can ensure reliability and safety in H70 service while helping to lower the cost of the overall dispenser system from the current status of $50,000 to the 2015 target $40,000 for an 860 bar dispenser.

6(b) Other: In addition to the specific subtopic listed above, the Department invites grant applications in other areas that fall within the scope of the topic description above.

6(a) Hydrogen Dispenser Hose Assemblies		
	Q	**A**
6(a)-1	What is expected in Phase I for the detailed design, preliminary cost analysis and design requirements?	The detailed design should include drawings from which the subsystem can be manufactured. The preliminary cost estimate should be based on quotes. The analysis of the design against the requirements may include mathematical modeling, CFD and FEA analysis or other analysis tools. It is not expected to include the purchase or test of any hardware.
6(a)-2	Do electric drive motors fall within the hydrogen dispenser topic?	No, it is only for hydrogen dispensers. Perhaps Vehicle technologies or AMO has an open solicitation where it might fit.

6(b) Other		
	Q	**A**
New	6(b) What level of implementation will you consider as part of the feasibility study for Phase I? Specifically, do we have to demonstrate prototype system-level integration, or just demonstrate the sensor technology and its ability to surpass commercial sensors?	Thank you for asking about the prototypes with regard to Topic 6(b). I realize this is unclear. As indicated in Topic 6(a), prototypes are not expected in the first phase; this is applicable to Topic 6(b) as well. Please scope the work appropriately to the award amount of $150,000 for Phase I.
6(b)-1	Can dispensing be for either gas or liquid Hydrogen?	Yes. The technology can be relevant to liquid, cryo-compressed, cold, or gaseous hydrogen dispensing.
6(b)-2	Are compression technologies part of the dispenser system?	Possibly. If the applicant can show the overall cost of dispensing is lowered and/or the reliability is improved by use of the technology it could be considered with in this topic.

6(b) Other (cont'd.)		
	Q	**A**
6(b)-3	Do you envision any integration of the dispenser hose with a hydrogen leak detector as a hose safety feature? Would the development of an H2 leak detector, or the integration of such a detector with a hose, fall within the scope of the "Other" section of the solicitation?	If the leak detector can provide a cost reduction (capital, reliability operating and maintenance costs are all considered) over the standard detectors required around dispensers, we would be happy to consider it within the "other" topic.
6(b)-4	We have invented and demonstrated a biomass conversion method for producing pure hydrogen in a manner that is energy self-sufficient.	This would not fit within the "other" topic as it relates specifically to hydrogen dispenser topics that do not fall within the "hose assemblies" category. As biomass conversion to hydrogen and other fuels is certainly an area of interest within the Department, please watch for other FOAs that may be more suitable.

Topic 7. Solar

Topic 7: Solar Through the EERE SunShot Initiative, the Solar program aims to achieve subsidy-free, cost competitive solar power by the end of the decade. Grant applications are sought for:

7(a) PV Module Degradation: Successful applicants should offer solutions to model or eliminate all or some causes of module degradation through physics based degradation software for lifetime predictions, novel cost-effective photovoltaics module components, new module architectures, or innovative low- cost and small floor print manufacturing methods, processes, and tests of modules and module subcomponents;

7(b) Module and System Manufacturing Metrology, Diagnostics, and Process Control: Applications for innovative, high performance, intelligent process control, and real-time nondestructive material characterization devices for use in metrology, diagnostics, and process quality control on the manufacturing lines for PV modules and systems;

7(c) Balance of System (non-hardware): Applications that develop of an online, graphical user interface-friendly calculator of the wind-loads on PV ground-mount and roof-mount systems; and

7(d) Concentrating Solar Power: The DOE SunShot CSP program seeks proposals for distributed (1kW to 1MW) CSP with storage. (CPV systems are not included in this subtopic). Any technology proposed should be capable of achieving the CSP SunShot target of 6¢/kWh by 2020.

7(a) PV Module Degradation		
	Q	**A**
New	We have an idea of structures to enhance optical absorption and consequently the cell efficiency. Is this a good fit for topic 7a?	Unfortunately, your idea is outside the scope of this topic, the goal of which is to find better solutions to eliminate the PV module degradation in the field, like eliminating the degradation due to water ingress, adhesion losses, delamination, thermal stresses, etc. The 2012 Phase I (Release 3) FOA did have a topic dedicated to cell improvements. As you mentioned, more basic research is needed in this area and DOE may look to investigate novel ideas in the future.
7(a)-1	What metrics will DOE use to assess the relative promise of different technologies that solve module degradation and failure issues?	Metrics include projected LCOE improvements, performance over current comparable products, ease of implementation of new technologies into current module making processes, etc.
7(a)-2	Would a project scaling the implementation of low-cost, environmentally stable transparent conductive oxides for CIGS module front contacts be considered for funding under this topic?	This would be a possible project provided the applicant can convince reviewers that once research is complete the product can be turned into a viable business, and provides significant improvements over the existing technology while notably reducing the costs. See EE-3.
7(a)-3	Would a novel array-level metrology method be considered for monitoring	DOE is looking for solutions that can model and/or eliminate the PV module degradation through physics based degradation software for

