Biography and Written Testimony before the
U.S. House of Representatives, Committee on Science, Space, and Technology
Subcommittee on Investigations and Oversight and Subcommittee on Energy

Hearing Entitled "Management and Spending Challenges within the Department of Energy's Office of Energy Efficiency and Renewable Energy"

Charles F. Gay, Ph.D.
Member: Sandia National Laboratory Energy and Homeland Security External Advisory Board
Former: Director of the Solar Energy Technologies Office, Department of Energy's Office of Energy Efficiency and Renewable Energy

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Chairwoman Johnson, Ranking Member Lucas and distinguished Members of the Subcommittees, it is an honor to appear before you today at this important hearing to better understand general management and spending challenges within the Department of Energy's (DOE) Office of Energy Efficiency and Renewable Energy (EERE). The Solar Energy Technologies Office (SETO) is one of multiple offices within EERE.

By way of background, I have worked in the field of solar and renewable energy for more than 45 years in both government and private sector roles. I currently serve on Sandia National Laboratory's External Advisory Board for Energy and Homeland Security; as a subject matter expert providing advisory consulting to Energetics' government and private-sector clients; as a founding member of San Jose State University's Engineering Advisory Board; as a new member of the Advisory Panel for the Australian Renewable Energy Agency (ARENA) and as founder of Greenstar. During the George W. Bush Administration, the Greenstar Foundation was selected by the Departments of Commerce, Interior, Energy and State to be the only Non-Government Organization to exhibit in the U.S. Pavilion at the World Summit on Sustainable Development in 2002. I am described on the DOE website as having "led a team that is dedicated to early-stage research and development of solar technologies, with a focus on how they contribute to supporting the reliability, resilience, and security of the U.S. electric grid."

I served as SETO Director (designated EE4S) from August 2016 to November 2019. During these three years, we achieved our SETO SunShot goal of 6¢/kWh three years ahead of schedule. We launched and awarded more than $700 million in funding for solar R&D. We proactively addressed, resolved and cleared a large backlog of legacy contracting issues, while significantly reducing unobligated balances. We created and launched the American-Made Challenges, Solar Prize, to revitalize U.S. manufacturing and streamline the timeline necessary for making awards.

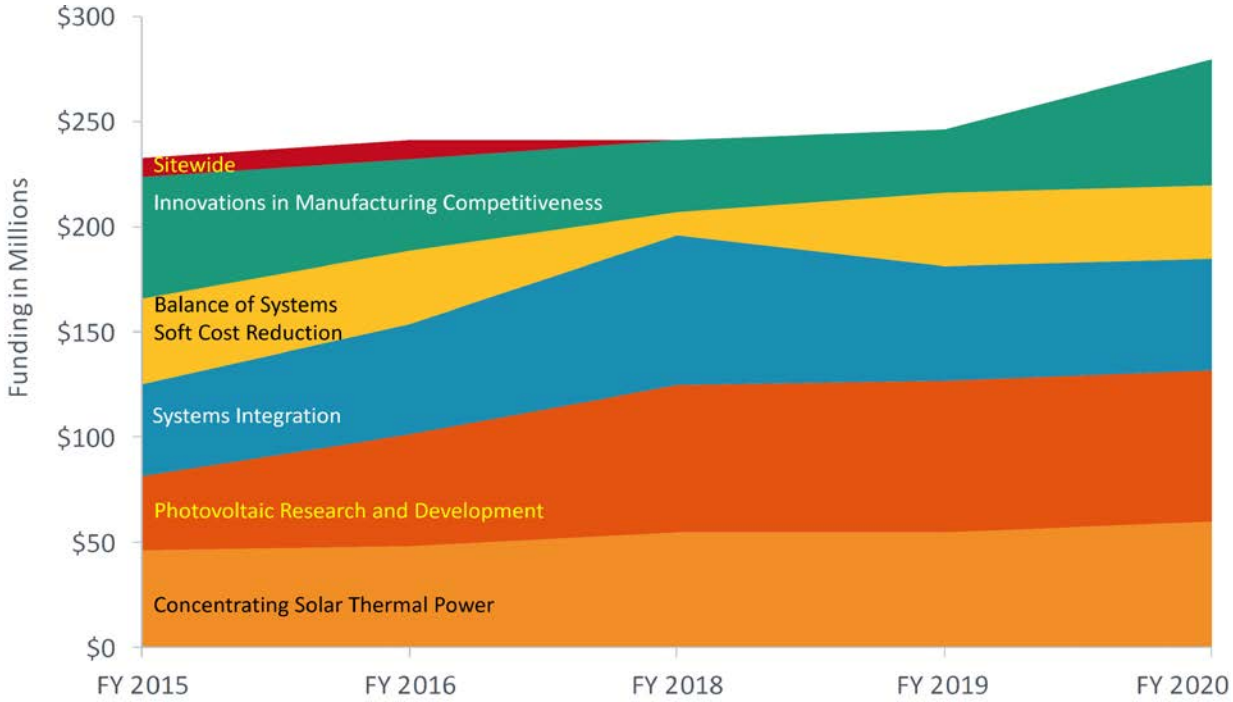
The views expressed in this testimony are my own. I have not collaborated with the DOE in preparation for today's Hearing. I have received no compensation nor reimbursement for my time, travel and miscellaneous expenses. At present, my interaction with DOE includes long-standing friendships with many of the staff at DOE headquarters, SETO's contracting partners in the Golden Field Office (GFO) and with numerous friends across the U.S. National Laboratory system. Ongoing written correspondence with DOE includes topics related to my DOE Thrift Savings Plan and Retirement Contributions. As is policy, I did not retain materials, records or other DOE property upon my voluntary retirement. I did retain a copy of my signed certification record associated with a Freedom of Information Act (FOIA) document production designated by DOE as HQ-2018-01594-F. In preparing this testimony I have had access to some portion of on-line redacted materials produced and submitted by DOE.[1,2A] As best I recall, my original document production pursuant to the FOIA request numbered about 50 with some parsed into multiple segments. Many of these subsections were given separate document numbers by the DOE FOIA Office. From my original production, 52 numbered documents were returned for certification. Approximately 5 of my originally submitted documents had been deleted and one new document, I didn't recall as being from my personal materials, was added. The redacted document count available on-line is 32. The on-line folder from reference 1, labeled, "Production 1-HQ-2018-01594-F First Partial Responsive Documents" (all submitted by me), is absent at least two documents relevant to this Hearing.

The solar community is appreciative of these Subcommittees' historical and continued attention. We are especially thankful for the continued financial resources that support the ongoing success of cost competitive solar power. The U.S. solar industry now counts over 250,000 high-paying jobs.[2] And we are thankful that the Committee has shown, by way of this Hearing and other similar Hearings over time, of the engagement with EERE's business practices with an eye toward continuous improvement.

[1] https://drive.google.com/drive/folders/1qYMxvktXh0EVP-N_V7gNgkUvva8jCn-h
also ref. 2A https://www.eenews.net/assets/2019/08/07/document_ew_02.pdf
[2] https://www.thesolarfoundation.org/solarjobscensusarchives/

I. Comments on SETO Spending

Rapid progress in meeting the SunShot goals set in 2011 were the result of steadfast congressional support over many years. This stability, along with the commitment of dedicated staff at DOE and at least 13 of the DOE National Laboratories has been consequential as previously noted.[3]



SETO Budget History

While the budget reflects excellent long-term stability, the process of reaching the final approved budget has at times been protracted and unpredictable. This was especially the case in FY2018, when a final budget was signed on March 23rd 2018. As of November 1, 2017 (second month of FY2018) the span of potential outcomes for SETO's budget was wide-ranging. This affected planning for staffing levels and scope definition for FY2018 FOAs.

Project Activity	FY2016 Enacted, $	FY2017 Enacted, $	FY2018 Admin. Req,$	FY2018 House Req, $	FY2018 Senate Req, $
Total	241,600,000	207,600,000	69,700,000	90,000,000	167,500,000
Concentrating Solar Power	48,400,000	55,000,000	8,000,000	18,233,557	48,000,000
Photovoltaics	53,152,000	64,000,000	43,700,000	43,700,000	48,000,000
Systems Integration	52,447,000	57,000,000	18,000,000	18,000,000	45,500,000
Balance of System (soft costs)	34,913,000	15,000,000	-	3,988,590.60	10,500,000
Technology to Market	43,488,000	16,600,000	-	6,077,852.35	16,000,000
NREL / Sitewide	9,200,000				

[3] https://www.energy.gov/sites/prod/files/2020/01/f70/SETO%20Quarterly%20Stakeholder%20Webinar%20January%202020_0.pdf

The final SETO budget for FY2018 shows that, rather than shrinking, funds increased over FY2017 and matched the FY2016 funding level.

Sub-Programs	FY 2017 Enacted, $k	FY 2018 Enacted, $k
Total	**207,600**	**241,600**
Concentrating Solar Power	55,000	55,000
Photovoltaic Research and Development	64,000	70,000
Systems Integration	57,000	71,200
Balance of Systems Soft Cost Reduction	15,000	11,000
Innovations in Manufacturing Competitiveness	16,600	34,400

For the EERE organization, the administration's budget request for FY2018 was far below the prior year.

Administration proposal for EERE in FY2017[4] $2,900 Million
Administration proposal for EERE in FY2018[5] $636 Million

In 2017 the EERE organization was staffed at approximately 625 employees, as I recall. With a potential funding decline, planning was necessary that included consideration of a reduction to, perhaps, a low of 450 employees.

The next pages (5-18) provide a chronology of certain events associated with Topic 1 of SETO's FY2018 FOA. As noted, the details have been largely extracted from Reference 1 and complemented by memory, when written records were not available.

[4] https://www.energy.gov/fy-2017-department-energy-budget-request-fact-sheet
[5] https://www.energy.gov/sites/prod/files/2017/05/f34/DOEFY2018BudgetFactSheet.pdf

II. The FY2018 SETO FOA Topic 1 timeline, related to solar integration with the electric grid.

#	Date	Activity	Added Detail	Personal Comments
1	January 2017	EE4 Dr. Tim Unruh succeeds Roland Risser as DAS Renewable Power[6]		
2	November 2017	EE4S Gay briefs B. Parks (OE) on FY2018 FOA plan and timeline ref 1 #7, pg 69		One of my goals was to build collaborative bridges with the Office of Electricity. Special recognition to Michael Pesin Gil Bindewald is of note.
3	November 20, 2017	Acting EE1 Simmons approves FOA Requirements Doc. ref1 #7, pg 69		
4	November – December 2017	SETO staff brief OE including DAS Jereza (OE20) on multiple FOA topics incl. Topic 1 ref1 #7, pg 69	Subtopic 1.1 identified for further development (Adaptive Local Grids)	
5	December 2017 – March 2018	SETO staff collaborates with G. Bindewald (OE) on Topic 1 including subtopics 1.1-1.3 ref1 #7, pg 69	Shared results with OE20 Jereza and DAS Pesin (OE10)	
6	January 2018	DOE Management Administration (MA) approves FOA Requirements Document ref1 #7, pg 69		
7	14 February 2018	The Office of Cybersecurity, Energy Security, and Emergency Response, CESER, is created.[7]		
8	1 March 2018	G. Yuan (SETO) sends FOA Topic 1 to G. Bindewald and incorporates the feedback into an updated wording. ref1 #6, pg 387		

[6] https://www.linkedin.com/in/timothy-unruh-895a135/
[7] https://www.greentechmedia.com/articles/read/doe-new-office-energy-infrastructure-security-cybersecurity

#	Date	Activity	Added Detail	Personal Comments
9	22 March 2018	G. Bindewald confirms that the revised Topic 1 wording incorporates his recommendation. OE10 Pesin is copied. ref1 #6, pg 389		
10	April 2018	EE1 COS Fitzsimmons approves FOA Requirements Doc. ref1 #7, pg 69		
11	16 April 2018	FOA Released	S1 press release[8] includes Topic 1 for PV+grid, Sept notification	
12	17 April 2018	SETO FOA published[9]		
13	25 April 2018	SETO FOA Webinar[10]		
14	5 May 2018	SETO FOA updated [11]		
15	9 May 2018	Concept Paper Deadline		
16	5 June 2018	Encourage/Discourage decisions released		
17	29 June 2018	SETO FOA Q&A Updated[12]		
18	5 July 2018	Full applications due	90+ applications for ~$250 million. FOA stated $46 million for ~ 14 projects	
19	5 July 2018	C. Tripodi appointed acting EE1[13]		

[8] https://www.energy.gov/articles/us-secretary-energy-rick-perry-announces-105-million-new-funding-advance-solar-technologies
[9] https://eere-exchange.energy.gov/FileContent.aspx?FileID=09e8a87d-3019-49bd-99a7-4bdea3bbc8ce
[10] SETO FY18 FOA Applicant Webinar_Topic 1
[11] https://eere-exchange.energy.gov/FileContent.aspx?FileID=09e8a87d-3019-49bd-99a7-4bdea3bbc8ce
[12] https://eere-exchange.energy.gov/FileContent.aspx?FileID=b8b7c027-02f4-4d55-be77-efae5aa5923a
[13] https://www.eenews.net/greenwire/stories/1060087939?t=https%3A%2F%2Fwww.eenews.net%2Fstories%2F1060087939

#	Date	Activity	Added Detail	Personal Comments
20	12 July 2018	Acting EE1 Tripodi communicates there will be a new FOA briefing process. ref1 #6, pg 515		
21	23 July 2018	EE4 Unruh first meets with acting EE1 Tripodi. She asks that OE20 Jereza know that OE has helped draft the SETO FOA language. ref1 #7, pg 47		
22	25 July 2018 8:39 a.m.	EE4 Unruh reports that acting EE1 Tripodi asks for thoughts on SETO Topic 1 from OE20 Jereza ref1 #5, pg 1	esp. regarding coordination with OE	
23	25 July 2018 8:28 p.m.	G. Bindewald (OE) informs OE20 Jereza that OE has active biweekly engagement reviews with SETO on Topic 1. D.Ton (OE) is also actively involved with SETO on Puerto Rico. ref1 #5, pg 41 which brings the organizations together even more frequently than normal.		
24	30 July 2018 morning	EE4 Unruh meets with acting EE1 Tripodi, also attending is OE20 Jereza. OE20 Jereza indicated she was not clear on what coordination had occurred between OE and SETO. Acting EE1 Tripodi and OE20 Jereza expressed that they thought some Topic 1 language was unclear. ref1 #7, pg 47		

#	Date	Activity	Added Detail	Personal Comments
25	30 July 2018 1:44 p.m.	Acting EE1 Tripodi emails OE1 Walker (OE1), A. Lotto (COS OE1) and OE20 Jereza that SETO has offered to rewrite Topic 1. ref1 #5, pg 43	Acting EE1 Tripodi also reports that she and OE20 Jereza do not understand the FOA and ask that it be rewritten to be consistent with the OE mission.	This is the apparent genesis of the Topic 1 breakdown. Nobody from EERE was apparently copied on this email and no evidence that such an offer was made has been found in the collection of documents produced and posted under the FOIA.
26	30 July 2018 early afternoon	EE6 Bindu Jacob (EERE Office of Operations) reports that acting EE1 Tripodi had asked questions about changing FOAs which are already on the street. ref1 #7, pg 47		
27	30 July 2018 late afternoon	EE4 Unruh stops by acting EE1 Tripodi's office to report that FOAs could be changed and EE6 Jacob was working with the GFO to develop the mechanics. Acting EE1 Tripodi also asked for and received a copy of the SETO Topic 1 plus the FOA preamble to be shared with OE1 Walker to see if he thought any changes were necessary. ref1 #7, pg 48		
28	May – August 2018	D. Ton (OE)	Participates in Topic 1 reviews	

