

Good [afternoon/morning], everyone and welcome to our webinar. Thank you for your interest in the U.S. Department of Energy's efforts on renewable energy and energy efficiency. You are joining us for the Informational Webinar for Applicants and other Interested parties for the Targeted Algal Biofuels and Bioproducts Funding Opportunity Announcement, or FOA, which was issued on September 23. My name is Daniel Fishman and I am a Technology Manager in the Bioenergy Technologies Office within the DOE's Office of Energy Efficiency and Renewable Energy. We hope to cover the basic aspects of the Funding Opportunity Announcement during this webinar.

Before we begin, I'd like to draw your attention to the email address on the left hand side of this cover page. This is the official mailbox to direct all of your questions during the entire FOA process. Please do not contact EERE individuals directly with questions, including myself. All questions received at this mailbox are posted publicly at the Q&A section of the FOA page on EERE Exchange in an anonymous way. The official answers to your questions will typically also be posted within 3 business days. Please be careful not to submit any language that might be business sensitive, proprietary or confidential.

We will have a live Q&A period at the end of the webinar, so please type in your questions as they come up. Again, please be careful not to submit any language that might be business sensitive, proprietary or confidential. We will be posting all Q&As to EERE Exchange after the webinar. There may be questions that require further discussion with

EERE staff and will not be addressed today. If you don't hear your question during the Webinar, please check EERE Exchange in the next few days as the answer will be posted there.

Also, just to be clear, there are no particular advantages or disadvantages to the application evaluation process with respect to participating on the webinar today. Your participation is completely voluntary.

Let's get started!

<b>DE-FOA-0001162</b> <b>TARGETED ALGAL BIOFUELS AND BIOPRODUCTS (TABB)</b>	
Anticipated Schedule:	
FOA Issue Date:	9/22/2014
FOA Informational Webinar:	10/8/14
Submission Deadline for Concept Papers:	10/30/2014 5:00pm ET
Submission Deadline for Full Applications:	12/15/2014 5:00pm ET
Submission Deadline for Replies to Reviewer Comments:	2/20/2015 5:00pm ET
Expected Date for EERE Selection Notifications:	April 2015
Expected Timeframe for Award Negotiations:	June 2015

This slide shows the anticipated schedule for the FOA. The FOA has already been posted, and we are conducting the FOA Informational Webinar now. Please note that there are a few requirements that we will go over in the presentation that are different than in past FOAs, such as Replies to Reviewer Comments – we will cover all requirements for this FOA later in the presentation.

## Notice

- All applicants are strongly encouraged to carefully read the Funding Opportunity Announcement **DE-FOA-0001162 (“FOA”)** and adhere to the stated submission requirements.
- This presentation summarizes the contents of the FOA. If there are any inconsistencies between the FOA and this presentation or statements from DOE personnel, the FOA is the controlling document and applicants should rely on the FOA language and seek clarification from EERE.
- If you believe there is an inconsistency, please contact [TABBFOA@ee.doe.gov](mailto:TABBFOA@ee.doe.gov).

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## Agenda

- 1) FOA Description
- 2) Topic Areas/Technical Areas of Interest
- 3) Award Information
- 4) Statement of Substantial Involvement
- 5) Cost Sharing
- 6) Concept Papers
- 7) Full Applications
- 8) Merit Review and Selection Process
- 9) Registration Requirements

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The agenda for this presentation is as follows: READ SLIDE

We encourage you to have a copy of the FOA in front of you for reference as we go through the presentation.

## FOA Description

- The TABB FOA is an integral part of the Algae Program strategy and it seeks alternative pathways to overcome two key barriers to commercializing algal biofuels. The TABB FOA seeks bench and process development scale applied Research and Development (R&D) that focuses on:
  - developing technology to achieve higher overall values for the processed biomass (Topic Area 1); and
  - increased biomass productivity leading to higher yields by developing crop protection or CO<sub>2</sub> utilization strategies (Topic Area 2).
- It is anticipated that successful projects from the TABB FOA will contribute to improving Bioenergy Technologies Offices (BETO) 2019 projected state of technology (SOT) for the cost of algal biofuels from the projected model mature technology of about \$8 per gallon gasoline equivalent (gge) to less than \$5 gge.

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The MYPP describes the Algae Program's projections for algal biofuel state of technology and the accompanying minimum fuel selling price using a nominal lipid extraction pathway. FY2019 projections are extrapolated.

For the purposes of this FOA, **bench scale** refers to work conducted in a laboratory setting under controlled conditions. Cultivation volumes for bench scale experiments are expected to be on the order of 100 liters or less. **Process development scale** refers to work conducted in field settings with fluctuating light, temperature, and other stochastic features (such as precipitation, wind, contamination), with sufficient supporting infrastructure to allow for multi-day to multi-week cultivation campaigns. Process development scale cultivation volumes are expected to be on the order of 1,000 liters up to and beyond 10,000 liters per vessel.

## FOA Description - Continued

### TOPIC AREA 1:

- Under **Topic Area 1**, multi-disciplinary consortia will pursue technology improvements that will lead to higher overall values for the algae. This will be achieved by developing and improving yields of high-impact bioproducts (e.g. specialty or commodity chemicals or polymers or proteins) and biofuels.
- Consortia are required for this topic because of the broad range of expertise and facilities needed to develop technologies from algae cultivars to finished biofuels and bioproducts.
- **A critical component of this topic area is that bioproducts are expected to increase the overall value of the algal biomass and still allow for biofuel production.**

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For Topic Area 1, the downstream requirements for delivery of timely and sufficient quantity of material for fuel and product characterization will ultimately define what scale of cultivation and conversion R&D is needed.