7(a) PV Module Degradation		
	Q	**A**
	junction degradation over time? (e.g.; a handheld scanning system that can determine Jo, Rs, Rsh of each cell within a module).	lifetime predictions, or novel PV module components, and architectures, or manufacturing processes

7(b) Module and System Manufacturing Metrology, Diagnostics, and Process Control		
	Q	**A**
7(b)-1	Will software that tailors off the shelf technologies to PV applications be considered?	Off the shelf technologies "tailored" to PV metrology for manufacturing lines are possible as long as the advantages of using that technology bring significant quality and cost reduction improvements over the current state of the art, rather than small, incremental changes.

7(c) Balance of System (non-hardware)		
	Q	**A**
7(c)-1	What metrics will DOE use to compare different online, graphical user interface-friendly calculators of the wind-loads on PV ground-mount and roof-mount systems?	Comparative metrics for evaluation are: data accessibility, regulatory validity of computation, size of database of current products able to be evaluated, and the ability to easily adapt to future wind loads guidelines and codes.

7(d) Concentrating Solar Power		
	Q	**A**
7(d)-1	Are there temperature range requirements for systems that produce solar hot water? Are levels of heat production (bet. 80 - 120 F) considered acceptable?	The temperature range for residential hot water may be 55 – 100^{o}C; higher for commercial and industrial purposes. Process heat and steam is also possible for commercial and industrial purposes.
7(d)-2	What is the upper limit on solar energy conversion efficiency that you assume for CSP? Does the requirement in topic 7 mean that the efficiency of converting solar energy to electricity must be 50% or greater? Are you interested in superior power cycles?	There is no explicit efficiency limit. The cost target (6¢/kWh by 2020) and the required electric ratio (≥ 50% of the incident sunlight on the system should be used for electricity generation) however, imply high solar electric conversion efficiency. No power cycle that meets the requirements is excluded.
7(d)-3	Phase I requires software simulation for which the only supplier is a German firm. Will there be problems with using such a supplier?	Using a foreign developed software program for the analysis is allowed. This is not really a topic question. See EE-10 in this document and http://science.energy.gov/sbir/about/faqs/.

7(d) Concentrating Solar Power (cont'd.)		
	Q	**A**
7(d)-4	Are you interested in proposals to develop solar collector tubes that can handle high temperatures (as in 8/28/12 DOE university grant announcement--1200 - 2350 F for CSP heat transfer fluids) and are compatible with liquid lead and molten salt?	The solicitation requires only that your proposal for distributed systems or components meet the 6¢/kWh SunShot goal.
7(d)-5	Would a proposal to develop a novel TES COMPONENT be considered responsive if it has the interest of a CSP provider? What about multi spectrum wave designs?	Through topic 7(d), DOE will consider applications for technology components in addition to full systems
7(d)-6	There does not appear to be any interest in advanced CPV (concentrating photovoltaic) systems—is this correct? If not would a novel CPV module with much lower degradation than conventional one-sun PV modules appropriate for this category?	CPV is excluded from subtopic 9(d) on concentrating solar power, but may be included as part of topic 11(a) solar co-generation.

Click here to go to Topic 11. Buildings-Solar Joint Topic (Solar Cogeneration)

Click here to go to Topic 12. The Solar TTO (AC PV)

Topic 8. Vehicles

Topic 8: Vehicles (http://www1.eere.energy.gov/vehiclesandfuels/) is focused on developing technologies to enable average new vehicle fuel economy of more than 60 mpg for cars and more than 43 mpg for trucks by 2025. Grant applications are sought in the following subtopics:

8(a) Electric Drive Vehicle Batteries: Applications are sought for electrochemical energy storage technologies that support commercialization of micro, mild, and full HEVs, PHEVs, and EVs. Information on EERE's Energy Storage projects can be found at http://www1.eere.energy.gov/vehiclesandfuels/resources/vt_es_fy11.html

8(b) Combustion: Advanced ignition concepts are sought that (i) extend the lean ignition limit to air/fuel ratio > 20, (ii) enable reliable ignition under high in-cylinder pressures (up to 100 bar at the time of ignition) thus enabling high load operation, (iii) enable operation under high levels of exhaust gas recirculation, and (iv) lower or maintain ignitability (coefficient of variance of IMEP < 3%);