#	Date	Activity	Added Detail	Personal Comments
29	2 August 2018	EE4 Unruh emailed OE20 Jereza asking if there was any information on the SETO Topic 1 (among other things). ref1 #7, pg 48	At this time the Topic 1 FOA was being Merit Reviewed. Accordingly, as sense of urgency was needed. OE20 Jereza replies that there was no further information on the Topic 1 FOA.	
30	6 August 2018	Acting EE1 Tripodi informs EE4 Unruh and OE20 Jereza that she spoke to OE1Walker and he was hopeful of having something by 8 August 2018. OE1 Walker wants solar to be located closer to the grid to serve a national security priority mission. ref1 #7, pg 52	Acting EE1 Tripodi states that it would be appropriate to wait for OE1 Walker's language because she is unable to explain it like he can.	The original Topic 1 FOA (1840) solicited proposals for Adaptive Local Grids, Advanced Systems Integration Technologies.
31	8 August 2018	Applicants reply to reviewer comments		
32	9-17 August 2018	In-person merit reviews	OE staff including Gil Bindewald, S. Walls, C. Irwin participate and make recommendations for Selection Official EE4S Gay	
33	15 August 2018	SETO Deputy Director Dr. Jones-Albertus meets with OE1 COS A. Lotto and reviews Topic 1.1 – 1.3 and copies documentation of collaboration with G. Bindewald (OE) and others in the Office of Electricity. ref1 #6, pg 498		

#	Date	Activity	Added Detail	Personal Comments
34	21 August 2018	K. Fricker (SETO FOA manager) reports 1142 concept papers were submitted for the total FOA. 508 full and eligible applications were ultimately submitted. ref1 #6, pg 503		
35	21 August 2018	EE4 Unruh provides data to acting EE1 Tripodi on Topic 1 applications, concept papers in response to 17 August request. ref1 #7, pg 42		
36	21 August 2018 6:35 a.m.	EE4 Unruh emails acting EE1 Tripodi asking if there is an update on the language in the SETO FOA. ref1 #7, pg 59	He also states that the Federal Consensus Panel for Topic 1 was meeting this week, so any information would be helpful	
37	21 August 2018 7:13 a.m.	EE4 Unruh responded to acting EE1 Tripodi's request for Topic 1 statistics which included the number of applications received and additional statistics. ref1 #7, pg 60		These statistics were incorporated by all EERE Offices as part of FOA reviews with acting EE1 Tripodi and included: The number of concept papers, number of invitations for full proposals, number of proposals evaluated, number selected and cost share. Also reported were the number of selectees new to the Office portfolio, number of selectees that do not currently have a financial assistance award with the Office. Geographic location of selectees and their partners along with the categorization of stakeholder attributes such as industry, small business, academia became mandatory after the next reported meeting.

#	Date	Activity	Added Detail	Personal Comments
38	23 August 2018	DAS4 Unruh documents chronology of SETO Topic 1 interactions with acting EE1 Tripodi. ref1 #6, pg 532		
39	27 August 2018	EE4S Gay briefs acting EE1 Tripodi, EE4 Unruh and EE1 COS Fitzsimmons on the Solar Prize and role of Power Connectors		The scheduled 5 minute review became a 25 minute discussion of the geographic locations of the business incubator hosts with challenge questions centering around why the Midwest and southeast didn't have more representation. Acting EE1 Tripodi asserted that EE4S Gay didn't know where manufacturing takes place in America. In response, EE4S Gay showed the map SETO created of the location of start-ups funded by the Office over seven years that had been successful in raising subsequent rounds of capital from the private sector. Acting EE1 Tripodi asserted that EE4S Gay "didn't know what [he] was talking about." She indicated that "we need to fund more work in these geographic areas."

#	Date	Activity	Added Detail	Personal Comments
39	27 August 2018 (continued)	EE4S Gay briefs acting EE1 Tripodi, EE4 Unruh and EE1 COS Fitzsimmons on the Solar Prize and role of Power Connectors		Acting EE1 Tripodi also required that SETO provide the names of those submitting full proposals but were not selected and the names of the original 41 groups expressing interest. Acting EE1 Tripodi again reaffirmed that the Midwest and southeast are where America manufactures. EE4S Gay pointed out where he had personally built solar manufacturing plants in California and Washington state. California and Washington had people with the necessary background skills, largely from the aerospace sector. Washington state was ideal for energy-intense single crystal silicon manufacturing. In addition, the proximity of supply chain resources, including polysilicon from Moses Lake, and argon and high purity crucibles made just-in-time production more cost effective. Power supplied by Bonneville Power Authority was dual redundant, which increased overall yield.
40	27 August 2018 2:59 p.m.	GFO1 Passarelli sends new Topic 1 language to D. Bobo	New language matches document handed to EE4S Gay the next day. ref1 #6, pg 541	

#	Date	Activity	Added Detail	Personal Comments
41	27 August 2018 4:28 p.m.	Diana Bobo (GFO) informs Kyle Fricker (SETO FOA manager), Guohui Yuan (SETO Program Manager for system integration) and Clay Pfrangle (GFO) that acting EE1 is seeking to revise Topic 1 and re-post. ref1 #7, pg 61		
42	28 August 2018 1:30 p.m.	EE4S Gay meets with acting EE1 Tripodi and EE1 COS Fitzsimmons		See detailed recollection below. Bottom line: cancel Topic 1 and re-issue.
43	28 August 2018 5:00 p.m.	EE4S Gay informs SETO Program Managers, EE4 Unruh, EE4 COS Hamos, K. Fricker (SETO FOA Manager), S. Murley (SETO Communications) of Topic 1 cancellation		
44	28 August 2018 7:30 p.m.	D. Passarelli (Director GFO) informs acting EE1 Tripodi, EE1 COS Fitzsimmons and EE4S Gay of cancellation of Topic 1 with plans for preparing and issuing a replacement FOA with goal of 45 days and plans for messaging the 90+ applicants to Topic Area 1.		
45	29 August 2018 6:41 a.m.	DAS4 Unruh sends email to EE1 COS Fitzsimmons with an idea that could be "a win all around on this." ref1 #6, pg 545	EE1 COS Fitzsimmons responds he's on his way to meet.	

#	Date	Activity	Added Detail	Personal Comments
46	30 August 2018 5:45 a.m.	EE6 Jacob asks GFO1 Passarelli what FOAs are going to require modification. Response is SETO and the Building Technologies Office (BTO) (who was not been informed) [ref1 #7, pg 34] Solid State Lighting FOA may also be in play but managed by NETL	Plan for SETO Topic 1 is to simultaneously place notice of cancellation and Notice of Intent (NOI) to issue new Topic 1. EE1 COS Fitzsimmons provided NOI language.	
47	31 August 2018 10:30 a.m.	EE4S Gay convenes all-hands SETO meeting to update employees on current status and process moving forward		Need to maintain integrity of SETO funds appropriated by Congress and integrity of the FOA process (for example EE4S Gay only "acknowledged" the replacement FOA 1987 rather than sign off); need to maintain relationships with key stakeholders. In racing to deliver a new FOA, it was necessary to assure the quality and integrity of work product.
48	31 August 2018 2:37 p.m.	M.L.Renfro (DOE External Coordination) emails House of FOA change[ref1 #7, pg 15-18]		
49	31 August 2018 3:00 p.m.	Topic 1 applicants notified of FOA revision, NOI (DE-FOA-0001986) for new FOA (DE-FOA-0001987) posted[14 ref1 #7, pg 15-18]	"EERE plans to Issue the FOA on or about September 15, 2018"	

[14] https://eere-exchange.energy.gov/FileContent.aspx?FileID=553e0d1e-3925-41bb-bd37-6e366e2f1171

#	Date	Activity	Added Detail	Personal Comments
50	31 August 2018 4:36 P.M.	J. Shimek (Clerk, U.S. House Appropriations Committee) responds to M.L. Renfro and B. Forcier at DOE ref1 #7, pg 15-18	How far along was original FOA	
51	31 August 2018 4:39 p.m.	J. Shimek responds to M.L. Renfro and B. Forcier (DOE Budget Analyst) ref1 #7, pg 15-18	EERE should not do anything publicly or formally with this until we understand what is happening here	
52	31 August 2018 8:12 p.m	J. Shimek instructs J.G. Vonglis (DOE CFO), B.Forcier, C. Johns (DOE Director of Budget). cc: to C. Hanson (Professional Staff Member, U.S. Senate Committee on Appropriations) ref1 #7, pg 15-18	Hill needs full briefing from DOE BEFORE anything is done to cancel, postpone, and/or put a hold on originally selected projects and BEFORE anything is done to put out a new FOA	
53	31 August 2018 10:51 p.m.	B. Forcier reports EE6 Jacob informed upper DOE of plan for announcing new FOA late afternoon of 30 Aug ref1 #7, pg 15-18		
54	7 September 2018	Acting EE1 Tripodi announces departure of EE4 Unruh and replacement with EE3 Chalk to simultaneously serve as acting EE4 beginning 17 September 2018		
55	7 September 2018	Acting EE1 Tripodi announces that Topic 1 was cancelled in July during a review of the remaining SETO FOA selections ref1 #7, pg 47		

#	Date	Activity	Added Detail	Personal Comments
56	18 September 2018 1:45 p.m.	Acting EE1 Tripodi emails S3 Menezes, S. Varnasidis (COS S3) and A. Webster (Senior Advisor S3) that she and OE20 Jereza met with EERE staff 3 times asking what Topic 1 meant. Staff was unable to explain and, after indicating they would amend the FOA, which did not happen. Instead, the Merit review proceeded through final scoring against direction. ref1 #7, pg 157	Acting EE1 Tripodi further asserts that she, OE20 Jereza and acting EE4 Chalk worked on the rewrite to ensure taxpayers are provided a Topic 1 that makes sense and is competitive for all applicants. ref2 #7, pg 157	Technical staff from the OE, EERE, GMI and SETO offices tried on multiple occasions to explain the FOA. Gil Bindewald (OE) had emailed the collaborative background on July 25. The 90+ applicants understood what they were proposing and any clarifying questions received replies on the EERE Exchange server for full transparency to all.
57	18 September 2018 7:04 p.m.	Acting EE4 Chalk forwards rewritten version of acting EE1 write-up for a new FOA seeking feedback from EE1 COS Fitzsimmons, acting EE1 Tripoti, and OE20 Jereza		

#	Date	Activity	Added Detail	Personal Comments
58	2 October 2018	Storyline preparation for meeting with HEWD ref1 #7, pg 385-386	DOE leadership asked for a review of all EERE FOAs During the review of the solar FOA, the decision was made that Topic 1 needed to be updated to more clearly and concisely communicate DOE's objectives of energy security and resiliency The solar FOA was not at the point in the process that acting EE1 would have been briefed on the FOA applicants, so she was not aware of any of the applicants when she made the request to update Topic 1	The Solar FOA was not formally reviewed until months later. When SETO initially presented the FY2018 selections, mention was made of FOA Topic 1 in the report. Acting EE1 Tripodi immediately instructed EE4S Gay and acting EE4 Chalk to leave the room and not return for the SETO FOA briefing, until anything related to Topic 1 had been excised.
59	3 October 2018	S3 Menzes, acting EE1 Tripodi et.al. appear at HEWD		
60	12 October 2018	New FOA published. DE-FOA-0001987[15]		
61	7 November 2018	FOA 1987 Webinar[16] and Script[17]		

[15] DE-FOA-0001987 Advanced Systems Integration for Solar Technologies
[16] SETO SI ASSIST FOA Webinar
[17] ASSIST FOA Applicant Webinar Script

#	Date	Activity	Added Detail	Personal Comments
62	14 November 2018	Letter of Intent due for Replacement Topic 1 FOA 1987		
63	30 November 2018	Updated Q&A FOA 1987[18]		
64	7 December 2018	Submission Deadline for Full Applications FOA 1987		
65	8 December 2018	EERE Upper Management and Communications staff were required to take a 2 day "Plain Writing" course. Attendance was taken for each day and reported.	Michael Coogan was designated as the DOE Plain Writing Contact	
66	1 February 2019	Expected Submission Deadline for Replies to Reviewer Comments		
67	6 February 2019[19]	D. Simmons sworn in as EE1		
68	22 March 2019	Expected Date for Selection Notifications FOA 1987		

[18] DE-FOA-0001987 QandA updated 11/30/18

[19] https://www.energy.gov/articles/daniel-simmons-ceremonially-sworn-doe-assistant-secretary-energy-efficiency-and-renewable

Re page 12: Tuesday 28 August 2018 at 1:30 p.m. acting EE1 Tripodi, EE1 COS Fitzsimmons, EE4S Gay …..based on personal recollection.

On the morning of 28 August, EE4S Gay was asked by calendar invitation to attend a meeting with acting EE1 Tripodi and EE1 COS Fitzsimmons. This was surprising in light of acting EE1 Tripodi's insistence that only DAS-level staff represent the voice of subordinates. EE4S Gay's DAS, EE4 Unruh, was in the office that day, just several doors away from acting EE1 Tripodi's office, but was not invited to join.

Acting EE1 Tripodi handed EE4S Gay a print-out of a "new version" of the Topic 1 FOA. Acting EE1 Tripodi said: "we agreed" a rewrite was needed. The rewrite had 3 sub-sections. EE4S Gay was informed that it was to be used in place of the existing Topic 1 and that it had all the key elements of the existing Topic 1 FOA.

Here is how the conversation went:

EE4S Gay:

I said such a last-minute change would be highly disruptive, unnecessary and costly. I asked for the rationale. Why do "we" think it's necessary to reissue?

acting EE1 Tripodi:

The wording used in the current version is not understandable. It reads like old style solar from 2015 and 2016. Further, there are too many buzzwords.

EE4S Gay:

We had over 350 concept papers and more than 90 full applications, which would likely lead an objective person to see that the communities of professionals actively participating in the industry had no such difficulty. Furthermore, any ambiguities could be addressed through the EERE exchange and clarifications would be visible to the public.[20] I was provided little time to read the new document but identified the narrowly defined addition of direct coupling of PV to motor frequency control of agricultural fans (presumably in greenhouses) to stand out, simply because such configurations were already commercial.

acting EE1 Tripodi:

Replied that frequency control is useful.

EE4S Gay:

I'm not arguing the generality but the specific application to fans should be opened to encompass high value attributes associated with grid frequency control, resilience and reliability

acting EE1Tripodi

Did you even read the FOA yourself?

EE4S Gay:

Of course I did. I worked to develop it and I understand it or I wouldn't have put it forward in the first place. You (meaning acting EE1 Tripodi) never asked me to explain it.