Examples of research routes that could help meet this objective include but are not limited to:

- Co-production of specific molecules with downstream applications as petro-chemical replacements.
- Redirection of carbon flux to a metabolic pathway that results in synthesis of a valuable chemical.
- Improving a strain to make a valuable protein.

For example, in the BETO 2014 projections (in the MYPP) for the state of the art for a nominal lipid extraction pathway, harvested algae is assumed to have 25% lipid content that is recoverable as a biofuel precursor and the remaining 75% of the residual biomass is treated as waste that is processed with anaerobic digestion (AD). Thus, in this example, the improvement targeted by the FOA would be to generate revenue from the residual greater than the value generated by AD.

## FOA Description - Continued

### TOPIC AREA 2:

- Under **Topic Area 2**, single investigator or small teams will pursue technology improvements that will result in increased biomass productivity leading to higher overall feedstock yields. This will be achieved by projects that focus on advancements in either:
  - 1) crop protection; or
  - 2) CO<sub>2</sub> utilization.

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## FOA Description - Continued

### CROP PROTECTION:

- Biological contamination presents one of the greatest challenges in cultivating robust, reliable algal cultures that meet target performance (growth rate, target product generation, culture density, etc.) specifications. Novel, safe, and effective strategies need to be developed to control culture contamination events that result in diminished target feedstock yield(s). Additionally, integrated pest management systems need to be developed to control pathogens and herbivores.

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Examples of research that would contribute to crop protection include but are not limited to:

Rapid detection systems to enable preventative treatments to ponds.

Biological systems and/or engineering to increase resilience of culture.

Novel chemical treatment protocols that are scalable, environmentally acceptable, and economically feasible.

## FOA Description - Continued

### CARBON DIOXIDE UTILIZATION:

- Algae utilize a diversity of carbon concentrating mechanisms to maintain adequate carbon stores for photosynthesis. Obtaining adequate carbon is affected by the transfer of dissolved inorganic carbon into the cultivation system, levels of biologically available carbon, and sequestration of carbon by algae.
- Reservoirs could include atmospheric CO<sub>2</sub>, supplied CO<sub>2</sub>, and biologically available carbon in the cultivation system. Enhancing transfer efficiency could enhance productivity through ensuring adequate intracellular carbon stores, as well as lower operating costs through more efficient utilization of carbon sources.
- Target improvements may be measured through enhanced photosynthetic efficiency, increased carbon efficiency, and improved rates of transfer, either into carbon reservoir, or uptake by algae from the reservoir. Improvements must result in improved productivity that could lead to higher feedstock yields.

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Examples of research that could help meet this objective include, but are not limited to:

Mechanical engineering solutions for mixing and gas exchange.

Alternative/Advanced CO<sub>2</sub> or C supply-system development.

Improved carbon uptake through strain engineering.

## FOA Description - Continued

- Successful projects under this FOA will set targets (assuming mature scale deployment of technologies) for energy return on investment and GHG emissions. Extrapolated from bench and process development scale data, these targets should describe:
  - Significantly positive energy return on investment, in terms of energy content of final products / energy input.
  - Lifecycle GHG emissions attributable to biofuel production at modeled commercial scale that could meet or exceed Renewable Fuels Standard (RFS) requirements for advanced biofuels.
- Incorporation of these targets means that successful projects under this FOA must integrate techno-economic modeling and life-cycle assessment into experimental plans. This will be captured to some extent in the required technical and financial data. After award, these data will be used to establish a baseline and targets.
- Project progress from baseline towards targets will be externally validated by a DOE-selected performer and used to inform mid-project Go/No Go decision points.

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**Regardless of Topic Area**, it is recognized that a barrier exists in translating laboratory success to demonstrated, scalable, outdoor cultivation environments that capture all of the variables not present in laboratory systems. Thus it is expected that the research conducted in both Topic Areas will include iterative processes whereby the results obtained from experiments in outdoor environments will be used to inform laboratory experiments and vice versa. This type of continuous feedback loop is expected to expedite the lessons learned and ensure they are relevant for large scale algal biofuels and bioproducts production.

Therefore, successful projects under this FOA will demonstrate responsiveness to the BETO mission by developing applied R&D plans with a vision toward contributing to development of national scale energy solutions, in accordance with BETO's 2030 goals for 5 billion gallons per year of algal biofuel.

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## Topic Areas/Technical Areas of Interest

### *APPLICATION REQUIREMENTS FOR BOTH TOPIC AREA 1 AND 2*

- 1) The required technical and financial data (see Technical and Financial Datasheet template) will be used to establish the project baseline, midpoint, and ultimate technical targets. Regular reporting requirements on progress from baseline towards targets will be incorporated into the award terms and conditions. The baseline and progress from the baseline towards targets will be externally validated by a DOE-selected performer and used to inform mid-project Go/No Go decision points.
- 2) Biology and cultivation experimental plans must consider scaling explicitly in experimental design and objectives as shown by but not limited to: primary use of robust production organisms (instead of model organisms, e.g. *Chlamydomonas reinhardtii*); diurnal cycles, solar-strength irradiance, and fluctuating temperatures for growth experiments; and outdoor culture performance verification. The use of robust production strains and explicit feedback between laboratory-based studies and field cultivation is required to meet the FOA objectives.
- 3) If experimental plans rely on genetically modified organism (GMO) technology, a discussion of U.S. regulatory landscape – e.g., Toxic Substance Control Act (TSCA), the Animal and Plant Health Inspection Service (APHIS) – and the impacts of regulations on the project objectives, scope, and schedule are required.