8(c) Dual-Fuel Vehicle Technologies: Dual-fuel concepts are sought for light-duty passenger car applications that (i) increase engine efficiency by exploiting the fuel properties, (ii) displace/reduce petroleum usage, (iii) enable use of existing emissions controls, (iv) meet all emissions and on-board diagnostic requirements, and (v) where the engine can switch between operation on 100% gasoline, 100% other fuel, or a combination of both without having to refuel; and,

8(d) Electric Drive Vehicle Power Electronics Subcomponent Improvements: Improvements in their performance can lead to cost reduction or better utilization of their capabilities in vehicles, as outlined in the U.S. DRIVE partnership Electrical and Electronics Technical Team Roadmap at www.eere.energy.gov/vehiclesandfuels/pdfs/program/eett_roadmap_12-7-10.pdf.

8(a) Electric Drive Vehicle Batteries		
	Q	**A**
8(a)-1	Are there Technology Readiness Level (TRL) requirements associated with this opportunity?	No. Although there are no TRL requirements, SBIR technologies focus on research that small businesses will be able to bring to market at the conclusion of their grant. If there does not appear to be a plausible pathway to advance the state-of-the-art to meet our goals and produce a marketable project shortly after the conclusion of this grant, the proposal will be judged accordingly.
8(a)-2	Is this subtopic aimed at lithium-ion batteries?	No. Although many prior year projects dealt with lithium-ion technologies, our goals are chemistry agnostic. As long as you are able to meet our requirements, it does not matter if it is with lithium-ion technology.
8(a)-3	What is the power requirement? What is the threshold of specific energy (Wh/kg) or energy density (Wh/L) that would be considered?	Please refer to the USABC goals: http://www.uscar.org/guest/article_view.php?articles_id=85. Choose an electric drive system platform your technology would be appropriate for.

8(a) Electric Drive Vehicle Batteries (cont'd.)		
	Q	**A**
8(a)-4	Will other energy storage topics be eligible if not applied to the integration of second-life EV batteries?	No, This topic only deals with energy storage applications that can be used in rechargeable electrochemical energy storage technologies.
8(a)-5	We manufacture Large Format prismatic Li-ion cells. Can we qualify for this SBIR?	There is no technical reason why you would not be able to. You should check to make sure your company meets the requirements of a small business.

8(b) Combustion		
	Q	**A**
8(b)-1	Is reduction in oil usage by internal combustion engines considered an improvement in efficiency?	Yes, if the engine efficiency is improved.
8(b)-2	Would research in the area of laser ignition (e.g. showing combustion benefits, developing laser source etc) be considered? Industry partners for TTO into production?	A research priority is to show combustion benefits for lean air-fuel mixtures.

8(c) Dual-Fuel Vehicle Technologies		
	Q	**A**
8(c)-1	Are there specific requirements for the dual fuel composition or source? Would combined ammonia/diesel technologies qualify? Does one of the fuels have to be gasoline?	One of the fuels must be readily available with current infrastructure, i.e., gasoline or diesel. The other fuel can be less common but must be currently and legally available for transportation, e.g., E85, natural gas, propane. Each fuel should cover at least 40 miles range by themselves if used exclusively, i.e., several gallons of gasoline for a mid-sized passenger vehicle. Thus, ammonia/diesel is not eligible.
8(c)-2	Can electricity generation be the second fuel? (E.g., would hybrid engines like the Prius, be considered?)	No, electricity will not be considered as one of the fuels.
8(c)-3	Does the engine efficiency have to be improved?	Yes, bi-fuel applications that simply substitute gasoline or diesel for an alternative fuel will not be accepted. The proposal must improve the operating efficiency of the engine by exploiting the beneficial fuel properties of both fuels, i.e., using the higher octane of the alternative fuel to improve thermal efficiency or using the alternative fuel to enable a lean-combustion regime.
8(c)-4	What capacity/range do the fuels have to cover?	Each fuel should cover at least 40 miles range by themselves if used exclusively, i.e., several gallons of gasoline for a mid-sized passenger vehicle.

8(c) Dual-Fuel Vehicle Technologies (cont'd.)		
	Q	**A**
8(c)-5	Is the application for light-duty only?	Light-duty and heavy-duty on-road applications are acceptable. Off-road applications (rail, marine, construction) will not be accepted.