[20] https://eere-exchange.energy.gov/FileContent.aspx?FileID=b8b7c027-02f4-4d55-be77-efae5aa5923a

acting EE1 Tripodi

Do you really think issuing a new FOA will be an issue?

EE4S Gay:

Absolutely yes. The stakeholder community has invested time and effort at their own expense to prepare proposals. Taxpayer money has been used to fund the process of issuing and reviewing the FOA. Qualified Merit Reviewers were retained. Such specialized expertise is difficult to find. With the cancellation, SETO was at risk of having these experts become "unavailable" for future reviews. Among other things….

acting EE1 Tripodi

All elements of the original Topic 1 are encompassed by the new write-up.

EE4S Gay

I don't see any reference to Topic 1.3 solar+X, such as PV plus batteries or PV plus pumped hydro. As far as I have had the chance to read these two pages, subtopic 3 is not present.

acting EE1 Tripodi:

It's in there.

EE4S Gay

Could you point it out to me?

Acting EE1 Tripodi:

You'll find it.

EE4S Gay:

I need time to collect my thoughts, since this is such a shock and puzzlement. I will sync up with GFO1 Passarelli and EE1 COS Fitzsimmons and find a plausible rationale that can be used to explain why it is necessary to reissue the FOA. At this instant, I'm thinking that we could update the context in light of DOE establishing the CESER Office.

On the way out of acting EE1 Tripodi's office, EE1 COS Fitzsimmons followed EE4S Gay down the hallway and profusely apologized for the situation. EE4S Gay said that he didn't like being blindsided, especially at this point where we have made selections for all FOA topics.

Estimated cost to change the original FOA
What was the cost of applying to and administering Topic 1 of the FOA?

- Compensate reviewers for Topic 1 Merit Reviews ($3k/reviewer): ~$80k
- DOE staff time to administer Topic 1: ~$500k Topic specific work – estimated by using burdened person-hours
    1. Topic ideas meeting
    2. Workshops
    3. Topic refinement
    4. FRD topic 1 language drafting, review and approval
    5. FOA topic 1 summary language drafting, review and approval
    6. FOA topic 1 detailed language for full FOA drafting, review and approval
    7. Reviewer recruitment
    8. Concept paper review and preparation
    9. Full application review and preparation
    10. Merit review and coordination
    11. Selection decision and briefing preparation
    12. Merit review advisory report preparation and approval
    13. Federal Consensus review and coordination (OE, GMI, SETO)
    14. Documentation and analysis for final report

- Estimated funds and opportunity cost incurred by applicants to the FOA: indeterminate, incurred by each applicant

III. Appendices

A. FOA Versions

i. Original 1840 – 4 topics.

Topic 1: Adaptive Local Grids, Advanced Systems Integration Technologies (20% cost share, TRL 2-5)
Topic 1.1 – Adaptive Local Grids
Topic 1.2 – Solar Observability
Topic 1.3 – Solar + X
Topic 1.4 – Innovative Pathways: Systems Integration

ii. C. Tripodi rewrite – 3 topics – see appendix

Topic 1.1 – Solar Grid Integration
Topic 1.2 – Solar Situational Awareness and Analysis
Topic 1.3 – Solar Technology Transfer

Challenges associated with the rewrite included:
The first subtopic speaks to solutions to be developed by the FOA appropriate for integration "throughout the bulk power systems or associated transmission to distribution substations." The remainder of the narrative speaks to Distributed Energy Resource (DER) solutions. Since DERs cannot be deployed to transmission lines, there will be confusion.

Blending transmission with distribution is not how utilities operate. Reference to “voltage testing” is not meaningful, unless context is provided.

The second paragraph for three sub-topics indicates that projects should include deployment aspects by stating proposals should explore taking "proactive steps to manage risk and strengthen the security and resilience of the Nation's critical infrastructure." This needs to be discussed with the Contracting Officer in Golden, CO because higher TRL levels require higher cost share as responders will potentially include demonstration projects.

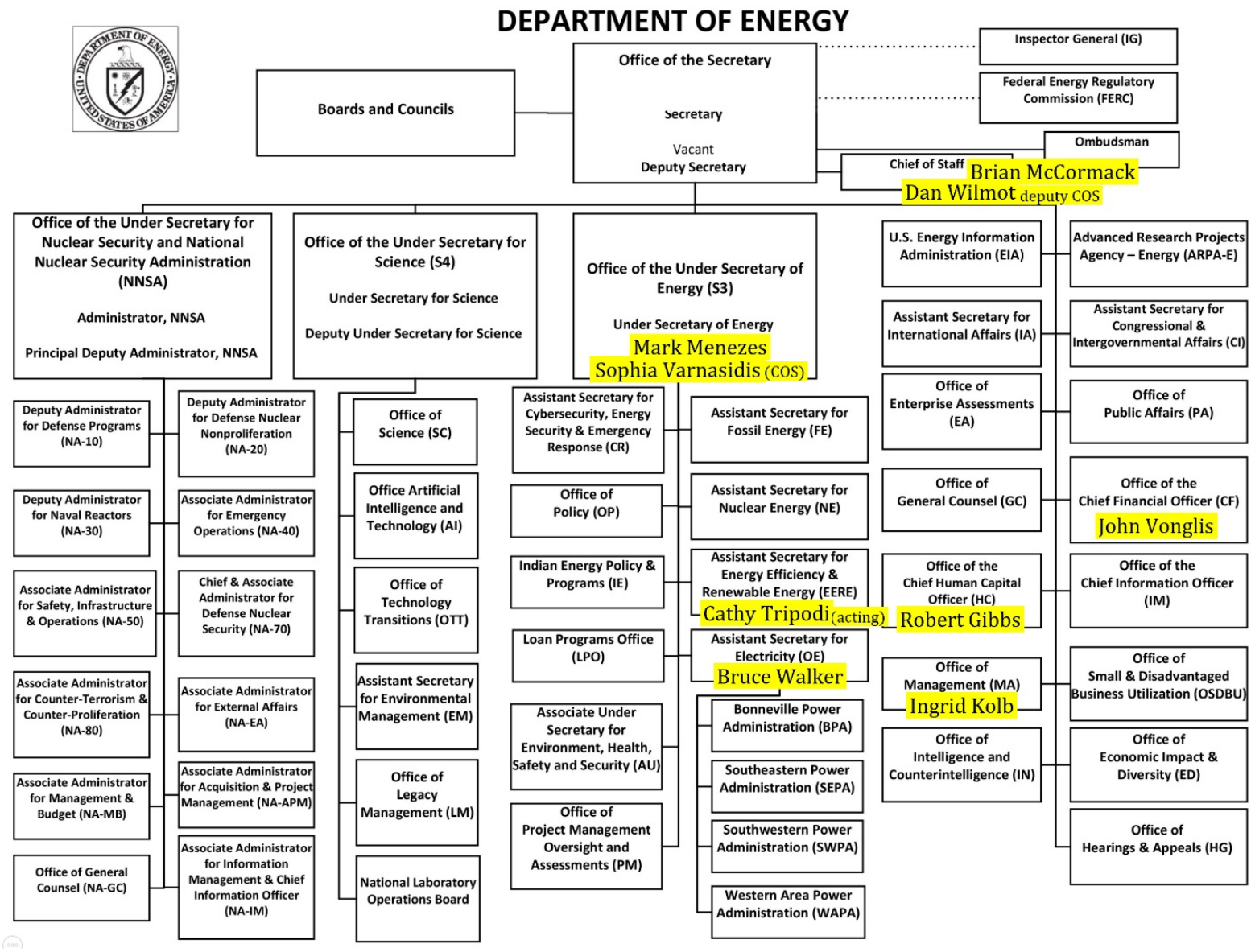
Since the new language emphasizes security and resiliency, we will want to add CESER to the review process, along with OE.

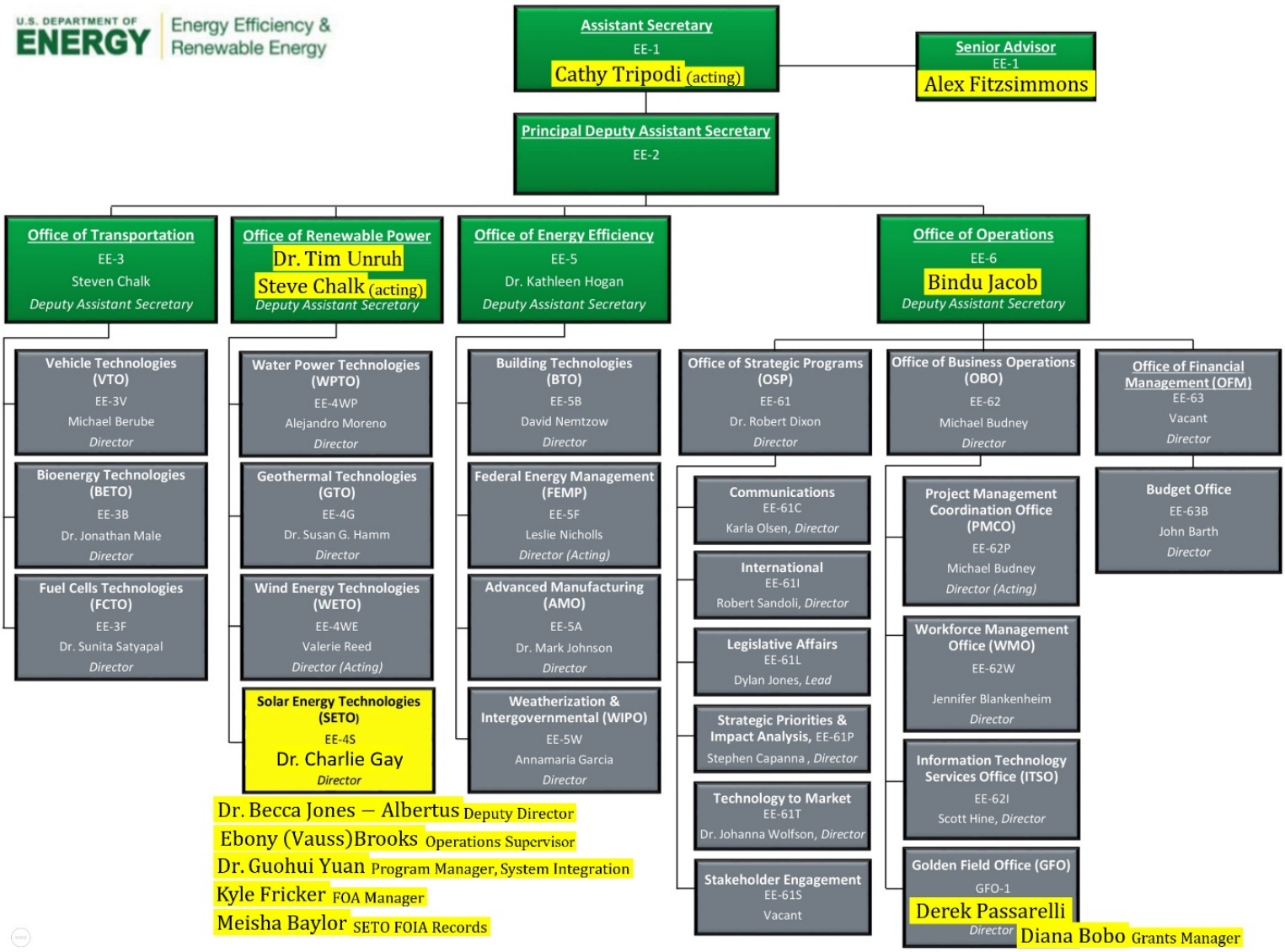
Solar+X (such as solar with storage), the original sub-topic 3 was deleted.

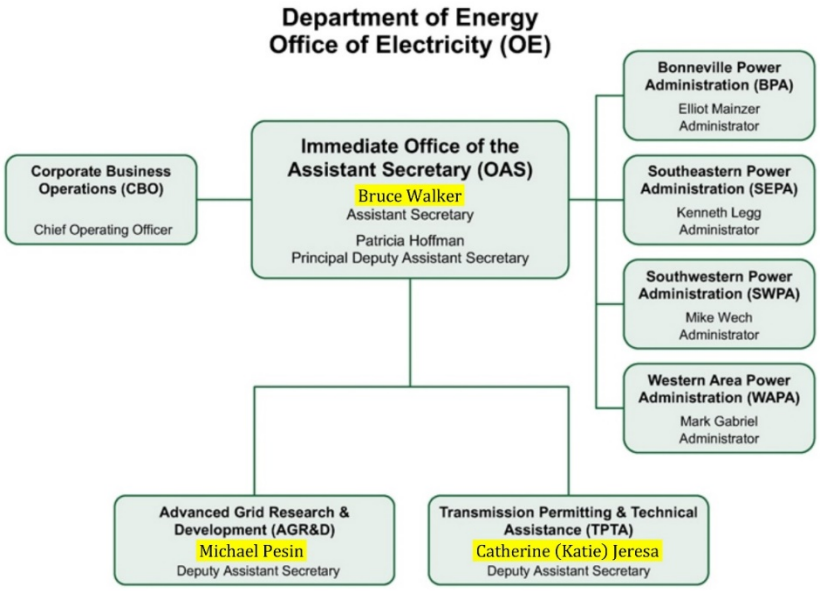
iii. Final revision 1987 – 2 topics

Topic 1.1 R&D and Technology Transfer for solar situational awareness in strategic locations associated with critical infrastructure
Topic 1.2 R&D, Technology Transfer and Validation of proactive resilience solutions for critical infrastructure.