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## Topic Areas/Technical Areas of Interest - Continued

### ***APPLICATION REQUIREMENTS FOR BOTH TOPIC AREA 1 AND 2***

- 4) Establishment of methods for integrating techno-economic and life-cycle analysis into experimental plans and definition of how these analyses will be used to inform deliverables to DOE documenting progress towards the FOA objective of less than \$5 gge algal biofuel is required.
- 5) Production of algal biomass will refer to the cultivation of both micro- or macro-alga, as well as cyanobacteria.
- 6) Acceptable algae cultivation systems include open ponds, attached growth systems, and closed photobioreactors (PBRs), combinations of these systems, or other systems with similarly justifiable scalable potential.
- 7) Standardized analytical methods for measuring the key biochemical constituents are vital to developing reliable algal production performance data and must be addressed within the application .
- 8) Construction and capital costs to build cultivation acreage or capacity are not allowed within this FOA.

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## Topic Areas/Technical Areas of Interest - Continued

### ***APPLICATION REQUIREMENTS FOR BOTH TOPIC AREA 1 AND 2***

- 9) Applications must propose to work on algal biomass (i.e. proposing research activities on biofuels and bioproducts derived from lignocellulosic biomass (e.g., agricultural residues, woody biomass) is considered non-responsive and will not be accepted).
- 10) Applicants that receive awards through this FOA will, in coordination with BETO, issue press releases at award and at successful completion of the project to highlight the positive aspects of the work.
- 11) Applicants that receive awards through this FOA will submit to DOE during the award and for 5 years after the award an annual report on the utilization and impact of the work in the project (such as: papers; presentations; additional awards; investment; joint ventures; additional construction; and advancement towards the market) that is affiliated with the TABB FOA award. This report will be for DOE internal use only. Please also refer to section VI.B.12 for specific administrative reporting requirements regarding subject inventions that are in no way diminished or replaced.

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## Topic Areas/Technical Areas of Interest - Continued

### **TOPIC AREA 1 SPECIFIC REQUIREMENTS**

- A successful TABB consortium must develop and characterize their proposed algal-derived biofuel(s) and their proposed algal-derived bioproduct(s) from their proposed algal biomass cultivation and processing system(s).
- It is anticipated that a project's technical targets for this topic area will span the entire algal biofuel and bioproduct production system (cultivation, harvesting, processing, and conversion to a biofuel and production of a bioproduct). Applicants should include a detailed discussion of the reasoning behind their proposed strategy or strategies and why the proposed technological pathway(s) has/have the highest probability of success.
- Sustainable practices, life-cycle and economic analyses, and resource management should be addressed relative to the proposed pathway(s).
- No major construction activities can be undertaken as part of this Topic Area. The use of a consortium is expected to bring together both the human and physical capital necessary to achieve the objectives of Topic Area 1.

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For Topic Area 1, BETO requires applications from consortia. Applications from entities not part of a consortium will not be considered under this Topic Area. Consortia are sought that synergistically use their unique capabilities to expedite the development of algal biomass based biofuels and bioproducts production pathways. These teaming efforts are expected to involve specific scientific, engineering, system design, analysis, and project management disciplines that can work together effectively to accomplish the stated project objectives. Such partnerships should include an appropriate mix (any appropriate combination thereof) of U.S. industry, academia, and government/non-government laboratories, and could include foreign entities with the appropriate skill sets. Additionally, these partnerships should seek to utilize 'best-in-class' technical approaches. DOE is not prescribing a specific number of team members, team structure, or mix of organization types. It is up to each applicant consortium to determine the appropriate mix of technical partners.

The consortium structure should consist of a Consortium Lead Organization (with associated director and other key personnel) and technical partners who will conduct the technical scope of work proposed and described by the Consortium in collaboration with the Lead Organization. All participants must be clearly identified. The Lead should be focused on the coordination and management of the overall technical effort in additional

to the strategy, approach, and expected outcomes. The Lead must describe how they will effectively maintain cohesiveness in a group of organization having different corporate and operating cultures. The award will be made to the Lead organization within the Consortium, with the technical partners as sub-recipients to the Lead. A proposed consortium will likely span many institutions, thus, the management plan will be evaluated for strategic methods that maximize exchange of information and existing capabilities (e.g., instruments, facilities, and administrators).

A Non-Disclosure Agreement (NDA) signed by all partners are required as part of the application. Refer to Section IV.D.14 and Appendix F for requirements and instructions.

The Consortium must develop and sign an Intellectual Property (IP) Management Plan within 30 days after selection. The IP Management Plan should describe handling of IP, including cross-licensing of IP, licensing of background IP, handling of joint inventions, plans for information sharing with the public, how strains and processes will be coordinated between consortium researchers, and how IP will be licensed to the general research community. One IP Management Plan signed by all parties in the proposed Consortium (including any sub-recipients) must be submitted by the Consortium Lead no later than 30 days after notification of selection for negotiation of an award. DOE expects the Partners to conduct business among themselves to facilitate the free flow of information within the Consortium. Please see Appendix H for guidance regarding the IP management plan.