8(d) Electric Drive Vehicle Power Electronics Subcomponent Improvements		
	Q	**A**
8(d)-1	Will graphite have low enough resistance or is a metallic conductor needed?	Metallic conductors are not expressly required for low electrical resistivity as described. Proposers should consider their approach against current state of the art materials used in vehicle applications and the challenge of a high-temperature requirement.
8(d)-2	Are there metrics associated with "small", "lightweight" or "low loss" for 8(d) 1?	There are not exact metrics, but we encourage applicants to compare their approach to the current state of the art for automotive DC/DC converters. One example is given in our 2010 annual report in section 4.1 – see http://www1.eere.energy.gov/vehiclesandfuels/pdfs/program/2010_apeem_report.pdf Similarly, for other topic areas, we suggest you select a current technology or approach for comparison to your proposal.

Topic 9. Water

Topic 9: Water (http://www1.eere.energy.gov/water/) The Water Power Program seeks proposals that contribute to large cost reductions in the deployment of U.S. water, hydro- and marine, power resources. NOTE: Subtopics 9(a) and 9(b) are completely independent of each other. Relative size/scales defined in topic 9(b) are specific to 9(b) and do not relate to topic 9(a).

9(a) Marine and Hydrokinetic Energy (MHK): DOE will fund analytical studies of innovative concepts (TRL 1-3) or projects that propose a sound but novel approach to a potentially important water power technology, science, or engineering breakthrough that can be applied to, or add to the portfolio of, innovative water power technologies.; and

9(b) Hydropower Applications: proposals are sought in the following four areas of interest:

i. ADVANCED COATINGS: Advanced coatings are needed for flow passages of hydraulic turbines.
ii. WATER QUALITY SENSORS:
iii. LOW-COST FLOW AND VELOCITY SENSORS: for rapid, low-cost deployment in absolute flow measurement systems and testing of hydraulic turbines; and
iv. SMALL HYDROPOWER TURBINE-GENERATOR TECHNOLOGY: with potential to dramatically reduce the cost of deployment in sites with less than 30 feet of head or innovative generation at the 5MW level that is scalable.

NOTE: For both ii and iii, accuracy of turbine flow measurement is a critical factor for (a) demonstration of energy conversion performance as specified in turbine procurement contracts and (b) determination of unit-specific performance characteristics to enable optimal unit commitment and load allocation within multi-unit hydropower facilities. Measurement systems identified in the aforementioned standards are cost-prohibitive for many small hydropower facilities and facilities with non-ideal intake passages. While incremental improvements to reduce the costs of existing flow measurement system deployments are valuable, the focus of the solicitation is to encourage development of transformative technologies--novel measurement systems and sensors that can be deployed at significantly lower cost to deliver useful accuracy.

9(a) Marine and Hydrokinetic Energy		
	Q	**A**
9(a)-1	How do you define "utility-scale?"	Topic 9a seeks projects which could produce "utility-scale electricity" (i.e., electrons on the grid). However, utility-scale electricity could come in the form of a single large unit or many smaller units set up in an array so that the total energy provided to the grid would be significant.
9(a)-2	Does the DOE have a road map for marine hydrokinetic (MHK) and offshore wind turbine?	DOE does not have an official roadmap for MHK devices. However, DOE has posted a number of publications regarding MHK technology at http://www1.eere.energy.gov/library/default.aspx?page=14.
9(a)-3	Would a grant application offering to develop an innovative anchoring approach for devices in high tidal or current areas qualify?	As long as the anchoring approach is targeted for use with MHK systems capable of producing utility-scale electricity then, yes, the application would qualify.

9(a) Marine and Hydrokinetic Energy (cont'd.)		
	Q	**A**
9(a)-4	What about deep-water (100 ft+) turbines that can work in the Gulf Stream without interfering with ship traffic?	Yes, DOE is interested in grant applications that are sought to develop approaches that can advance wave and current energy technologies. Areas of interest include wave energy converters and energy conversion technologies for tidal, river, and ocean currents.
9(a)-5	What about "Above The Water Hydrokinetic Technology" studies? What about the generation of power using Buoyancy Prime Mover?	Yes, the Department is interested in above the water hydrokinetic technology, as long as the technology is applicable to an MHK system of wave or current.
9(a)-6	Will this FOA cover only wave energy converter technologies, or will it consider auxiliary supporting systems, such as mooring, anchoring, and power transmission.	Components could be specific to the MHK industry or could be a crosscutting component (i.e. moorings and anchors).
9(a)-7	What are the benchmark performance/cost numbers over which a 20% performance improvement is sought?	The line, "These concepts must demonstrate the potential for a 20% improvement in performance or cost relative to existing devices or technologies of similar function," is meant to be more qualitative than quantitative. To meet this metric, a discussion on how the technology has the potential for a significant improvement should be included. The baseline technology would be the technology the application aims to replace or complement. For example, if the application were proposing an innovative power take off, the technology of comparison would be to typical power take off scheme(s) in the MHK device(s) the application targets (point absorber, axial flow turbine, etc.). If an entirely new system is proposed, the discussion should compare the advantages and improvements over similar MHK systems in that class (point absorber, axial flow turbine, etc.).