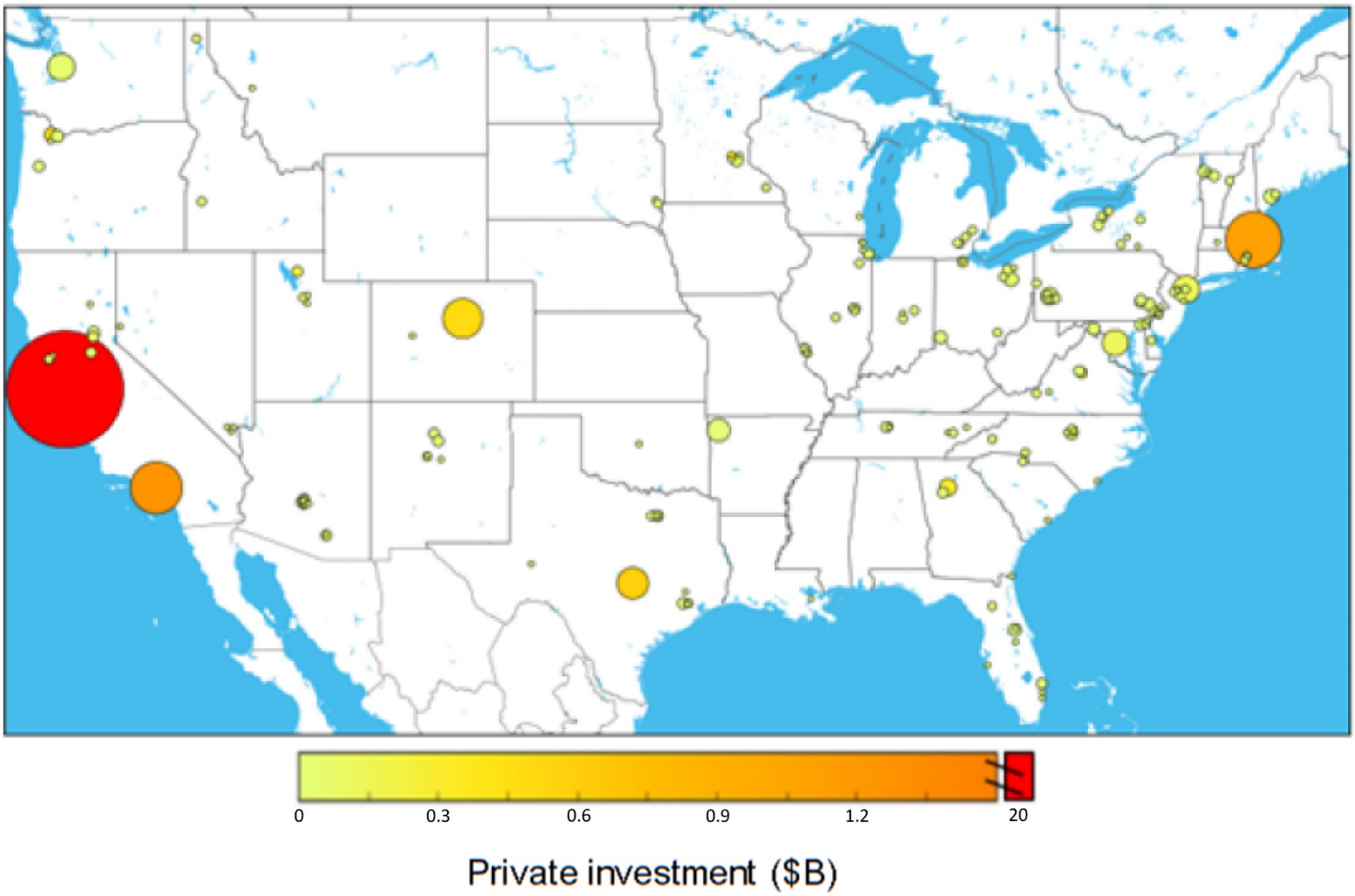
B. **DOE Organization Charts** :Highlighting Some Key Principals




U.S. DEPARTMENT OF ENERGY
Energy Efficiency & Renewable Energy
Assistant Secretary
EE-1
Cathy Tripodi (acting)
Senior Advisor
EE-1
Alex Fitzsimmons
Principal Deputy Assistant Secretary
EE-2
Office of Transportation
EE-3
Steven Chalk
Deputy Assistant Secretary
Office of Renewable Power
Dr. Tim Unruh
Steve Chalk (acting)
Deputy Assistant Secretary
Office of Energy Efficiency
EE-5
Dr. Kathleen Hogan
Deputy Assistant Secretary
Office of Operations
EE-6
Bindu Jacob
Deputy Assistant Secretary
Vehicle Technologies (VTO)
EE-3V
Michael Berube
Director
Bioenergy Technologies (BETO)
EE-3B
Dr. Jonathan Male
Director
Fuel Cells Technologies (FCTO)
EE-3F
Dr. Sunita Satyapal
Director
Water Power Technologies (WPTO)
EE-4WP
Alejandro Moreno
Director
Geothermal Technologies (GTO)
EE-4G
Dr. Susan G. Hamm
Director
Wind Energy Technologies (WETO)
EE-4WE
Valerie Reed
Director (Acting)
Solar Energy Technologies (SETO)
EE-4S
Dr. Charlie Gay
Director
Building Technologies (BTO)
EE-5B
David Nemtzow
Director
Federal Energy Management (FEMP)
EE-5F
Leslie Nicholls
Director (Acting)
Advanced Manufacturing (AMO)
EE-5A
Dr. Mark Johnson
Director
Weatherization & Intergovernmental (WIPO)
EE-5W
Annamaria Garcia
Director
Office of Strategic Programs (OSP)
EE-61
Dr. Robert Dixon
Director
Office of Business Operations (OBO)
EE-62
Michael Budney
Director
Office of Financial Management (OFM)
EE-63
Vacant
Director
Communications
EE-61C
Karla Olsen, Director
International
EE-61I
Robert Sandoli, Director
Legislative Affairs
EE-61L
Dylan Jones, Lead
Strategic Priorities & Impact Analysis, EE-61P
Stephen Capanna , Director
Technology to Market
EE-61T
Dr. Johanna Wolfson, Director
Stakeholder Engagement
EE-61S
Vacant
Project Management Coordination Office (PMCO)
EE-62P
Michael Budney
Director (Acting)
Workforce Management Office (WMO)
EE-62W
Jennifer Blankenheim
Director
Information Technology Services Office (ITSO)
EE-62I
Scott Hine, Director
Golden Field Office (GFO)
GFO-1
Derek Passarelli
Director
Budget Office
EE-63B
John Barth
Director
Dr. Becca Jones – Albertus Deputy Director
Ebony (Vauss)Brooks Operations Supervisor
Dr. Guohui Yuan Program Manager, System Integration
Kyle Fricker FOA Manager
Meisha Baylor SETO FOIA Records
Diana Bobo Grants Manager


Department of Energy
Office of Electricity (OE)
Corporate Business Operations (CBO)
Chief Operating Officer
Immediate Office of the Assistant Secretary (OAS)
Bruce Walker
Assistant Secretary
Patricia Hoffman
Principal Deputy Assistant Secretary
Bonneville Power Administration (BPA)
Elliot Mainzer
Administrator
Southeastern Power Administration (SEPA)
Kenneth Legg
Administrator
Southwestern Power Administration (SWPA)
Mike Wech
Administrator
Western Area Power Administration (WAPA)
Mark Gabriel
Administrator
Advanced Grid Research & Development (AGR&D)
Michael Pesin
Deputy Assistant Secretary
Transmission Permitting & Technical Assistance (TPTA)
Catherine (Katie) Jeresa
Deputy Assistant Secretary

C. Map reflecting SETO funding successes as measured by independent capital raises based on DOE awards.[21]



Geographic distribution of the number of active solar companies (represented by the size of the circle) and amount of private equity investments (represented by the fill color of the circle). Data are collected from Pitchbook and include transactions between 2000 and 2017.

[21] Source: Jonathan P. Trinastic, Senior Data Scientist, Duke Energy

IV: Conclusion

Renewable energy is key for the transition to a less carbon-intensive, sustainable world. Stanford's Mark Z. Jacobson is scheduled to soon publish a comprehensive plan for reaching 100% renewable energy by 2050.[22] Such a detailed roadmap is long overdue. Having metrics and practical examples to inspire and track progress was paramount to SETO's success in driving down solar power system costs. The consistent, stable, long term support congress provided to our office produced results and created a deep talent pool for the future. The SunShot success demonstrates the principle.

Thank you for the opportunity to appear before the Committee today. I look forward to your questions.

Attachments

1. Original Topic 1 FOA (1840) - Abbreviated
2. Intermediate FOA Replacement Supplied by Acting EE1 Tripodi
3. Final "Topic 1" Replacement FOA (1987) - Abbreviated
4. FOA Development Standard Operating Procedure (Glossary - page 6)
5. EE4S Gay FOIA Certification

[22] https://web.stanford.edu/group/efmh/jacobson/WWSBook/100PctWWSIntroTOC.pdf

Attachment 1
Original Topic 1 FOA (1840) - Abbreviated

Complete FOA in Reference 9::
https://eere-exchange.energy.gov/FileContent.aspx?FileID=09e8a87d-3019-49bd-99a7-4bdea3bbc8ce

I. Funding Opportunity Description

A. Description/Background

This Funding Opportunity Announcement (FOA) is being issued by the U.S. Department of Energy's (DOE), Office of Energy Efficiency and Renewable Energy (EERE), Solar Energy Technologies Office (SETO). This section describes the overall goals of SETO and the type of projects that are being solicited for funding support through this FOA.

In 2016, solar power surpassed 1% of annual electricity supply in the United States for the first time, and the Energy Information Administration projects that solar will grow to 5% of U.S. electricity by 2030.[1] Further, if the price of solar electricity and/or energy storage declines more rapidly than projected, that percentage could be even higher.[2] But solar is more than just a source of affordable electricity; it also provides the potential to improve grid reliability and resilience, increase employment ,[3] create business opportunities, increase energy diversity, and provide environmental benefits.

The mission of the Solar Energy Technologies Office (SETO) is to support early-stage research and development to improve the performance and flexibility of solar technologies that contribute to a reliable and resilient U.S. electric grid. The office invests in innovative research efforts that securely integrate more solar energy into the grid, enhance the use, storage and dispatch of solar energy, and lower solar electricity costs.

SETO focuses on two different solar energy technologies: photovoltaic (PV) technologies that directly convert sunlight into electricity, typically via a semiconductor, and concentrating solar thermal power (CSP) technologies that convert sunlight to heat, which can be converted or stored until needed, and then used to generate electricity or provide other energy services. Because sunshine varies with the time of day, location, and season, solar power systems must be paired with adaptive loads, other sources of power, or energy storage to deliver electricity whenever it's needed. This dependency reduces the value of solar power systems once solar starts to supply a significant fraction of the electricity within a

[1] U.S. Department of Energy, Energy Information Administration, International Energy Outlook 2017, DOE/EIA-0484 (2017).

[2] P.A. Basore and W.J. Cole, "Comparing supply and demand models for future photovoltaic power generation in the USA," submitted to *Progress in Photovoltaics: Research and Applications*, 2017.

[3] The Solar Foundation, *National Solar Jobs Census*, 2010 – 2016.

given region and highlights the need for a focus on addressing grid integration challenges.

SETO, in partnership with other offices at DOE, launched the SunShot Initiative in February 2011 with the goal of solar electricity becoming price-competitive with conventional utility sources by 2020.[4] The SunShot 2020 goal has already been achieved for utility-scale PV, and with continued effort, it is likely to be achieved for grid-tied solar applications. As a result of this tremendous progress and in response to the growing deployment of solar in the U.S., SETO is increasing its focus on addressing the challenges related to seamlessly integrating high penetrations of solar energy onto the nation's electricity grid. Additionally, SETO set 2030 cost targets to further reduce the cost of solar electricity across all market sectors, which would make solar one of the most affordable sources of electricity and enable a substantial fraction of U.S. electricity demand to be supplied by solar technology.[5] The targets for the unsubsidized cost of electricity at the point of grid connection in a location with average U.S. solar resources are 3¢ per kilowatt-hour (kWh) for utility-scale photovoltaics, 4¢ per kWh for commercial rooftop photovoltaics, 5¢ per kWh for residential rooftop photovoltaics, and 5¢ per kWh for concentrating solar power with thermal energy storage.

By supporting early-stage research across the solar energy technology space through this FOA, SETO can foster innovation and enable integrated multi-technology solutions that can advance the widespread adoption of solar power while securely integrating it into the nation's energy grid.

Topic 1: Advanced Solar Systems Integration Technologies describes SETO research priorities in the seamless integration of high penetrations of solar energy onto the nation's electricity grid. Responsive projects would advance the prediction, monitoring, and control of solar power production, the capabilities of solar power electronics and the integration of solar energy with synergistic technologies.

Topic 2: Concentrating Solar Thermal Power Research and Development describes SETO research priorities that support solar technologies that focus sunlight to generate and store high-temperature heat for electricity generation and other end uses. Responsive projects would contribute to increasing solar power adoption and grid reliability often through combined power and storage.

Topic 3: Photovoltaic Research and Development describes SETO research priorities that support the further development of photovoltaic technologies that improve

[4] *SunShot Vision Study*, NREL Technical Report DOE/GO-102012-3037, 2012.

[5] U.S. Dept. of Energy, *The SunShot Initiative's 2030 Goal: 3¢ per Kilowatt Hour for Solar Electricity,* 2016.

system reliability, annual energy yield, demonstrate performance of novel PV devices and develop new PV materials. Responsive projects would directly contribute to increasing PV affordability through continuous improvements in PV efficiency and reliability. SETO's work ensures that a pipeline of innovation continues to reduce PV system cost, increase power conversion efficiency, and reduce supply-chain capital expense.

Topic 4: Improving and Expanding the Solar Industry through Workforce Initiatives describes SETO research priorities that support solar workforce development. Responsive projects would focus on increasing the size of the pipeline of skilled workers being employed by the solar industry while simultaneously working to increase the participation of veterans and other talent pools, providing increased value to the solar industry as a whole.

SETO's funding supports U.S. leadership in solar technology R&D by funding the next generation of innovative technologies and by developing domestic research talent.

Historically, SETO has released separate funding opportunities that address specific stages and types of solar research. For the first time, this funding program combines SETO funding efforts into one FOA for fiscal year 2018 (FY2018). Subject to availability of funds appropriated by Congress for the purpose of this program, the availability of future-year budget authority, and approval, SETO intends to adjust topic descriptions and reopen this funding program for new applications each year relatively soon after budget guidance has been provided. By providing a more streamlined and consistent FOA strategy SETO hopes to further accelerate the advancement of solar research.

B. Topic Areas / Technical Areas of Interest

This section describes technical areas of interest for this funding opportunity in more detail. Applicants can apply to any of the topic areas below based on the scope and duration of the proposed project. Individual applications should be submitted for each topic. This solicitation intends to support research and development that advances scientific understanding. Therefore, applicants should budget and plan to disseminate any findings in peer-reviewed publications, presentations, and patents as applicable.

Topic 1 Advanced Solar Systems Integration Technologies

The Systems Integration (SI) subprogram supports early-stage research and development that advances the reliable, resilient, secure and affordable integration of solar energy onto the U.S. electric grid. For more in-depth discussion of solar grid integration, please visit "Solar Grid

Integration" https://energy.gov/eere/solar/downloads/technical-background-2018-seto-funding-opportunity-announcement.