## Topic Areas/Technical Areas of Interest - Continued

### Specific Topic Area 1 Requirements to be evaluated for technical merit

1. Demonstration that the consortium will have capability in:
  - a. Photosynthetic algae strain development
  - b. Mass culture of photosynthetic algae
  - c. Recovery of target fuel and chemical precursors from mass cultures
  - d. Conversion of precursors to valuable products
  - e. Integrative analysis to assess LCA and TEA constraints together with national impact potential
2. Definition of baseline state of technology and establishment of target improvements for biology, cultivation, processing, and conversion using the provided Technical and Financial Datasheet template or the applicant's preferred format (see section IV.D.1). After selection, these targets will be evaluated by a DOE-selected external team and then will be incorporated into award documents for us in the mid-project Go/No Go evaluation (see section VI.C.15 for more detail on the use of Go/No Go decision points).
3. Approaches to characterizing value will be at an appropriate scale to provide information necessary to compare algal product specifications to the established product. The TABB FOA intent is to support applied R&D, not necessarily product certification. The intent of the TABB FOA is not for preparing pre-commercial or commercial quantities of material for sale.

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## Topic Areas/Technical Areas of Interest - Continued

### Specific Topic Area 1 Requirements to be evaluated for technical merit – cont.

4. Establishment of target production amounts and delivery schedules of all targeted biofuels and bioproducts and demonstration that delivery to downstream processing and conversion partners will be in timely support of consortium objectives.
5. Discussion of envisioned split, assuming mature technology deployment, between biofuels and bioproducts in terms of energy, mass, and value. Applicants should note that the production of biofuels is directly related to BETO's statutory authority and strategic goals (which are defined in the BETO Multi-Year Program Plan referenced above) and thus this discussion will inform the evaluation conducted under the Other Selection Factors as described in Section V.C.1.
6. Demonstration of understanding of target markets and market entry strategies.
7. Demonstration that the proposed technologies are currently at a minimum of Technology Readiness Level (TRL) of 3 and that the proposed consortium scope is adequate to advance the TRL of the proposed technologies to 5 or 6.
8. Demonstration that the consortium objectives can be accomplished without major construction activities.

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## Topic Areas/Technical Areas of Interest - Continued

### *TOPIC AREA 2 SPECIFIC REQUIREMENTS*

- This topic area is for single investigator or small team technology development projects focused on developing technologies for: 1) crop protection; or 2) CO<sub>2</sub> utilization to increase biomass productivity in a manner that can lead to increased feedstock yields.
- TABB Topic Area 2 technology development projects will focus on discrete aspects of the algal biofuel chain related to algae production at TRL 2-3 levels. Thus, successful projects will develop technologies that lead to higher yields of recoverable target biofuels and bioproducts, but will not necessarily develop finished fuels or products.

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## Topic Areas/Technical Areas of Interest - Continued

### Specific Topic Area 2 Requirements to be evaluated for technical merit

1. Identification as to whether the project is focused on crop protection or CO<sub>2</sub> utilization.
2. Definition of baseline state of technology and establishment of target improvements for improved productivity that leads to higher recoverable yields. Use the provided Technical and Financial Datasheet template or the applicant's preferred format (see section IV.D.1). After selection, these targets will be evaluated by a DOE-selected external review team and then will be incorporated into award documents for us in the mid-project Go / No Go evaluation (see section VI.C.15 for more detail on the use of Go/No Go decision points).
3. Demonstration that the proposed technologies are currently at a minimum of TRL 2 and that the proposed project scope is adequate to advance the TRL of the proposed technologies to 3 or 4.

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## Non-Responsive Applications

The following types of applications will be deemed nonresponsive and will not be reviewed or considered for an award:

- Applications that fall outside the technical parameters specified in Section I.B of the FOA, including but not limited to:
- Applications for proposed technologies that are not based on sound scientific principles.
- Applications that propose to develop technology that relies on purely heterotrophic algae cultivation.
- Applications that propose mixotrophic algae cultivation strategies that utilize food-based sugars.
- Applications that propose to develop technology for the artificial lighting-based cultivation of algae for energy products.
- Applications that propose to work on biomass other than algae biomass.
- Topic Area 1 project applications that are not from a consortium.
- Applications that propose construction of new facilities.
- Applications that propose modifications to existing facilities that exceed 20% of the total project cost.

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The following types of applications will be deemed nonresponsive and will not be reviewed or considered for an award:

- Applications that fall outside the technical parameters specified in Section I.B of the FOA, including but not limited to:
- Applications for proposed technologies that are not based on sound scientific principles (e.g., violates the law of thermodynamics).
- Applications that propose to develop technology that relies on purely heterotrophic algae cultivation.
- Applications that propose mixotrophic algae cultivation strategies that utilize food-based sugars (i.e., derived from food-based crops including but not limited to corn, beets, sorghum, and sugar cane).
- Applications that propose to develop technology for the artificial lighting-based cultivation of algae for energy products (other than as an enabling tool for high-throughput laboratory-based screening).
- Applications that propose to work on biomass other than algae biomass (e.g. lignocellulosic biomass).
- Topic Area 1 project applications that are not from a consortium.
- Applications that propose construction of new facilities.
- Applications that propose modifications to existing facilities that exceed 20% of the total project cost.