9(b) Hydropower Applications		
	Q	**A**
New-1	9(b) Response to multiple questions.	Applicants are encouraged to work with hydropower consultants, manufacturers, and other stakeholders to determine state-of-art applications, technology gaps, and how proposed solutions would benefit the industry through increased performance at competitive costs. FYI: standards and documented techniques for flow measurement in hydraulic turbines are available from the American Society of Mechanical Engineers (PTC-18) or the International Electrotechnical Commission (60041). Accuracy of turbine flow measurement is a critical factor for (a) demonstration of energy conversion performance as specified in turbine procurement contracts and (b) determination of unit-specific performance characteristics to enable optimal unit commitment and load allocation within multi-unit hydropower facilities.

9(b) Hydropower Applications (cont'd.)		
	Q	**A**
New-2	9(b)(i) We propose to demonstrate use of thermal spray hard coatings such as WC-Co-Cr and Chrome oxide with boron nitride dispersions as solid lubricants. I wanted to check with you if this conforms to your objectives for protection of turbine components.	It is very difficult for me to provide any opinion on your technology based on the limited description provided. Please see Q&A 9(b)-10 below.
New-3	9(b)(ii) I have been looking over methods of monitoring dissolved oxygen and total dissolved gasses and find that there are several commercially available instruments for measuring dissolved oxygen (e.g. Ocean Optics NeoFox unit and assorted probes). Have you looked at this technology and found it not suitable? If so, why?	DOE is aware of the state of the art technologies for water quality sensors exist though specific sensors may or may not have been evaluated. I request you to see the intent of the sub-topic regarding dramatic cost reductions and performance improvement. DOE is looking for sensor technologies that lower the costs of monitoring compliance with water quality requirements for project operations and scheduling.
New-4	9(b)(ii) Is the water turbid or clear? Do you want to limit growth of algae and other organisms? What sensor response time are you looking for? What data up-date rate do you want?	As you may be aware, river and reservoir water turbidity conditions vary from site to site and from time to time and the sensors must be able to deal with that kind of variability. Similarly, sensors face a number of challenges with regard to biofouling and sensor survivability. Applicants are encouraged to work with hydropower industry consultants to determine the exact water quality sensor requirements and challenges and provide a description of how the proposed technology will benefit the industry in terms of lowering the costs to meet industry needs while responding to the objectives stated in the FOA.
New-5	9(b)(ii) What % cost reduction is DOE seeking?	The FOA does not specify a percentage cost reduction as that may be specific to certain technologies. As you may be aware, there are multiple technologies available with different costs and benefits. The responsibility is on the applicant to show the benefits compared to the costs for their respective technology.
New-6	9(b)(ii) We are trying to find more information on the sensor requirements.	As stated in the FOA, the solicitation is for two types of sensors that can lower costs and increase performance for velocity measurement and water quality.
New-7	9(b)(ii) What are the ranges and what resolution is expected for (a) flow velocity and (b) pressure?	The velocity and pressure range is site-specific and varies from project to project.

9(b) Hydropower Applications (cont'd.)		
	Q	**A**
New-8	9(b)(ii) How frequently are the measurements required in the fluid? Several times a minute or less frequent? Will several sensors be deployed in the same system along the pipe length?	The requirements of frequency of measurement and number of sensors also vary with the type of project.
New-9	9(b)(ii) Does the composition of fluid remain nearly same at all times or can it change from time to time?	The composition of water for hydropower generation varies from site to site and from time to time. For example, most hydropower stations use raw water, the turbidity of which is variable.
New-10	9(b)(iii) Can you tell me the size(s) of the conduits the sensors will be measuring and if the accuracy needs to be greater than 0.10 gallons per minute for low flow conditions?	As stated in the FOA, the solicitation is for Hydropower Applications. The parameters such as pipe diameter(s) and flow rates are site-specific and vary from project to project. Typically, flow rates for hydropower projects are measured in cubic feet per second or cubic meters per second and the accuracy is measured as a percentage of the flow rate.
9(b)-1	Please clarify what is considered "small." Does any part of topic 9 cover small, non-utility scale hydrokinetic machines such as down to the kW range? The "small hydropower" goes up to 100MW, which is the utility scale.	For the purpose of this solicitation, any powerhouse with an installed capacity of 30MW or less is considered small hydropower.
9(b)-2	Are man-made waterways (irrigation canals, wastewater treatment, etc) being considered for grants?	Yes, provided they are suitable for one or more of the sub-topics. Those technologies could be used for all hydropower applications including man-made waterways.
9(b)-3	(i) Do you also wish to reduce Zebra Mussel adherence while reducing fish injury?	One of the goals of the solicitation is to reduce fish injury in water flow passages. If the coatings proposed also reduce Zebra Mussel adherence it, would be an added advantage.
9(b)-4	(i) What specific injury to fish would be addressed (i.e. fouling, pollutants, physical injury)?	The solicitation is primarily focused on abrasion injury that would occur when fish contact the surface of the turbine passage.
9(b)-5	(i) What about usability of instrument for early CH4 detection in water as a part of Total Dissolved Gas detection process; there definitely is a market for such application detecting leak during fracking.	DOE is not looking at such impacts, we are specifically looking for water quality measurement devices that monitor the actual health of river systems (e.g. reservoirs and rivers)