In 2011, solar power comprised less than 0.1% of the U.S. electricity supply with an installed capacity of just 1.2 gigawatts (GW). Solar now supplies nearly 2% of the annual U.S. electricity demand[6] with an installed capacity of roughly 47 GWs[7], and is continuing to grow. According to U.S. Energy Information Administration (EIA), in some states and regions, solar represents up to 15% of total annual electricity generation. Instantaneous solar generation can reach a much higher level, more than 40% in some cases.[8]

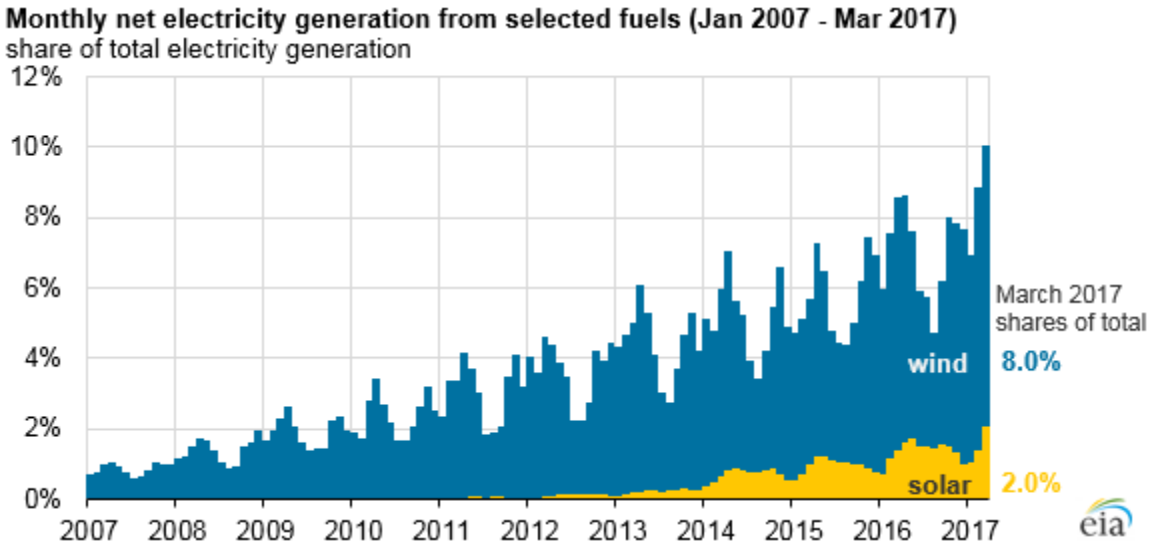


Figure 1: For the first time, in March 2017 solar supplied 2% of the U.S. electricity demand, while wind and solar combined accounted for 10% of the U.S. electricity generation. (Source: EIA)

As the penetration of solar energy on the grid continues to increase, it becomes imperative to identify the associated technical, economic and regulatory challenges, and to develop impactful solutions in order to ensure compatibility with the existing grid and a smooth transition to a secure, reliable and resilient grid of the future.

Traditional grid architecture was based on large-scale centralized generation remotely located from consumers, hierarchical control structures with minimal feedback, limited renewable

[6] U.S. Energy Information Administration (EIA), Electric Power Monthly with Data for November 2017, published in January 2018. https://www.eia.gov/electricity/monthly/current_month/epm.pdf

[7] Source: Solar Energy Industries Association (SEIA), http://www.seia.org/

[8] For example, in the California Independent System Operator (CAISO) Monthly Renewables Performance Report, the 5-minute market data shows that at the maximum solar served almost 45% of the load in September 2017. See http://www.caiso.com/Documents/MonthlyRenewablesPerformanceReport-Nov2017.html

generation such as wind and solar, limited energy storage and passive loads. A modern grid must be reliable, resilient and secure. It must have the ability to dynamically optimize grid operations and resources, rapidly detect and mitigate disturbances, engage millions if not billions more intelligent devices, integrate diverse generation sources (including both conventional and renewable types), integrate demand response and energy efficiency resources, enable customers to manage their electricity use and participate in markets, and provide strong protection against physical and cyber risks.

The current business-as-usual trajectory for the electric industry will not result in a timely transition to a modernized grid[9]. Since large investments in the past and today in the nation's electric grid infrastructure will remain in service for decades, it is important that the U.S. make smart decisions to invest in enabling and forward-looking technologies that will support the creation of a modern grid infrastructure in the coming years. There is a critical need to foster innovations and new technology adoptions by decreasing regulatory, market and business model uncertainties, demonstrating technology maturity and reducing implementation risks.

The Department of Energy's Grid Modernization Initiative[10], is a cross-cutting effort that aligns grid modernization efforts across the multiple DOE Program Offices. As part of the Grid Modernization Initiative (GMI), the SI subprogram supports targeted technology research and development (R&D) that addresses the technical challenges with achieving higher solar penetration, while supporting a safe, reliable, secure and cost-effective electric power system.

More broadly, the Grid Modernization Initiative focuses on the development of holistic solutions for the grid of the future. Several key technology areas have been identified in the Grid Modernization Multi-Year Program Plan (MYPP)[11]:

- Devices and Integrated Systems Testing;
- Sensing and Measurements;
- Systems Operations, Power Flow and Control;
- Design and Planning Tools;
- Security and Resilience; and
- Institutional Support.

Progress in all of these areas is considered crucial for the effective grid integration of solar energy and modernization of the grid, as illustrated in Figure 2. A specific focus of the SETO Systems Integration subprogram includes understanding the impacts of increasing penetration

[9] Department of Energy Grid Modernization Multiyear Program Plan (MYPP)

[10] Accessed 01 November 2017, https://energy.gov/under-secretary-science-and-energy/grid-modernization-initiative

[11] Department of Energy Grid Modernization Multiyear Program Plan (MYPP), Accessed 01 November 2017, https://energy.gov/downloads/grid-modernization-multi-year-program-plan-mypp

of solar energy on grid reliability and power quality, developing best practices for interconnecting and integrating solar with energy storage and synergistic technologies, addressing the variability of solar generation, researching power electronic technologies for flexible power flow control, enhancing situational awareness of solar generation at the grid edge and informing the standardization of interconnection, interoperability, and cybersecurity for PV and other distributed energy resources (DER) systems. Taking these all together, the goal is to advance the knowledge-base and the ability to integrate solar generation, at scale, into electric transmission and distribution systems in a cost-effective, secure, and reliable manner.

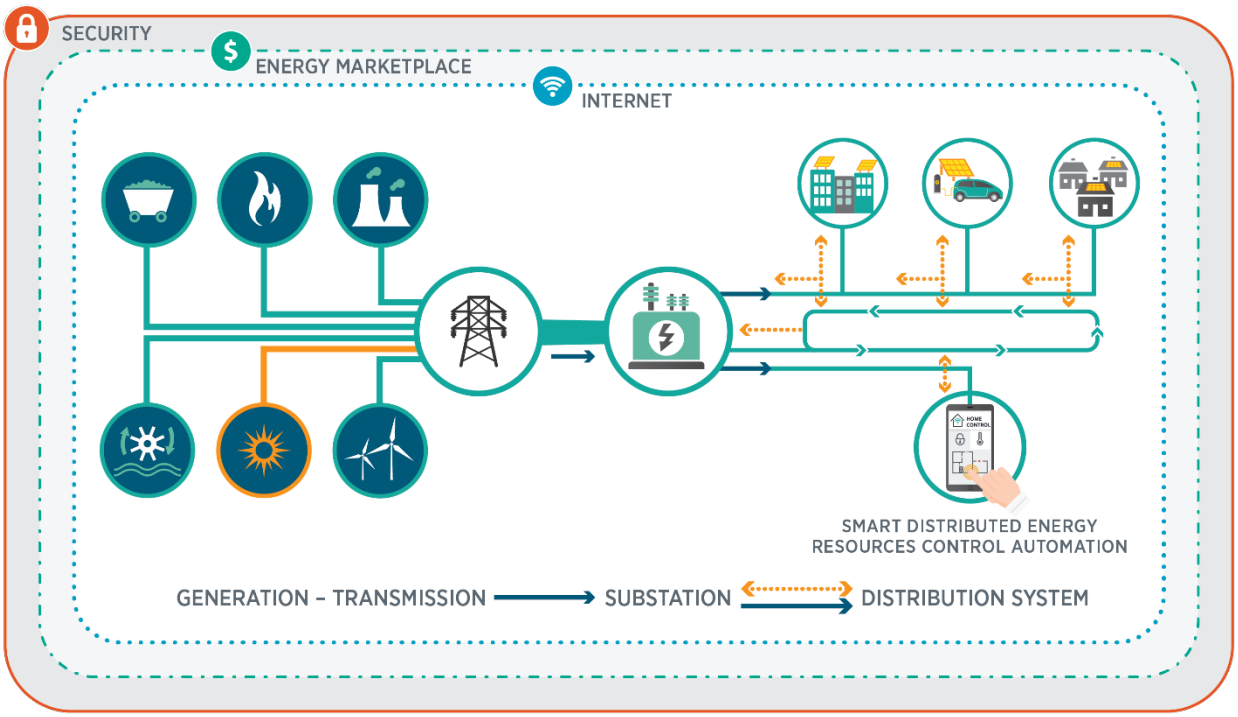


Figure 2: Illustration of high level solar penetration in a modernized electricity power system.

In this FOA the SETO Systems Integration subprogram seeks to fund research in the following topic areas:

- Adaptive Solar Grid Integration;
- Solar Observability;
- Solar + X; and
- Innovative Pathways.

Modernizing the grid also requires a workforce capable of understanding and managing this dynamic and digital environment. For those interested in developing proposals related to training the digital grid workforce of the future, please refer to Topic 4 of this FOA.

Topic 1.1 Adaptive Solar Grid Integration

This topic will support applications to research and field validate innovative technologies that enable distributed solar photovoltaic (PV) to contribute to grid reliability and resilience by providing solar dispatchability and grid-support functions—including energy, capacity, and reliability and resilience services. These technologies can be deployed throughout the electric distribution system. The approaches will focus on developing flexible interconnection requirements and dynamic hosting capacity concepts for solar PV as opposed to today's prevalent "firm" interconnection requirements and static hosting capacity planning. It is expected that the same design concepts will be applicable for energy storage and other distributed energy resources (DERs), Through the intelligent control of the distributed assets, flexible interconnection requirements can increase the overall hosting capacity for solar and DERs in the distribution system, support diverse customer interconnection choices, improve system reliability and resilience, and reduce PV curtailment. Applications must consider diverse DER options (e.g. PV, energy storage, flexible load) available as well as power systems engineering alternatives, and demonstrate the benefits of the proposed technologies in the hosting capacity analysis. It should also be shown in these solutions how a fleet of PV systems from multiple customers at multiple locations will be able to respond to fast changing conditions under normal operations and provide power to critical loads during grid outages – with consideration of other DER options and distribution system constraints. Example projects may include, but are not limited to, control hardware and software innovations for smart PV inverters and DER management system (DERMS) that allow more flexibility to interconnection and operation of small scale PV and other DER systems.

Topic 1.2 Solar Observability

This topic will support applications to research, develop and validate observability or situational awareness technologies at the grid edge to support planning and operation with high PV penetration. Primary focus areas include PV-integrated sensor technologies, secure and robust communication, advanced data analytics (including machine learning) and detection of cyber-intrusion. Projects may also be considered with secondary focus areas, which enhance grid-edge observability of solar systems by integration with additional planning, operations and business unit systems. All applications should have an assessment of economic viability of the system or component in the application and as part of the project.

Topic 1.3 Solar + X

This topic will support applications to research and field validate innovative approaches to integrate Behind-the-Meter (BTM) solar PV with synergistic technologies (including but not limited to energy storage, building controls, demand response, electric vehicles, and other

DERs) to support dispatchability and provide grid services – including energy, capacity, and reliability and resilience services – as a single control point. Projects will focus on research and development in control coordination and optimization of BTM customer-owned and co-located behind a single (master) meter: PV, storage, and other DER assets in response to broader system-wide conditions, with key interest in utilizing DER assets to provide critical power during outages. Projects may consider traditional "firm" DER interconnection requirements as well as emerging flexible interconnection approaches (such as those sought in Topic 1.1) and innovative compensation mechanisms. In an effort to minimize the overall system cost for solar integration arising from new hardware deployment, such as battery storage, , applicants are encouraged to consider how solar and load estimation, advanced data analytics, and artificial intelligence can be utilized in the operations of their proposed systems. All Applicants should have an assessment of economic viability of the system or component in the application as part of the project.

Topic 1.4 Innovative Pathways: Systems Integration

This topic will explore innovative approaches and models to accelerate the transfer of systems integration and related technologies from the lab into the real world. Rather than funding research on individual technology solutions directly, applicants will research and develop new methods to advance research portfolios of solar (and related) technologies and overcome challenges endemic to the solar technology transfer space, including knowledge gaps between the research/industrial communities and constraints on access to necessary resources. Applicants must demonstrate a realistic pathway to test, scale and sustain the model after the period of performance. Potential areas of interest include, but are not limited to, models to deploy alternative capital (e.g., local public-private partnerships, foundations) for technology R&D or transfer, structures to incentivize industry-researcher collaboration, approaches to lower barriers such that new entrants can leverage existing facilities, data and build capacity (e.g., dormant manufacturing capacity or underutilized laboratory space), and methods to drive down the cost and accelerate processes around hardware validation and certification.

****

All work under EERE funding agreements must be performed in the United States. See Section IV.J.3 and Appendix C.

C. Applications Specifically Not of Interest

The following types of applications will be deemed nonresponsive and will not be merit reviewed or considered (See Section III.D of the FOA):

- Applications that fall outside the technical parameters specified in Section I.B of the FOA
- Applications for proposed technologies that are not based on sound scientific principles (e.g., violates the laws of thermodynamics).

- Undifferentiated research, products, and/or solutions: This FOA seeks innovative solutions that help achieve SETO goals. Incremental advancement of undifferentiated or duplicative efforts is insufficient to meet SETO goals and is not of interest to this FOA.
- Projects lacking influential impact from federal funds: This FOA intends to fund projects where Federal funds will provide a clear and measurable impact, (e.g. retiring risk sufficiently for follow-on investment or catalyzing development.) Projects that have sufficient monies and resources to be executed regardless of federal funds are not of interest.
- Re-funding the same idea at the same technology readiness level: This FOA does not intend to re-fund prior SETO awardees for the same idea at the same technology readiness level.
- Applications focusing exclusively on HVAC and water heating applications are not of interest.
- Products or solutions for systems which do not tie to a grid or micro-grid (i.e. wholly off-grid applications and portable power).
- Fundamental electro-chemical battery materials research
- Hydrogen and fuel cell technologies

Any Concept Papers or Full Applications that focus on "Areas Specifically Not of Interest" will be rejected as nonresponsive and will not be considered for award.

D. Authorizing Statutes

The programmatic authorizing statute is EPACT 2005, Section 931 (a)(2).

Awards made under this announcement will fall under the purview of 2 CFR Part 200 as amended by 2 CFR Part 910.

II. Award Information

A. Award Overview

i. Estimated Funding

EERE expects to make awards based on the guidance provided in the below table (subject to the availability of appropriated funds). The cells are structured to show:

- The expected total amount of funding allocated for the subtopic

  - Note: The actual funding numbers per subtopic may be somewhat higher or lower depending on the number and quality of applications within each subtopic
- The expected maximum amount (federal share) for an individual award within that subtopic
  - Note: Individual award amounts may be somewhat higher or lower than the expected amount depending on the scope of the project
- The expected award duration for a project within that subtopic
  - Note: Depending on the scope of the proposed project, some projects may have shorter durations, and in rare cases, longer durations
- The expected number of awards that could be made for the subtopic
  - Note: The actual number of awards per subtopic will depend on the number and quality of applications within each subtopic

	Topic Title	Details ($105.5M in total funding, below values are approximate)
TOPIC 1: Adaptive Local Grids, Advanced Systems Integration Technologies (20% cost share, TRL 2-5)		
Topic 1.1	Adaptive Local Grids	$18M $4.5M/award 3 years 4 awards
Topic 1.2	Solar Observability	$26M $3M/award 3 years 8 awards
Topic 1.3	Solar + X	
Topic 1.4	Innovative Pathways: Systems Integration	$2M $1.5M/award 3 years 2 awards

EERE may issue awards in one, multiple, or none of the topic areas under this FOA:

EERE may establish more than one budget period for each award and fund only the initial budget period(s). Funding for all budget periods, including the initial budget period, is not guaranteed.