## Award Information

<b>Total Amount to be Awarded</b>	\$13,000,000 to \$25,000,000*
<b>Average Award Amount</b>	EERE anticipates making awards that range from \$5,000,000 to \$10,000,000 in Topic Area 1 and \$500,000 to \$1,000,000 in Topic Area 2.
<b>Types of Funding Agreements</b>	Cooperative Agreements, Grants, Work Authorizations, and Interagency Agreements
<b>Period of Performance</b>	36 to 48 months
<b>Cost Share Requirement</b>	20% of Total Project Costs

\*Subject to the availability of appropriated funds in both FY14 and FY15

EERE expects to make approximately \$13 to 25 million of Federal funding available for new awards under this FOA subject to the availability of appropriated funds. The average award amount is anticipated to range from from \$5,000,000 to \$10,000,000 in Topic Area 1 and \$500,000 to \$1,000,000 in Topic Area 2.

EERE intends to fund mostly cooperative agreements under this FOA, but may also fund Grants, TIAs, Work Authorizations, and Interagency Agreements. Cooperative Agreements include Substantial Involvement, which we will discuss next.

## Statement of Substantial Involvement

EERE has substantial involvement in work performed under Awards made following this FOA. EERE does not limit its involvement to the administrative requirements of the Award. Instead, EERE has substantial involvement in the direction and redirection of the technical aspects of the project as a whole. Substantial involvement includes, but is not limited to, the following:

- EERE shares responsibility with the Recipient for the management, control, direction, and performance of the Project.
- EERE may intervene in the conduct or performance of work under this Award for programmatic reasons. Intervention includes the interruption or modification of the conduct or performance of project activities.
- EERE may redirect or discontinue funding the Project based on the outcome of EERE's evaluation of the Project at that the Go/No Go decision point.
- EERE participates in major project decision-making processes.

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- Under cooperative agreements, there will be what is known as “substantial involvement” between EERE and the Recipient during the performance of the project.
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## Cost Sharing Requirements

- Applicants must contribute a minimum of 20% of the total project costs for R&D projects.
- The cost share must be at least 20% of the total allowable costs for research and development projects (i.e., the sum of the Government share, including Federally Funded Research and Development Centers (FFRDC) costs if applicable, and the recipient share of allowable costs equals the total allowable cost of the project) and must come from non-Federal sources unless otherwise allowed by law. (See 10 CFR 600.30 for the applicable cost sharing requirements.)

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To assist Applicants in calculating proper cost share amounts, EERE has included a cost share information sheet and sample cost share calculation as Appendices B and C to this Funding Opportunity Announcement.



## Cost Share Contributions

- Contributions must be:
  - Specified in the project budget
  - Verifiable from the Prime Recipient's records
  - Necessary and reasonable for proper and efficient accomplishment of the project
- 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

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The total budget presented in the application must include both Federal (DOE), and Non-Federal (cost share) portions, thereby reflecting TOTAL PROJECT COSTS proposed. All costs must be verifiable from the Recipient's records and be necessary and reasonable for the accomplishment of the project.

### 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

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Cost Share must be allowable and must be verifiable upon submission of the Full Application. Please refer to this chart for your entity's applicable cost principles. It is imperative that you follow the applicable cost principles when creating your budget for the full application.

## Allowable Cost Share

- Cash Contributions
  - May be provided by the Prime Recipient, Subrecipients, or a Third Party
- In-Kind Contributions
  - Can include, but are not limited to: personnel costs, indirect costs, facilities and administrative costs, rental value of buildings or equipment, and the value of a service, other resource, or third party in-kind contribution

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Cost share can be provided in cash and/or in-kind. It can be provided by the Prime Recipient, subs, or a third party.

The basic definition of in-kind cost share is the donation of personnel time, equipment, facilities, or other items that an organization will contribute to the project. It can take many forms, each of which must be assigned a dollar value to be included in the budget. Some examples of in-kind cost share are the donation

of work hours, facility use, equipment use.

## Unallowable Cost Share

- The Prime Recipient may not use the following sources to meet its cost share obligations including, but not limited to:
  - Revenues or royalties from the prospective operation of an activity beyond the project period
  - Proceeds from the prospective sale of an asset of an activity
  - Federal funding or property
  - Expenditures reimbursed under a separate Federal Technology Office
  - Independent research and development (IR&D) funds
  - The same cash or in-kind contributions for more than one project or program