9(b) Hydropower Applications (cont'd.)		
	Q	**A**
9(b)-6	(i) DOE assistance for beta testing: are there designated sites – or this should be sole responsibility of the proposer to find interested stake-holders within hydropower industry, cost of the proposal is affected	There are no specific facilities required for beta testing. It is the applicant's responsibility to find interested stake holders as described in the FOA
9(b)-7	(i) Regulatory status - if there is no incoming regulation for the improved standard the likelihood of commercialization is nil. Gov links discussing such requirement would be useful.	Applicants are encouraged to look at the varying states' water quality requirements. The federal requirements set out by the Environmental Protection Agency (EPA) (please see http://water.epa.gov/scitech/swguidance/) and the states that share the rivers set their own pollution regulations and grant discharge permits.
9(b)-8	(i) Is the primary goal to reduce friction and drag of turbines in the water?	For this subtopic, improving overall efficiency through reduction of friction losses through flow passages (including intakes, penstocks, turbine flow passages, and draft tubes) is the primary goal.
9(b)-9	(i) Is performance reduced by fouling, high friction, cavitation damage, etc?	While biological fouling of flow passage surfaces is not unheard of, normally the primary mechanism for reduced performance is through roughening due to abrasion, pitting, and/or cavitation damage.
9(b)-10	(i) What types of Advanced Coatings will DOE consider?	All types of coatings that are suitable for hydropower water flow passages and improve overall efficiency through reduction of friction losses through flow passages (including intakes, penstocks, turbine flow passages, and draft tubes) will be considered.
9(b)-11	(i) On what type of substrate will the coating be applied?	The flow passages normally consist of concrete in areas of low water velocity, while areas of high-velocity flow are generally composed of cast iron, carbon steel, or stainless steel depending on the vintage of the equipment.
9(b)-12	(i) What is the function of the part that will be coated?	All surfaces function to guide the flow, first accelerating in the intake passage, then distributing flow around the circumference of the runner, and recovering the velocity head by decelerating the flow in the draft tube. These surfaces are subject to abrasion by sediment carried with the flow, cavitation in low-pressure zones, and direct impact from larger debris that may get past the intake trash racks.
9(b)-13	(i) Is there a cost target?	DOE is seeking proposals that can dramatically reduce the costs and improve performance of the water quality measurement devices for hydropower applications. You are encouraged to look at the current technologies and compare those to your proposed technology.