Attachment 2
Intermediate FOA Replacement
Supplied by Acting EE1 Tripodi

TOPIC 1.1 Solar Grid Integration

This topic will support applications to research and field validate unique and innovative solutions that will improve the resiliency of the Energy Sector's capability to withstand all hazards; focusing on cyber and physical vectors. Specifically, the solutions should identify the strategic location of solar photovoltaic (PV) systems that will ensure the Energy Sector provides continuity of service in the face of wide spread and coordinated threats. These solutions can be deployed throughout the bulk power systems or associated transmission to distribution substations. It is expected that the same design concepts will be applicable for energy storage and other distributed energy resources (DERs). The approaches will test the systems' ability to operate and adapt at both steady and degraded states. Applications must consider diverse DER options (e.g. photovoltaics, energy storage, and flexible load) available as well as power systems engineering alternatives, and demonstrate the benefits of the proposed solutions. It should also be shown in these solutions how a fleet of multiple photovoltaics systems from multiple locations will be able to respond to fast changing conditions under normal operations and provide power to critical loads during grid outages – with consideration of other DER options and distribution system constraints. Example projects may include, but are not limited to, new design and use-case concepts, essential reliability services, adaptive capabilities, voltage support, previously uncontemplated and unique capabilities and control hardware and software innovations for smart PV inverters and DER management systems. Applications must have an assessment of economic viability of the proposed system, activity or component in the respective part of the project.

Applicant's solar photovoltaic projects may require working with critical infrastructure owners and operators and state, local, tribal and territories entities to take proactive steps to manage risk and strengthen the security and resilience of the Nation's critical infrastructure, considering all hazards that could have a debilitating impact on national security, economic stability, public health and safety, or any combination thereof. These solar photovoltaic projects shall seek to reduce vulnerabilities, minimize consequences, identify and disrupt threats, and hasten response and recovery efforts related to critical infrastructure to ensure public health and safety while improving national security and economic security.

TOPIC 1.2 Solar Situational Awareness and Analysis

This Topic will support applications to research and field validate unique and innovative solutions that will improve the resiliency of the Energy Sector's capability to withstand all hazards; focusing on cyber and physical vectors. Specifically, the solutions should enhance operator capability to observe solar systems deployed throughout the bulk power systems or associated transmission to distribution substations or Behind-the-Meter (BTM) solar including but not limited to battery storage, systems controls, and demand response. Primary focus areas include solar photovoltaic integrated sensor technologies, secure and robust electricity supply delivery and communication tools, advanced data analytics including Artificial Intelligence and Machine to Machine capabilities, and voltage testing. Projects with secondary focus areas may also be considered which include the integration of observed data into planning, operations and business unit systems that would operate at both steady and degraded states. Applications must have an assessment of economic viability of the proposed system, activity or component in the respective part of the project.

Applicant's solar situational awareness and analysis projects may require working with critical infrastructure owners and operators and state, local, tribal and territories entities to take proactive steps to manage risk and strengthen the security and resilience of the Nation's critical infrastructure, considering all hazards that could have a debilitating impact on national security, economic stability, public health and safety, or any combination thereof. These projects shall seek to contribute to one or more risk components: reduce vulnerabilities, minimize consequences, identify and disrupt threats, and/or hasten response and recovery efforts related to critical infrastructure to ensure public health and safety while improving national security and economic security.

TOPIC 1.3 Solar Technology Transfer

This topic will explore unique and innovative approaches to accelerate the transfer of solar system solutions that will improve the resiliency of the Energy Sector's capability to withstand all hazards; focusing on cyber and physical vectors. Potential areas of interest include, but are not limited to, projects or models that deploy alternative capital, for technology R&D transfer, incentivize industry-researcher collaboration, leverage existing facilities or capabilities, data and build approaches and methods that serve to drive down the hardware cost and ensure solutions, validation, certifications, resilience and electricity supply to withstand wide spread and coordinated threats compatible with Topic 1.1 and Topic 1.2

Applicant's solar technology transfer projects may require working with critical infrastructure owners and operators and state, local, tribal and territories entities to take proactive steps to manage risk and strengthen the security and resilience of the Nation's critical infrastructure, considering all hazards that could have a debilitating impact on national security, economic stability, public health and safety, or any combination thereof. These projects shall seek to contribute to one or more risk components: reduce vulnerabilities, minimize consequences, identify and disrupt threats, and/or hasten response and recovery efforts related to critical infrastructure to ensure public health and safety while improving national security and economic security.

Attachment 3

Final “Topic 1” Replacement FOA 1987 - Abbreviated

Complete FOA in Reference 15:

DE-FOA-0001987 Advanced Systems Integration for Solar Technologies

Department of Energy (DOE)
Office of Energy Efficiency and Renewable Energy (EERE)

Advanced Systems Integration for Solar Technologies:
Solar Situational Awareness and Resilient Solutions for Critical Infrastructure

Funding Opportunity Announcement (FOA) Number: DE-FOA-0001987
FOA Type: Initial
CFDA Number: 81.087

FOA Issue Date:	10/15/2018
Letter of Intent Due Date	11/14/2018 5:00pm EST
Submission Deadline for Full Applications:	12/7/2018 5:00pm ET
Expected Submission Deadline for Replies to Reviewer Comments:	2/1/2019 5:00pm ET
Expected Date for EERE Selection Notifications:	3/22/2019
Expected Timeframe for Award Negotiations	60 days

- To apply to this FOA, applicants must register with and submit application materials through EERE Exchange at https://eere-Exchange.energy.gov, EERE's online application portal.

- Applicants must designate primary and backup points-of-contact in EERE Exchange with whom EERE will communicate to conduct award negotiations. If an application is selected for award negotiations, it is not a commitment to issue an award. It is imperative that the applicant/selectee be responsive during award negotiations and meet negotiation deadlines. Failure to do so may result in cancelation of further award negotiations and rescission of the Selection.

I. Funding Opportunity Description

A. Description/Background

This Funding Opportunity Announcement (FOA) is being issued by the U.S. Department of Energy's (DOE) Office of Energy Efficiency and Renewable Energy (EERE), Solar Energy Technologies Office (SETO). This section describes the overall goals of SETO and the type of projects that are being solicited through this FOA.

In 2016, solar power surpassed 1% of annual electricity supply in the United States for the first time, and the Energy Information Administration projects that solar will grow to 5% of U.S. electricity by 2030.[1] Further, if the price of solar electricity and/or energy storage declines more rapidly than projected, that percentage could be even higher.[2] But solar is more than just a source of affordable electricity; it also provides the potential to improve grid reliability and resilience, increase employment,[3] create business opportunities, increase energy diversity, and provide environmental benefits.

The mission of the Solar Energy Technologies Office (SETO) is to support early-stage research and development to improve the performance and flexibility of solar technologies that contribute to a reliable and resilient U.S. electric grid. The office invests in innovative research efforts that securely integrate more solar energy into the grid, enhance the use, storage and dispatch of solar energy, and lower solar electricity costs.

SETO focuses on two different solar energy technologies: photovoltaic (PV) technologies that directly convert sunlight into electricity, typically via a semiconductor, and concentrating solar thermal power (CSP) technologies that convert sunlight to heat, which can be converted or stored until needed and then used to generate electricity or provide other energy services. Because sunshine varies with the time of day, location, and season, solar power systems must be paired with adaptive loads, other sources of power, or energy storage to deliver electricity whenever it's needed. This dependency reduces the value of solar power systems once solar starts to supply a significant fraction of the electricity within a given region and highlights the need for a focus on addressing grid integration challenges.

[1] U.S. Department of Energy, Energy Information Administration, International Energy Outlook 2017, DOE/EIA-0484 (2017).
[2] P.A. Basore and W.J. Cole, "Comparing supply and demand models for future photovoltaic power generation in the USA," submitted to *Progress in Photovoltaics: Research and Applications*, 2017.
[3] The Solar Foundation, *National Solar Jobs Census*, 2010 – 2016.

SETO, in partnership with other offices at DOE, launched the SunShot Initiative in February 2011 with the goal of solar electricity becoming price-competitive with conventional utility sources by 2020.[4] The SunShot 2020 goal has already been achieved for utility-scale PV, and with continued effort, it is likely to be achieved for grid-tied solar applications. As a result of this tremendous progress and in response to the growing deployment of solar in the U.S., SETO is increasing its focus on addressing the challenges related to seamlessly integrating high penetrations of solar energy onto the nation's electricity grid. Additionally, SETO set 2030 cost targets to further reduce the cost of solar electricity across all market sectors, which would make solar one of the most affordable sources of electricity and enable a substantial fraction of U.S. electricity demand to be supplied by solar technology.[5] The targets for the unsubsidized cost of electricity at the point of grid connection in a location with average U.S. solar resources are 3¢ per kilowatt-hour (kWh) for utility-scale photovoltaics, 4¢ per kWh for commercial rooftop photovoltaics, 5¢ per kWh for residential rooftop photovoltaics, and 5¢ per kWh for concentrating solar power with thermal energy storage.

By supporting early-stage research across the solar energy technology space through this FOA, SETO can foster innovation and enable integrated multi-technology solutions that can advance the widespread adoption of solar power while securely integrating it into the nation's energy grid.

DOE is committed to improving the affordability of energy technologies and strengthening the Energy Sector's capability to withstand cyber and physical threats, including natural disasters. Improving the strategic location and situational awareness of solar systems can help ensure continuity of service in the face of widespread and coordinated threats. Developing innovative approaches to accelerate the transfer of solar system solutions that will improve Energy Sector resilience is also a priority.

The Systems Integration (SI) subprogram supports early-stage research and development that advances the reliable, resilient, secure and affordable integration of solar energy onto the U.S. electric grid. For more in-depth discussion of solar grid integration, please visit "Solar Grid Integration" https://energy.gov/eere/solar/downloads/technical-background-2018-seto-funding-opportunity-announcement.

[4] *SunShot Vision Study*, NREL Technical Report DOE/GO-102012-3037, 2012.
[5] U.S. Dept. of Energy, *The SunShot Initiative's 2030 Goal: 3¢ per Kilowatt Hour for Solar Electricity,* 2016.

In 2011, solar power comprised less than 0.1% of the U.S. electricity supply with an installed capacity of just 1.2 gigawatts (GW). Solar now supplies nearly 2% of the annual U.S. electricity demand[6] with an installed capacity of roughly 47 GWs[7], and is continuing to grow. According to the U.S. Energy Information Administration (EIA), in some states and regions, solar represents up to 15% of total annual electricity generation. Instantaneous solar generation can reach a much higher level, more than 40% in some cases.[8]

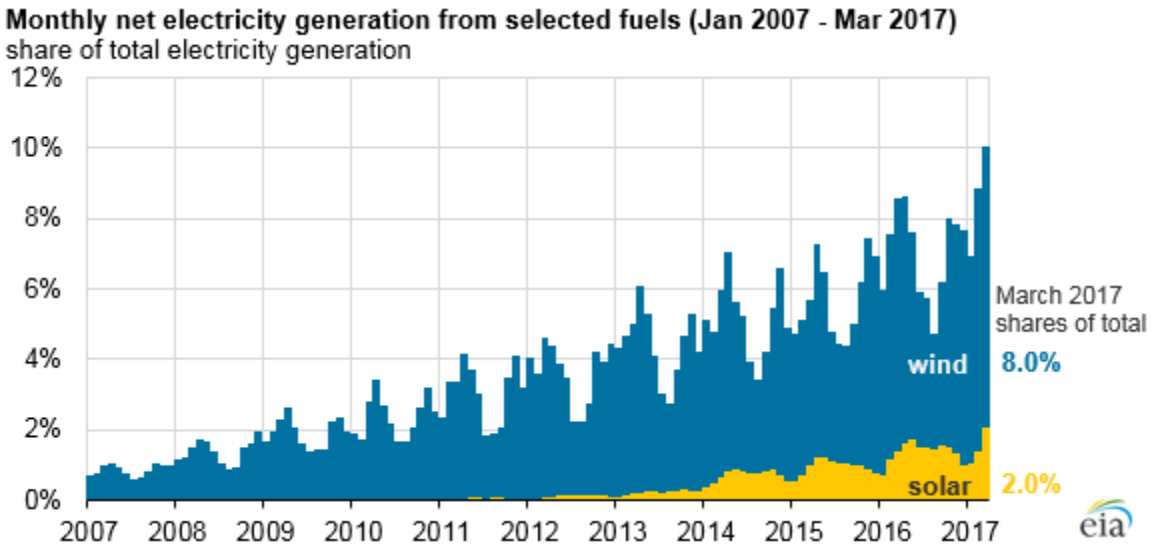


Figure 1: For the first time, in March 2017 solar supplied 2% of the U.S. electricity demand, while wind and solar combined accounted for 10% of the U.S. electricity generation. (Source: EIA)

As the penetration of solar energy on the grid continues to increase, it becomes imperative to identify the associated technical, economic and regulatory challenges, and to develop impactful solutions in order to ensure compatibility with the existing grid and a smooth transition to a secure, reliable and resilient grid of the future.

Traditional grid architecture was based on large-scale centralized generation remotely located from consumers, hierarchical control structures with minimal feedback, limited renewable generation such as wind and solar, limited energy storage and passive loads.

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[6] U.S. Energy Information Administration (EIA), Electric Power Monthly with Data for November 2017, published in January 2018. https://www.eia.gov/electricity/monthly/archive/january2018.pdf

[7] Source: Solar Energy Industries Association (SEIA), http://www.seia.org/

[8] For example, in the California Independent System Operator (CAISO) Monthly Renewables Performance Report, the 5-minute market data shows that at the maximum solar served almost 45% of the load in September 2017. See http://www.caiso.com/Documents/MonthlyRenewablesPerformanceReport-Nov2017.html

A modern grid must be reliable, resilient and secure. It must have the ability to dynamically optimize grid operations and resources, rapidly detect and mitigate disturbances, engage millions if not billions more intelligent devices, integrate diverse generation sources (including both conventional and renewable types), integrate demand response and energy efficiency resources, enable customers to manage their electricity use and participate in markets, and provide strong protection against physical and cyber risks.

The current business-as-usual trajectory for the electric industry will not result in a timely transition to a modernized grid[9]. Since large investments in the past and today in the nation's electric grid infrastructure will remain in service for decades, it is important that the U.S. make smart decisions to invest in enabling and forward-looking technologies that will support the creation of a modern grid infrastructure in the coming years. There is a critical need to foster innovation and new technology adoption by decreasing regulatory, market, and business model uncertainties, demonstrating technology maturity and reducing implementation risks.

The Department of Energy's Grid Modernization Initiative[10], is a cross-cutting effort that aligns grid modernization efforts across the multiple DOE Program Offices. As part of the Grid Modernization Initiative (GMI), the SI subprogram supports targeted technology research and development (R&D) that addresses the technical challenges with achieving higher solar penetration, while supporting a safe, reliable, secure, and cost-effective electric power system.