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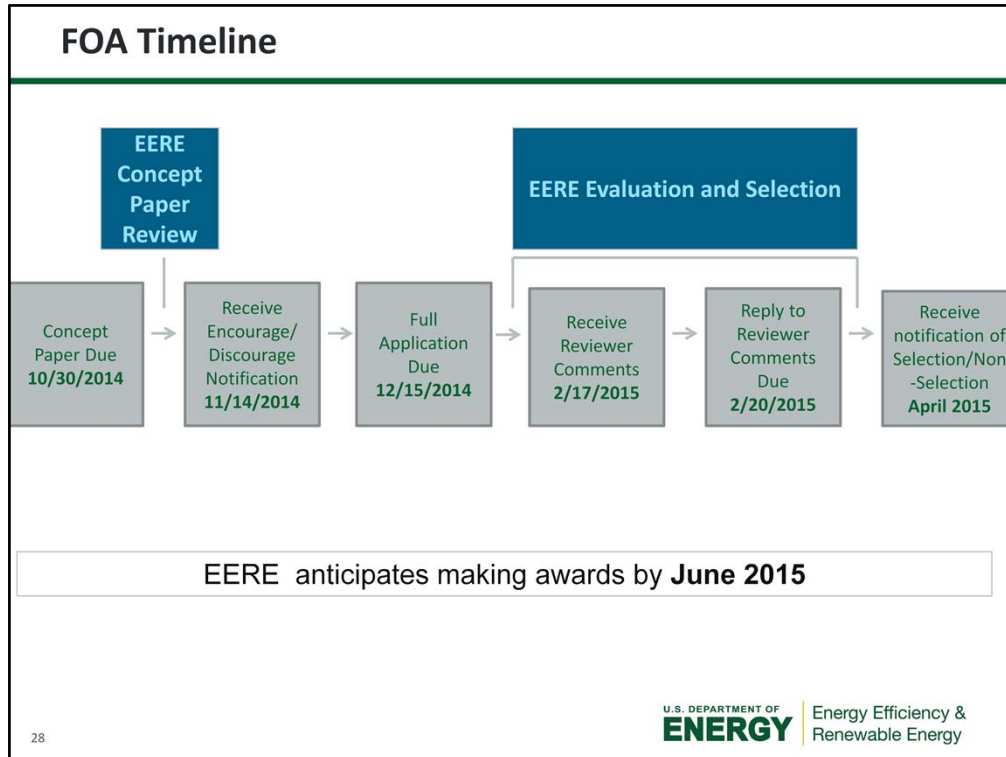
Be aware that there are items that are considered unallowable cost share. If a cost is considered unallowable, it cannot be counted as cost share. This slide provides some examples of cost share that is unallowable.

## Cost Share Payment

- Recipients must provide documentation of the cost share contribution, incrementally over the life of the award
- The cumulative cost share percentage provided on each invoice must reflect, at a minimum, the cost sharing percentage negotiated
- In limited circumstances, and where it is in the government's interest, the EERE Contracting Officer may approve a request by the Prime Recipient to meet its cost share requirements on a less frequent basis, such as monthly or quarterly. See Section III.B.7 of the FOA.

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Cost Share must be provided on an invoice basis, unless a waiver is requested and approved by the DOE Contracting Officer.



EERE's Evaluation and Selection Process is shown in blue here. EERE will review Concept Papers, Replies to Reviewer Comments (which we will cover later in the presentation), and Full Applications. The gray boxes represent the actions that apply to applicants throughout the FOA process.

## Concept Papers

- Applicants must submit a Concept Paper
  - Each Concept Paper must be limited to a single concept or technology
- The Concept Paper must include a technology description (See Section IV.C of the FOA)
  - The technology description is limited to 3 pages
  - The Concept Paper can also include graphs, charts, or other data (limited to 2pages)
- Concept Papers must be submitted by **10/30/2014, 5:00pm EST**, through EERE Exchange, and must comply with the content and form requirements in Section IV.C of the FOA
- EERE provides applicants with: (1) an “encouraged” or “discouraged” notification, and (2) the reviewer comments

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Concept Papers are required for this FOA. Concept Papers are brief descriptions of the proposed project. It allows applicants to submit their ideas with minimal time and expense. EERE will provide feedback on the proposed project so the Applicant can make an informed decision whether to expend additional resources to prepare a full application.

If an applicants fails to submit an eligible Concept Paper, the applicant is not eligible to submit a Full Application.

Concept Papers must be submitted by **10/30/2014, 5p EST**, through EERE Exchange.

EERE will provide applicants with either an encouraged or discouraged notification. A “discouraged” notification conveys EERE’s lack of programmatic interest in the proposed project. An applicant who receives a “discouraged” notification may still submit a Full Application.



## Concept Paper Review

EERE evaluates the Concept Papers based on the following technical review criteria:

- **Criterion 1: Impact of the Proposed Technology Relative to State of the Art (50%)** This criterion involves consideration of the following factors:

- Method used to identify current state of the art technology
- If technical success is achieved, the proposed idea would significantly improve technical and economic performance relative to the state of the art.

- **Criterion 2: Overall Scientific and Technical Merit (50%)**

This criterion involves consideration of the following factors:

- The proposed technology is unique and innovative; and
- The proposed approach is without major technical flaws.

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EERE will provide applicants with (1) either an “encouraged” or “discouraged” notification, and (2) the reviewer comments.

Please note that regardless of the date applicants receive the Encourage/Discourage notifications, the submission deadline for the

Full Application remains the date stated on the  
FOA cover page

## Full Applications

- The Full Application includes:
  - **Technical Volume:** The key technical submission - info relating to the technical content, project team members, etc.
  - **SF-424 Application for Federal Assistance:** The formal application signed by the authorized representative of the applicant.
  - **SF-424A Budget & Budget Justification:** a detailed budget and spend plan for the project.
  - **Summary for Public Release**
  - **Summary Slide**
  - **Administrative Documents:** E.g., U.S. Manufacturing Plan, FFRDC Authorization (if applicable), Disclosure of Lobbying Activities, etc.

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The Full Application includes:

**Technical Volume:** The key technical submission. Applicants submit info pertaining to the technical content, project team members, etc.

**SF-424 Application for Federal Assistance:** The formal application signed by the authorized representative of the applicant. Includes cost share amounts and Federal certifications and assurances.

**SF-424A Budget & Budget Justification:** Budget documents that asks applicants to submit a detailed budget and spend plan for the project.