9(b) Hydropower Applications (cont'd.)		
	Q	**A**
9(b)-14	(ii) The topic indicates that you are looking for dissolved oxygen and total dissolved gasses; however, it is not indicated over what concentration and temperature range you want this information. In addition, what spatial resolution do you require; are you interested in tomography? I am thinking along the lines of optical techniques.	Typical resolution is 0.1 mg/L for Dissolved Oxygen (DO) sensors and 0.1 mmHg for Total Dissolved Gases (TDG) sensors. The range of water quality conditions of interest is that encountered in forebays and tailraces of hydropower facilities, which would include very low DO to saturated DO conditions and extreme super saturation of TDG during spillway and turbine operations. We agree that the spatial heterogeneity of dissolved gas concentrations is a significant issue to be considered in demonstrating that water control facilities are complying with water quality criteria. Any technology that can improve the characterization of such heterogeneity while lowering monitoring costs is desirable.
9(b)-15	(ii) and (iii) Is there a current measure of accuracy on sensors; if so for what accuracy range?	Typical resolution is 0.1 mg/L for Dissolved Oxygen (DO) sensors and 0.1 mmHg for Total Dissolved Gases (TDG) sensors. The range of water quality conditions of interest is that encountered in forebays and tailraces of hydropower facilities, which would include very low DO to saturated DO conditions and extreme super saturation of TDG during spillway and turbine operations. There are various kinds of flow measurement devices available including current meters and acoustic and electro-magnetic flow measurement devices – the accuracies for which vary with the type of device and location. Standards and documented techniques for flow measurement in hydraulic turbines are readily available from the American Society of Mechanical Engineers (PTC-18) or the International Electrotechnical Commission (60041).
9(b)-16	(iv) Please confirm if a hydrokinetic or SC generator system, listed above, is applicable or not for your "Small Hydropower Turbine Generator Technology"	Any generator technology that fits the description described under the FOA topics and could be used for conventional hydropower generation would be acceptable for topic area 9b. You are in the best position to determine if your generator technology fits in the description provided.
9(b)-17	(iv) We interpret the solicitation to request two separate developments: a turbine design, or a power converter design. Is this correct?	That is correct. The solicitation subtopic 9(b) is requesting applications for both, a turbine design and/or a power converter design. You may apply for one or the other or both.
9(b)-18	(iv) Are you looking for a power converter design, a controller design, or both?	The FOA states "Engineering prototypes of a power converter modular controller…". The solicitation is for a modular controller for a power converter. However, the power converter may need modifications as well. Hence, the solution may lie in providing both designs.
9(b)-19	(iv) Would an IGBT design also be considered if it had advantages in cost or performance?	Yes, both IGCT and IGBT solution(s) will be acceptable as long as it meets the solicitation's requirement "5MW level that is scalable up to100MW in 5MW increments using the same control topology."

9(b) Hydropower Applications (cont'd.)			
	Q	**A**	
9(b)-20	(iv) What is the ranking of importance for these metrics: efficiency; power factor or harmonics presented to the generator(s); size; performance such as THD or regulation; cost?	All these are good metrics. There is no ranking of importance for this solicitation. Applicants are encouraged to include such metrics in the description of how their proposed technologies are an improvement over existing controllers.	
9(b)-21	(iv) If you are looking for a controller design, Is there an existing power converter to which you would like to interface the controller?	The applicants are expected to select the power converter that will meet the solicitation's requirement "5MW level that is scalable up to100MW in 5MW increments using the same control topology"	
9(b)-22	(iv) What would be the nominal input and output voltages for the 5MW system? What would be the nominal input and output voltages for the scaled 100 MW system?	Voltage rating is a design parameter.	Applicants are encouraged to review current hydropower IEC and ANSI/IEEE standards and specifications.
9(b)-24	(iv) What are the controller specifications you desire? (i.e., number of outputs or gates to control, topology of power converter, voltage or current mode control or both, fault protection and types of faults, regulation, transient response)	The design parameters for the controller include all the items you mention.	
9(b)-25	(iv) What is the interface to the power plant central controls, if any?	Applicants are encouraged to consult with hydropower equipment manufacturers, consultants, and power plant operators.	

Topic 10. Wind

Topic 10: Wind (http://www1.eere.energy.gov/wind/) seeks proposals for innovations that significantly advance the goal of large cost reductions in the deployment of U.S. wind power resources, including:

10(a) Development of a Met-Ocean Package for Offshore Wind: Key requirements are that measurements must support improved assessment of wind speed and direction, atmospheric stability, ocean waves, swells and currents, data sampling and communication rates consistent with advanced rapid refresh weather modeling data assimilation needs.; and

10(b) Wide Band-gap Semiconductors for Wind Turbine Power Conversion: Development of semiconductor components that contribute to a system that translates output from various generator technologies at medium voltages (600 – 2kV) into distribution-level voltages (10-15kV) could significantly reduce wind turbine balance of station costs and thus reduce wind's levelized cost of energy.

10(a) Development of a Met-Ocean Package for Offshore Wind		
	Q	**A**
10(a)-1	Does the DOE have a road map for marine hydrokinetic and offshore wind turbine? (question included in both Water and Wind)	DOE does not have a road map for MHK or offshore wind turbines.
10(a)-2	Would DOE accept pure software solutions?	No, DOE is seeking applications that include the deployment of physical observation equipment.
10(a)-3	This subtopic appears to repeat the subtopic in the FY12 SBIR release. Could you discuss the factors that led DOE to not fund this topic last year but include it again this year while stating it is an urgent need?	The money was not sufficient to do the research correctly for the program last year. Rather than put forth the effort in a less than optimal manner, we elected to show the importance to the program with effort befitting the program.