More broadly, the Grid Modernization Initiative focuses on the development of holistic solutions for the grid of the future. Several key technology areas have been identified in the Grid Modernization Multi-Year Program Plan (MYPP)[11]:

- Devices and Integrated Systems Testing;
- Sensing and Measurements;
- Systems Operations, Power Flow and Control;
- Design and Planning Tools;
- Security and Resilience; and
- Institutional Support.

[9] Department of Energy Grid Modernization Multiyear Program Plan (MYPP)

[10] Accessed 01 November 2017, https://energy.gov/under-secretary-science-and-energy/grid-modernization-initiative

[11] Department of Energy Grid Modernization Multiyear Program Plan (MYPP), Accessed 01 November 2017, https://energy.gov/downloads/grid-modernization-multi-year-program-plan-mypp

Progress in all of these areas is considered crucial for the effective grid integration of solar energy and modernization of the grid, as illustrated in Figure 2. A specific focus of the SETO Systems Integration subprogram includes understanding the impacts of increasing penetration of solar energy on grid reliability and power quality, developing best practices for interconnecting and integrating solar with energy storage and synergistic technologies, addressing the variability of solar generation, researching power electronic technologies for flexible power flow control, enhancing situational awareness of solar generation at the grid edge and informing the standardization of interconnection, interoperability, and cybersecurity for PV and other distributed energy resources (DER) systems. Taking these all together, the goal is to advance the knowledge-base and the ability to integrate solar generation, at scale, into electric transmission and distribution systems in a cost-effective, secure, and reliable manner.

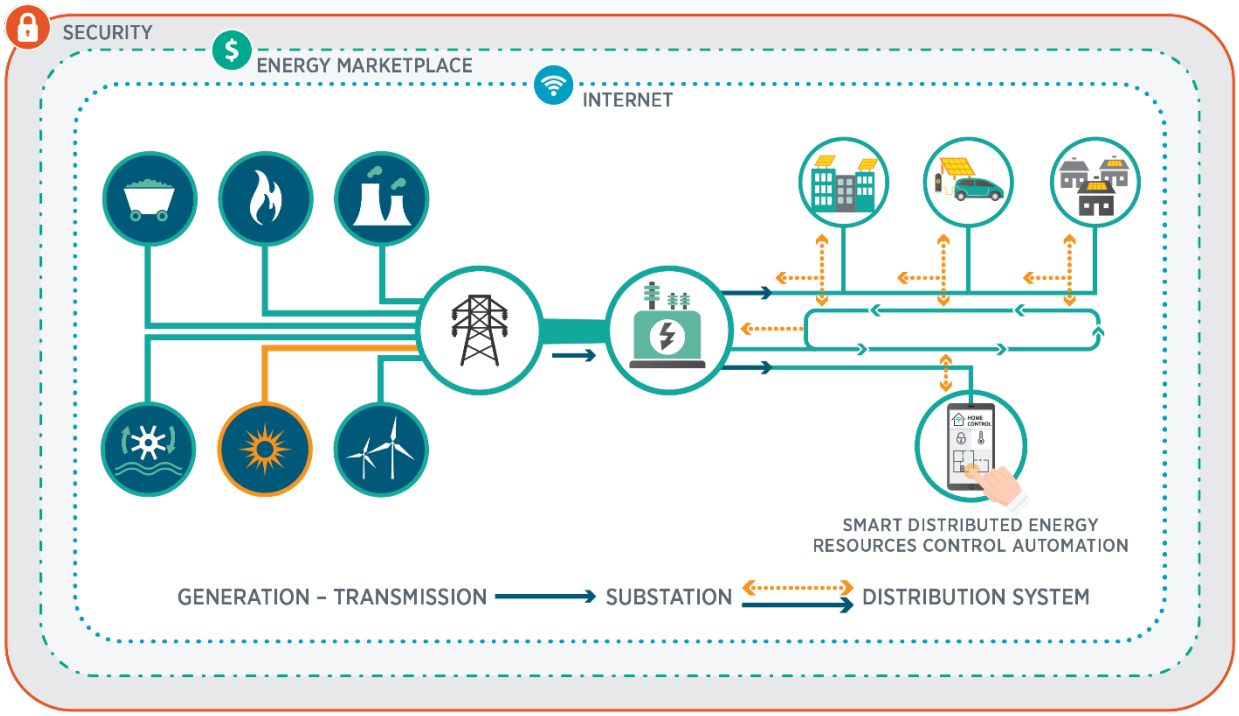

Figure 2: Illustration of high level solar penetration in a modernized electricity power system.

B. Topic Areas/Technical Areas of Interest

Topic 1.1 R&D and Technology Transfer for solar situational awareness in strategic locations associated with critical infrastructure

Situational awareness of solar photovoltaic (PV) systems in strategic locations is vital to managing risk and strengthening the security and resilience of the Nation's critical infrastructure (e.g., for safety, public health and national security). Further, the increasing deployment of utility-scale and distributed solar PV systems brings about challenges to electric power grid planning and operation. As more solar energy systems come online, grid operators across the country need new tools to ensure the secure, resilient and reliable operation of our nation's electric grid and delivery of energy services to our critical infrastructure.

This Topic will support applications to conduct R&D and technology transfer of unique and innovative solutions that will enhance grid operator's situational awareness of solar energy systems deployed throughout the bulk power system, associated substations, distribution system and/or Behind-the-Meter (BTM). Specifically, the solutions should focus on the situational awareness of solar photovoltaic (PV) systems in strategic locations with considerations of cyber and physical vectors to ensure the electric power grid provides continuity of service in the face of wide spread and coordinated threats. The project must result in greater resilience and assure energy services to the Nation's critical infrastructure.

Applications must consider diverse DER options (e.g. photovoltaics, energy storage, and flexible load) available as well as power systems engineering alternatives, and demonstrate the benefits of the proposed solutions. It should also be shown in these solutions how a fleet of multiple photovoltaics systems from multiple locations will be able to respond to fast changing conditions under normal operations and provide power to critical loads during grid outages – with consideration of other DER options and distribution system constraints. Example projects may include, but are not limited to, new design and use-case concepts, essential reliability services, adaptive capabilities, voltage support, previously uncontemplated and unique capabilities and control hardware and software innovations for smart PV inverters and DER management systems.

Technological advancements include control/coordination strategies, real-time system monitoring, robust communication structures, grid planning and analytical platforms, and integration of multiple DER technologies.

Primary focus areas include solar photovoltaic integrated sensor technologies, secure and robust communication tools, advanced data analytics including

machine learning and artificial Intelligence, machine to machine capabilities, and data visualization. Projects should consider the integration of observed data into planning, operations and business unit systems that would operate at both steady and degraded states. The research should leverage established industrial control and power system cyber security work to implement state-of-the-art cyber security best practices for solar PV systems. Applications must also have an assessment of economic viability of the proposed system, activity or component. The project results are expected to develop the situational awareness tools and improve resilience in strategic locations associated with the critical infrastructure.

Applicants must explore unique and innovative approaches to accelerate the transfer of solar technology solutions that improve the solar situation awareness. Potential areas of interest may include, but are not limited to, projects or models that deploy alternative capital for technology R&D transfer, incentivize industry-researcher collaboration, leverage existing facilities or capabilities, data and build approaches and methods that serve to drive down the hardware cost and ensure solutions, validation, certifications, resilience and electricity supply can withstand wide spread and coordinated threats.

Applicants are encouraged to work with critical infrastructure owners and operators, industry, academia, and other stakeholders including state, local, tribal and territories entities to take proactive steps to manage risk and strengthen the security and resilience of the Nation's critical infrastructure, considering all hazards that could have a debilitating impact on national security, economic stability, public health and safety, or any combination thereof.

Topic 1.2 R&D, Technology Transfer and Validation of proactive resilience solutions for critical infrastucture.

This topic seeks applications that will conduct the R&D and technology transfer under Topic 1.1 and also include field validation. Validation should demonstrate how unique and innovative solutions enhance resiliency of the bulk power system and/or distribution systems (including microgrids) with high penetrations of solar PV systems. Specifically, the solutions validated should identify the strategic location of solar photovoltaic (PV) systems that will ensure the Energy Sector provides continuity of service to critical infrastructure in the face of wide spread and coordinated threats; focusing on cyber and physical vectors.

Field validation must be applicable and associated with critical infrastructure that verifies the viability of system design, validates architecture relationships and interoperability, ensures protection of system networks and data against cyber

threats, and informs functional requirements for bulk and distribution system planning platforms and decision support tools. The Applicant must demonstrate through data and information that the technology solutions result in greater resilience and assure energy services to the Nation's critical infrastructure.

Applications must have an assessment of economic viability of the proposed system, activity or component in the respective part of the project. Applicant's solar photovoltaic projects may require working with critical infrastructure owners and operators and state, local, tribal and territories entities to take proactive steps to manage risk and strengthen the security and resilience of the Nation's critical infrastructure, considering all hazards that could have a debilitating impact on national security, economic stability, public health and safety, or any combination thereof. These solar photovoltaic projects shall seek to reduce vulnerabilities, minimize consequences, identify and disrupt threats, and hasten response and recovery efforts related to critical infrastructure to ensure public health and safety while improving national security and economic security.

Applicants must explore unique and innovative approaches to accelerate the transfer of solar technology solutions that improve the solar situation awareness. Potential areas of interest may include, but are not limited to, projects or models that deploy alternative capital for technology R&D transfer, incentivize industry-researcher collaboration, leverage existing facilities or capabilities, data and build approaches and methods that serve to drive down the hardware cost and ensure solutions, validation, certifications, resilience and electricity supply can withstand wide spread and coordinated threats.

Cybersecurity and Interoperability: Applicants should describe their strategies and plans for establishing and maintaining interoperability, and the utilization of open standards wherever possible. Applicants should consider interoperability within their solution (among devices and/or subsystems) and at the external interfaces with other utility and customer systems. Applicants shall indicate where they have chosen to utilize proprietary standards.

Applicants should also describe their approach to establishing and maintaining cybersecurity throughout their solution, and at the interfaces to external components and systems. In accordance with the cybersecurity technique of defense-in-depth, applicants shall not cede responsibility for cybersecurity to the external boundaries of their proposed solution, nor shall they propose that it be added on at some later stage.

Post award, Recipients will be required to submit an Interoperability Plan and a Cybersecurity Plan, detailing how they propose to implement and maintain these aspects of their solution.

Anticipated Phases and Cost Share Requirement by Topic

The following table illustrates the anticipated focus and required cost share by phase for each topic, along with the anticipated timeframes for each phase:

	Year 1	Year 2	Year 3
Topic 1.1: R&D and Technology Transfer for solar situational awareness	Research and development (20% cost share)		
Topic 1.2: R&D, Technology Transfer and Validation of proactive resilience solutions	Phase 1: Research and development (20% cost share)		Phase 2: Field validation (50% cost share)

While the phases identify the type of activity and required cost share, each project will be divided into three one year budget periods, with go/no-go decision points between each budget period.

All work under EERE funding agreements must be performed in the United States. See Section IV. H.iii and Appendix C.

C. Applications Specifically Not of Interest

The following types of applications will be deemed nonresponsive and will not be reviewed or considered (See Section III.D of the FOA):

- Applications that fall outside the technical parameters specified in Section I.B of the FOA.
- Applications for proposed technologies that are not based on sound scientific principles (e.g., violates the laws of thermodynamics).
- Undifferentiated research, products, and/or solutions: This FOA seeks innovative solutions that help achieve SETO goals. Incremental advancement of undifferentiated or duplicative efforts is insufficient to meet SETO goals and is not of interest to this FOA.
- Projects lacking influential impact from Federal funds: This FOA intends to fund projects where Federal funds will provide a clear and measurable impact, (e.g. retiring risk sufficiently for follow-on investment or catalyzing development.) Projects that have sufficient monies and resources to be executed regardless of federal funds are not of interest.
- Re-funding the same idea at the same technology readiness level: This FOA does not intend to re-fund prior SETO awardees for the same idea at the same technology readiness level.

- Products or solutions for systems which do not tie to a grid or micro-grid (i.e. wholly off-grid applications and portable power).
- Generic technologies or solutions that are not integrated with solar PV. These include sensor and measurement, communications, and cyber security.

D. Authorizing Statutes

The programmatic authorizing statute is EPACT 2005, Section 931 (a)(2).

Awards made under this announcement will fall under the purview of 2 CFR Part 200 as amended by 2 CFR Part 910.

II. Award Information

A. Award Overview

i. Estimated Funding

EERE expects to make approximately $46 million of Federal funding available for new awards under this FOA, subject to the availability of appropriated funds. EERE anticipates making approximately 10 awards under this FOA. EERE may issue one, multiple, or no awards. Individual awards may vary between $2 and $10 million.

EERE may issue awards in one, multiple, or none of the topic areas.

EERE may establish more than one budget period for each award and fund only the initial budget period(s). Funding for all budget periods, including the initial budget period, is not guaranteed.

Attachment 4
FOA Development Standard Operating Procedure
Glossary – page 3

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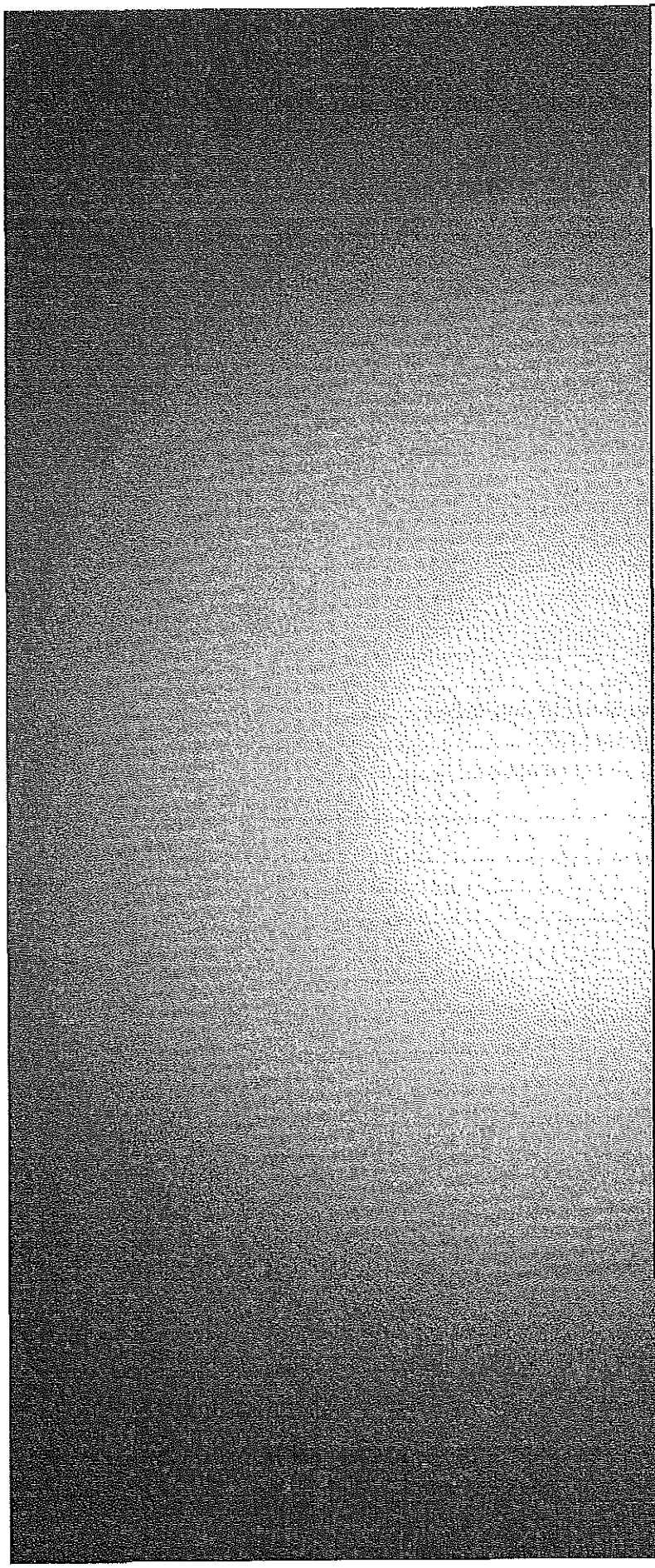

U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

EERE S 540.110

FOA Development Standard Operating Procedure

Template Version 8/31/2018

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I. Executive Summary

The Office of Energy Efficiency and Renewable Energy (EERE) partners with industry, universities, nonprofits and others to advance the use of renewable energy and energy efficiency technologies. EERE encourages the growth of these technologies by offering financial assistance opportunities for their outreach, research, development and demonstration. To further this goal, EERE publishes Funding Opportunity Announcements (FOAs) through which the public may submit applications for financial assistance awards.