**Summary for Public Release:** Applicants must provide a 1 page summary of their technology appropriate for public release.

**Summary Slide:** Powerpoint slide that provides quick facts about the technology. Slide content requirements are provided in the FOA.

**Administrative Documents:** E.g., U.S. Manufacturing Plan, FFRDC Authorization (if applicable), Disclosure of Lobbying Activities, etc.

Full Applications: Technical Volume Content	
<ul style="list-style-type: none"> <li>• <b>Technical Volume: the key technical component of the Full Application</b></li> </ul>	
Content of Technical Volume	Suggested % of Technical Volume
Cover Page	
Project Overview	10%
Technical Description, Innovation and Impact	25%
Workplan	50%
Technical Qualifications and Resources	15%

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The key technical component of the full application is the Technical Volume, which helps applicants frame the technical information that the application will be evaluated on. The Technical Volume provides information regarding what the project is, how the project tasks will be accomplished, and the project timetable.

The Technical Volume is comprised of a cover page, project overview, technical description, innovation, and impact, workplan, and technical qualifications and resources. Please note that the percentages listed here are suggested and are not mandatory.

- The Cover Page will be a one page document and provides basic information on their project, such as title, topic area, points of contact, etc.
- The Project Overview constitutes approximately 10% of the Technical Volume and provides information on project background, goals, impact of EERE funding
- The Technical Description, Innovation, and Impact section is approximately 25% of the Technical Volume. It provides information on project relevance and outcomes, feasibility, and innovation/impacts. This ultimately provides the justification as to why EERE should fund the project.
- The Workplan is the key element to the Technical Volume, and constitutes approximately 50% of the Technical Volume. It details the proposed milestones and project schedule, and should be provided in Microsoft Word format. If selected for award negotiations, the Workplan serves as the starting point when negotiating the Statement of Project Objectives. The Workplan should also include:
  - Market Transformation/Commercialization Plan: The Applicant should provide a market transformation/commercialization plan, including the following:
  - Identification of target market, competitors, and distribution channels for proposed technology along with known or perceived barriers to market penetration, including a mitigation plan
  - Identification of a 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.

- Example Milestone Summary Table and Work Breakdown Structure are provided in the FOA.
- The Technical Qualifications and Resources section is approximately 15% of the Technical Volume. It provides applicants and opportunity to provide information about the proposed project team and demonstrate how the applicant **will** facilitate the successful completion of the proposed project.

## Full Application Eligibility Requirements

- Applicants must submit a Full Application by **12/15/2014 at 5:00pm EST**
- Full Applications are eligible for review if:
  - The Applicant is an eligible entity Section III.A of FOA;
  - The Applicant submitted an eligible Concept Paper;
  - The Cost Share requirement is satisfied Section III.B of FOA;
  - The Full Application is compliant Section III.C of FOA; and
  - The proposed project is responsive to the FOA Section III.D of FOA
  - The Full Application meets any other eligibility requirements listed in Section III of the FOA.

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As we previously pointed out, applicants must submit full applications by **12/15/2014**. EERE will conduct an eligibility review, and full application will be deemed eligible if: READ SLIDE

## Who's Eligible to Apply?

Eligible applicants for this FOA include:

1. Individuals
2. Domestic Entities
3. Foreign Entities
4. Incorporated Consortia
5. Unincorporated Consortia

For more detail about each eligible applicant, please see Section III.A of the FOA for eligibility requirements

Nonprofit organizations described in Section 501(c)(4) of the Internal Revenue Code of 1986 that engaged in lobbying activities after December 31, 1995, are not eligible to apply for funding.

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Please note that nonprofit organizations described in Section 501(c)(3) of the Internal Revenue Code of 1986 that engaged in lobbying activities after December 31, 1995, are not eligible to apply for funding.

Also, note that all Prime Recipients receiving funding under this FOA must be incorporated (or otherwise formed) under the laws of a State or territory of the United States. If a foreign entity applies for funding as a Prime Recipient, it must designate in the Full Application a subsidiary or affiliate incorporated (or otherwise formed) under the laws of a State or territory of the United States to be the Prime Recipient. The Full Application must state the nature of the corporate relationship between the foreign entity and domestic subsidiary or affiliate.



## Multiple Applications

Applicants may submit more than one application to this FOA, provided that each application describes a unique, scientifically distinct project

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### Merit Review and Selection Process (Full Applications)

- The Merit Review process consists of multiple phases that each include an initial eligibility review and a thorough technical review
- Rigorous technical reviews are conducted by reviewers that are experts in the subject matter of the FOA
- Ultimately, the Selection Official considers the recommendations of the reviewers, along with other considerations such as program policy factors, to make the selection decisions

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## Technical Merit 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.

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Applications will be evaluated against the following merit review criteria:

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## Technical Merit Review Criteria - Continued

### **Criterion 2: Project Research and Commercialization 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.

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## Technical Merit Review Criteria - Continued

### Criterion 2, Continued

#### 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 a 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 Management Plan and Open Source Software Distribution Plan , U.S. manufacturing plan etc., and product distribution.

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## Technical Merit Review Criteria - Continued

### 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.

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## Replies to Reviewer Comments

- EERE provides applicants with reviewer comments
- Applicants are not required to submit a Reply - it is optional
- To be considered by EERE, a Reply must be submitted by **2/20/2015 by 5:00pm ET** and submitted through EERE Exchange
- Content and form requirements:

Section	Page Limit	Description
Text	2 pages max	Applicants may respond to one or more reviewer comments or supplement their Full Application.
Optional	1 page max	Applicants may use this page however they wish; text, graphs, charts, or other data to respond to reviewer comments or supplement their Full Application are acceptable.