10(b) Wide Band-gap Semiconductors for Wind Turbine Power Conversion		
	Q	**A**
10(b)-1	Are the wide band-gap semiconductors referenced in the program to be for sensing, controlling, or other, with regard to their implementation in the offshore wind power systems?	The application should be related to either land-based or offshore wind turbines and should be used in the turbine power conversion module to reduce the size of or eliminate the need for turbine pad-mounted transformers and reduced conductor size for transferring power from nacelle to the grid.
10(b)-2	Are there specific metrics for the WBGSs?	No, but applications should propose designs that result in the elimination of the need for turbine pad-mounted transformers and a reduction in the amount of conductor material needed to transfer power from nacelle to the grid.

Topic 11. Buildings-Solar Joint Topic (Solar Cogeneration)

Topic 11: Buildings-Solar Joint Topic (Solar Cogeneration) Buildings and Solar offices are cosponsoring a topic at the nexus of two programs—

11(a) Low Cost Solar Cogeneration or (other hybrid solar technologies): The proposed solution must provide electric and thermal energy that can be designed to meet typical residential and commercial building's heating, space conditioning, and electric energy demands. The technology must be capable of producing site electricity at a levelized cost of less than 10¢ /kWh for residential applications or less than 8¢/kWh for commercial applications when savings from reduced building energy consumption are included.

11(a) Low Cost Solar Cogeneration or (other hybrid solar technologies)		
	Q	**A**
New	11(a) Is building exterior envelope design and analysis for energy efficiency a topic under this solicitation?	This does not fit under Buildings Topic 4 or Buildings-Solar Topic 11 building solar cogeneration. There is no building topic in the exterior envelope area this year. There are, however, non-SBIR FOAs that may be of interest. I suggest the applicant check EERE's eXchange website: https://eere-exchange.energy.gov/
11(a)-1	Must it include electricity generation?	All applications must include onsite electricity generation.
11(a)-2	Must the technology use PV? Can it be hot water, cooling, and heating?	We encourage proposals using PV technologies. Some onsite electricity generation is required, thus it cannot be just hot water, cooling, and heating.
11(a)-3	Can it be concentrating PV electric-hot water/cooling?	Yes it can be concentrating PV electric-hot water/cooling.
11(a)-4	Is there a minimum number of co-applications that must be included? Do PV solutions in conjunction with Daylighting systems qualify? Are any applications excluded?	The minimum number of co-applications that must be included is 2, including electricity generation. PV solutions in conjunction with Daylighting systems qualify. There are no exclusions as long as the applications involve site electricity generation.
11(a)-5	Do you have an electricity/thermal ratio in mind?	There is no preferred electricity/thermal ratio; applicants should use the best ratio for their applications in order to meet the subtopic goals.
11(a)-6	What are acceptable co-generation technologies?	Acceptable co-generation technologies include PVT; Concentrating PV with Thermal heat recovery; STEGs; Concentrating PV with thermally activated cooling technologies, etc.

11(a) Low Cost Solar Cogeneration or (other hybrid solar technologies) (cont'd.)		
	Q	**A**
11(a)-7	Can an optimized design of existing components / existing technologies geared to a specific market qualify for the grant? i.e. "integrated system optimization" for an "easily-installed packaged solution"?	Yes, an optimized design of existing components / existing technologies geared to a specific market qualifies for the grant.
11(a)-8	Will concepts proposed focused on alternative thermodynamic power cycles for solar applications be supported?	No, thermodynamic power cycles for solar applications are not supported under this subtopic. These are considered under other (non-SBIR) "SunShot initiative" FOAs and other solar FOAs.
11(a)-9	What projections for the future of solar energy should the proposal assume and would solar growth limited to certain areas of the country?	Solar energy is an abundant resource with great potential for most areas of the country. The payback can be dramatically different based on climate, building design, and neighborhood design.
11(a)-10	What specific criteria are most important when reviewing applications?	Cost effectiveness and ease of installation are the most important criteria during the applications review.

Topic 12. The Solar TTO (AC PV)

Topic 12: The Solar TTO (AC PV) This technology ([AC PV] US Patent: 6750391, 6/15/2004) provides a fully integrated and self-containing alternating current (AC) photovoltaic (PV) Building Block device and method that allows photovoltaic applications to become true plug-and-play devices.

Topic 12: The Solar TTO (AC PV)		
	Q	**A**
New	Topic 12: We developed a somewhat similar technology with the Sandia approach, but our approach is different from the Sandia patent. Can we use it and apply for the TTO topic?	No. The Technology Transfer Opportunity grants are an attempt to leverage the technology already developed by a National Laboratory and transfer it to the market place; in other words, Sandia is looking for ways to commercialize its own research through DOE. The reason DOE chose this technology from Sandia National Laboratory is that it will help achieve the goals of the Department's SunShot Program of reducing the Balance of System (BOS) costs for photovoltaic modules.