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The Full Application are reviewed by experts in the FOA topic area(s). After those experts review the applications, EERE will provide applicants with reviewer comments. Applicants will have a brief opportunity to review the comments and prepare a short Reply to Reviewer Comments responding to comments however they desire. The Reply to Reviewer Comments is due by the date and time provided on this slide. Applicants should anticipate receiving the independent reviewer comments approximately three business days before this due date. The Reply to Reviewer Comments is an optional submission; applicants are not required to submit a Reply to Reviewer Comments.

This a **customer centric** process that provides applicants with a unique opportunity to correct misunderstandings and misinterpretations and to provide additional data that might influence the selection process in their favor. The Replies are considered by the reviewers and the selection official.

Replies to Reviewer Comments must conform to the content and form requirements listed here, including maximum page lengths. If a Reply to Reviewer Comments is more than three pages in length, EERE will review only the first three pages and disregard any additional pages.

Please see [Sections IV.F. and V.A.3](#) for additional information regarding Replies to Reviewer Comments

## Selection Factors

The Selection Official may consider the merit review recommendation, program policy factors, and the amount of funds available in arriving at selections for this FOA.

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## Program Policy Factors

- The Selection Official may consider the following program policy factors in making his/her selection decisions:
  - The degree to which the proposed project, including proposed cost share, 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

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After the Merit Review process, the Selection Official may consider program policy factors to come to a final selection decision.

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## Registration Requirements

- To apply to this FOA, Applicants must register with and submit application materials through EERE Exchange: <https://eere-Exchange.energy.gov>
- Obtain a “control number” at least 24 hours before the first submission deadline
- Although not required to submit an Application, the following registrations must be complete to received an award under this FOA:

Registration Requirement	Website
DUNS Number	<a href="http://fedgov.dnb.com/webform">http://fedgov.dnb.com/webform</a>
SAM	<a href="https://www.sam.gov">https://www.sam.gov</a>
FedConnect	<a href="https://www.fedconnect.net">https://www.fedconnect.net</a>
Grants.gov	<a href="http://www.grants.gov">http://www.grants.gov</a>

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There are several one-time actions before submitting an application in response to this FOA, and it is vital that applicants address these items as soon as possible. Some may take several weeks, and failure to complete them could interfere with an applicant’s ability to apply to this FOA, or to meet the negotiation deadlines and receive an award if the application is selected.

### *DUNS Number*

Obtain a Dun and Bradstreet Data Universal Numbering System (DUNS) number.

### *System for Award Management*

Register with the System for Award Management (SAM). Designating an Electronic Business Point of Contact (EBiz POC) and obtaining a special password called an MPIN are important steps in SAM registration. Please update your SAM registration annually.

### *Fedconnect*

Register in FedConnect. To create an organization

account, your organization’s SAM MPIN is required. For more information about the SAM MPIN or other registration requirements, review the FedConnect Ready, Set, Go! Guide at the FedConnect site.

*Grants.gov*

Register in Grants.gov to receive automatic updates when Amendments to this FOA are posted. However, please note that [Delete if Letters of Intent are not applicable] Letters of Intent, Concept Papers, and Full Applications will not be accepted through Grants.gov.

## Means of Submission

- Concept Papers, Full Applications, and Replies to Reviewer Comments must be submitted through EERE Exchange at <https://eere-Exchange.energy.gov>
  - EERE will not review or consider applications submitted through other means
- The Users' Guide for Applying to the Department of Energy EERE Funding Opportunity Announcements can be found at <https://eere-Exchange.energy.gov/Manuals.aspx>

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All required submissions must come through EERE Exchange. EERE will not review or consider applications submitted through any other means.

## Key Submission Points

- Check entries in EERE Exchange
  - Submissions could be deemed ineligible due to an incorrect entry
- EERE strongly encourages Applicants to submit 1-2 days prior to the deadline to allow for full upload of application documents and to avoid any potential technical glitches with EERE Exchange
- Make sure you hit the submit button
  - Any changes made after you hit submit will un-submit your application and you will need to hit the submit button again
- For your records, print out the EERE Exchange Confirmation page at each step, which contains the application's Control Number

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## Applicant Points-of-Contact

- Applicants must designate primary and backup points-of-contact in EERE Exchange with whom EERE will communicate to conduct award negotiations
- It is imperative that the Applicant/Selectee be responsive during award negotiations and meet negotiation deadlines
  - Failure to do so may result in cancellation of further award negotiations and rescission of the Selection

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## Questions

- Questions about this FOA? Email [TABBFOA@ee.doe.gov](mailto:TABBFOA@ee.doe.gov)
- All Q&As related to this FOA will be posted on EERE Exchange
  - You must select this specific FOA Number in order to view the Q&As
  - EERE will attempt to respond to a question within 3 business days, unless a similar Q&A has already been posted on the website
- Problems logging into EERE Exchange or uploading and submitting application documents with EERE Exchange? Email [EERE-ExchangeSupport@hq.doe.gov](mailto:EERE-ExchangeSupport@hq.doe.gov) .
  - Include FOA name and number in subject line
- All questions asked during this presentation will be posted on EERE Exchange

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