Standard Operating Procedures (SOPs) articulate EERE's commitment to a strong program planning and project management capability. These SOPs represent a broad set of business practices that demonstrate EERE's proficiency as a steward of the public's trust in the commitment, obligation, and expenditure of federally-appropriated funds.

The FOA Development process documented in this SOP begins when a Technology Office identifies the need for a particular set of projects to advance their mission, and prepares a FOA based on that defined need. During this phase, the Technology Office defines the requirements for the FOA and convenes a team to coordinate and manage the development process. The FOA Team creates a FOA Requirements Document (FRD) which outlines key features of the FOA. After FRD approval, the FOA Team drafts the FOA and coordinates review. EERE then ensures DOE has approved the FOA concept, coordinates congressional notification (if applicable), and publishes the FOA. The FOA Development Phase ends with limited post-publication activities, including an optional webinar, a question and answer forum for potential applicants, and any necessary modifications to the FOA.

The additional financial assistance-related processes below can be found in separate SOPs:

- **Evaluation and Selection**: The process for evaluating and selecting applicant proposals under a competitive FOA.
- **Award Negotiations**: EERE conducts activities to resolve key issues with selected applicants (now referred to as selectees) and negotiates awards.
- **Active Project Management:** EERE utilizes Active Project Management (APM) to support the goal of achieving the highest possible mission impact for the taxpayer investment.
- **GFO Closeout SOP:** EERE closes out projects in a timely manner and makes the results of research publicly available.

Applicability: The FOA Development SOP applies to all EERE competitive FOAs. This SOP does not apply to formula grants or non-competitive actions (e.g., Determination of Non-Competitive Financial Assistance (DNFAs)).

Future Updates: The EERE Change Control Board manages changes to this SOP and related templates (for applicability and process, see the EERE OBO Directives SOP). The Change Control Board considers input from subject matter experts from the EERE Technology Offices, Operations Offices, the Golden Field Office (GFO) and the National Energy Technology Laboratory (NETL) to ensure that the process documented in the FOA SOP continues to improve and reflect the business practices that improve efficiency and add value to EERE staff.

II. Abbreviations

ASEE	Assistant Secretary of Energy Efficiency & Renewable Energy
CI	Office of Congressional and Intergovernmental Affairs (DOE)
CFO	Chief Financial Officer
CO	Contracting Officer
COI	Conflict of Interest
CS	Contract Specialist (NETL)
DAS	Deputy Assistant Secretary
DOE	Department of Energy
DNFA	Determination of Non-competitive Financial Assistance
DRE	Determination of Restricted Eligibility
EERE	Energy Efficiency & Renewable Energy
FAO	Financial Assistance Office (GFO)
FFRDC	Federally Funded Research and Development Center(s)
FOA	Funding Opportunity Announcement
FRD	FOA Requirements Document
GFO	Golden Field Office
GMS	Grants Management Specialist (GFO)
HCA	Head of Contracting Activity
HQ	Headquarters
IP	Intellectual Property
IPLD	Intellectual Property Law Division (GFO)
MA	Office of Management (DOE)
MA-62	Office of Contract Management (DOE)
MYPP	Multi-Year Program Planning
NDA	Non-Disclosure Acknowledgement
NEPA	National Environmental Policy Act
NETL	National Energy Technology Laboratory
NCO	NEPA Compliance Officer (GFO)
OBO	Office of Business Operations (EERE)
OGC	Office of General Counsel (DOE)
PA	Office of Public Affairs (DOE)
PCN	Priority Congressional Notification
PMCO	Project Management Coordination Office
PDAS	Principal Deputy Assistant Secretary (performs ASEE role in absence of political appointee)
POC	Point of Contact
SO	Selection Official
SOP	Standard Operating Procedure(s)
TM/PM	Technology Manager/Project Manager
TPO	Technical Project Officer

III. Roles and Responsibilities

The roles and responsibilities identified in the table below provide a high-level overview of the responsibilities for each role as they relate to FOA development. This is only an overview and does not reflect every step required of each role. For more information, see the relevant sections within this SOP.

Roles and Responsibilities	
Assistant Secretary for EERE (ASEE)	• Receives MA FOA Cover Sheet briefing from Technology Office Director and FOA Manager • Briefs DOE Review Team and/or MA on the FOA concept
Deputy Assistant Secretary (DAS)	• Approves annual FOA List for his/her sector • Consults on the MA FOA Cover Sheet when requested by Technology Office Director • Concurs on Determinations of Restricted Eligibility (DREs) • Reviews FOA-specific Cost Share Reduction or Waiver Determinations • Approves public announcements for FOA publication
DAS Chief of Staff	• Works with Office of DAS-O and ASEE to schedule FOA briefings • Submits final MA FOA Cover Sheet to Office of DAS-O
Technology Office Director	• Identifies all FOAs to be issued and included on the annual FOA list • Assigns the FOA Manager • Reviews and approves the MA FOA Cover Sheet and the FRD • Reviews and accountable for the Notice of Intent (NOI) and the FOA • May review and edit public announcement • Serves as the Selection Official, with some limited exceptions
Selection Official	• Reviews and approves the FRD
Operations Supervisor	• Ensures MA Work Plan data is accurate and ready for submission to MA on a weekly basis
FOA Manager[1]	• Leads development of FOA concept • Develops FOA schedule • Leads development, review, and approval of FRD and FOA • Organizes and leads FOA Strategy Meeting with representatives from business offices • Drafts key documents throughout the FOA process, including RFI, MA FOA Cover Sheet, FRD, NOI, and FOA. Leads development,

[1] The DOE Merit Review Guide for Financial Assistance (2017) references a "Federal Merit Review Chairperson." Under the current EERE policy, the FOA Manager assumes the duties of the Federal Merit Review Chairperson along with other duties. To reflect current EERE Policy, this document refers to the FOA Manager. The FOA Manager role is typically performed by a Technology Manager or Program Manager.

Roles and Responsibilities	
	review, and approval of FOA-related documents. • Leads development, review, and approval of supplemental documents (if required), including FOA-specific Cost Share Reduction or Waiver Determination, Determination of Restricted Eligibility and FOA-specific Evaluation and Selection Plans • Works closely with Technology Office Communications Lead and EERE Communications team to develop (and obtain approval for) public announcements and congressional notifications (and related materials) in advance of FOA publication
Technical Project Officer (TPO)[2]	• Performs FOA Manager tasks as delegated by the FOA Manager • Creates Requisitions, as needed
DOE Business Clearance	• Sends an annual request to the Head of Contracting Activity (HCA) for upcoming EERE FOAs and selects FOAs for review • Reviews selected FOAs and provides comments to the Contracting Officer for incorporation into the FOA • If selected for review, provides concurrence before the FOA may be published
Head of Contracting Activity (HCA)	• As the senior contracting official, has ultimate responsibility for ensuring that management systems, awards, and administration of financial assistance are in accordance with laws, regulations, and DOE policies • Ensures that agency policies and procedures are implemented • Establishes review and approval levels for financial assistance actions • Appoints Contracting Officers • Designates Selection Officials for FOAs under $50 million[3] (Senior Procurement Executive designates for FOAs at or above $50 million) • Reviews new FOAs if the total value is over $25 million • Signs the Section 301 Congressional Notification letter, if applicable[4]
Contracting Officer (CO)	• Authorized to obligate government funds for financial assistance and execute awards on behalf of DOE • Advises FOA Team on award type, FOA, evaluation, selection, and finalization of the award • Responsible for business management and non-program aspects of the financial assistance process

[2] In some cases, the FOA Manager may also serve the role as Technical Project Officer.

[3] To calculate the $50M threshold, both DOE share and cost share are included.

[4] At NETL, delegated to the Procurement Director. At GFO, delegated to the Financial Assistance Office Director for FOAs < $25M.

Roles and Responsibilities	
	• Ensures the integrity of the competitive procurement process • Serves as a focal point for dissemination and interpretation of financial assistance regulations, policies, and procedures • Concurs on FRD and the Evaluation and Selection Plan • Participates in the FOA Strategy Meeting • Coordinates with Legal Counsel regarding any legal issues with FOA • Coordinates any Business Clearance or Head of Contracting Activity review (if applicable) and coordinates any related edits to the FOA • Reviews and concurs on FOA-specific Cost Share Reduction or Waiver Determinations and Determinations of Restricted Eligibility (if applicable) • Reviews all applicable congressional notifications • Publishes the RFI, NOI, FOA and any FOA Modifications • Responsible for the official FOA and award records in STRIPES and ensures the GMS has all necessary documents for the official record and that they are uploaded to STRIPES
Grants Management Specialist (GMS)/Contract Specialist (CS)	• Supports the Contracting Officer in all activities • Primarily responsible for record-keeping and publication of important FOA information, including maintaining the official FOA record in STRIPES, publishing announcements in Exchange and on grants.gov, and ensuring signed COI/NDAs are in official record • Participates in the development of the FOA, including review of FRD and related documents • Participates in the FOA Strategy Meeting • Prepares and sends required Congressional Notifications • Coordinates and publishes responses to all applicant questions to the FOA
Legal Counsel[5]	• Provides legal advice to the FOA Team throughout development of the FOA • Prepares the FOA-specific Selection Official Designation Memorandum, if blanket designations cannot be used • Participates in the FOA Strategy Meeting • Advises the FOA Team with respect to the Evaluation and Selection Plan and any proposed non-standard approaches • Concurs on FRD and Evaluation and Selection Plan • Reviews and concurs on RFI, NOI, FOA-specific Cost Share

[5] For purposes of this SOP, Legal Counsel refers to Field Counsel or GFO's Office of Chief Counsel. It does not refer to General Counsel, which is at HQ. The Office of General Counsel (OGC) role in this FOA SOP process is limited, except where Business Clearance is involved.

Roles and Responsibilities	
	Reduction or Waiver Determinations (if applicable), Determinations of Restricted Eligibility (if applicable), FOA and FOA Modifications • Advises on responses to applicant questions or clarification of the FOA requirements (e.g. eligibility) as requested by the CO
Intellectual Property (IP) Counsel	• Leads development of an IP Strategy for the FOA • Provides advice on IP issues throughout the FOA process • Participates in the FOA Strategy Meeting • Provides IP language to include in the FOA • Prepares or adapts any required IP forms for the FOA
National Environmental Policy Act (NEPA) Staff	• Participates in the development of a NEPA strategy for the FOA • If the FOA clearly intends to fund *only* projects limited to certain administrative activities, the NEPA Compliance Officer (NCO) may categorically exclude the entire FOA or entire topic areas from further NEPA review • Provides NEPA language and any required NEPA forms for the FOA • Participates in the FOA Strategy Meeting
Technology Office Communications Lead	• In consultation with the FOA Manager, coordinates public announcement strategy with the EERE Communications POC • Works with the FOA Manager in planning, drafting, documenting and obtaining approval for a public announcement • Updates the EERE policy calendar, as needed
EERE Communications POC	• Provides support and advice to the Technology Office Communications Lead and FOA Manager throughout all public announcement processes and edits public announcements, as needed • Sends green light emails for publishing FOAs, and sending congressional notifications (if applicable) • Publishes approved public announcements on EERE website

IV. Initial FOA Planning

Schedule Note: Initial planning will take place from approximately February through May. The final Annual FOA List should be complete no later than the end of August. For the most up to date deadlines for the current year, refer to the applicable FY FOA Memo and the latest EERE Business Calendar.

A. FOA Concept Development

Each Technology Office will determine its own method for brainstorming FOA ideas, including, but not limited to:

- Technology Roadmaps
- Multi-Year Program Planning (MYPP)
- Overall Program Goals and Objectives
- Administration Priorities
- DOE and EERE Initiatives
- Stakeholder Inputs (e.g., Request for Information (RFI)[6], Public Workshops[7])
- Current Technology Office Portfolio
- Congressional Appropriations
- Congressional Direction
- State of Technology
- "FOA Fest" planning meetings

B. FOA Scenario Planning

Each Technology Office must respond to an annual information management (IM) request for potential FOAs for the upcoming fiscal year. In recent years, Congress has not enacted a final budget for EERE until the second or third quarter of the fiscal year, so the FOA Scenario Planning IM is the Technology Office's projection of what FOAs they will publish under varying budget scenarios (e.g., the Presidential Request level, the House Mark, the Senate Mark, or a full-year continuing resolution). This information may be collected as part of the Budget Execution Spend Plan IM or separately.

C. Annual FOA List

Using the results of the FOA Scenario Planning IM, each EERE sector will identify all

[6] RFIs that are intended to inform the development of a FOA must have DOE Approval prior to publishing (see Section V DOE Review and Approval Process). For more information on RFIs (whether associated with a FOA or not) refer to the RFI Template.

[7] All Public Workshops must be published to the Federal Register in addition to EERE Exchange. See Federal Register Process (Workshops) for more information.

of its proposed FOAs for the year and will rank them in priority order. The aggregated list will serve as a basis for workload planning and strategy planning for the DAS, Technology Office Director, and the Office of Business Operations (OBO).

Step 1: The Technology Office inputs FOA information as specified in the IM request (see Section IV.B FOA Scenario Planning).

Step 2: The Technology Office Director assigns a FOA Manager to each FOA on the list.

Step 3: PMCO creates an Annual FOA List based on the information in the IM results and routes to each sector DAS.

Step 4: **APPROVAL:** The DAS reviews the list and provides approval for his/her sector.

Step 5: PMCO distributes the approved Annual FOA List to GFO Financial Assistance Office and to NETL.

D. Business Clearance Review Initiated

Step 1: Business Clearance sends an annual request to the Head of Contracting Activity (HCA) for upcoming FOAs.

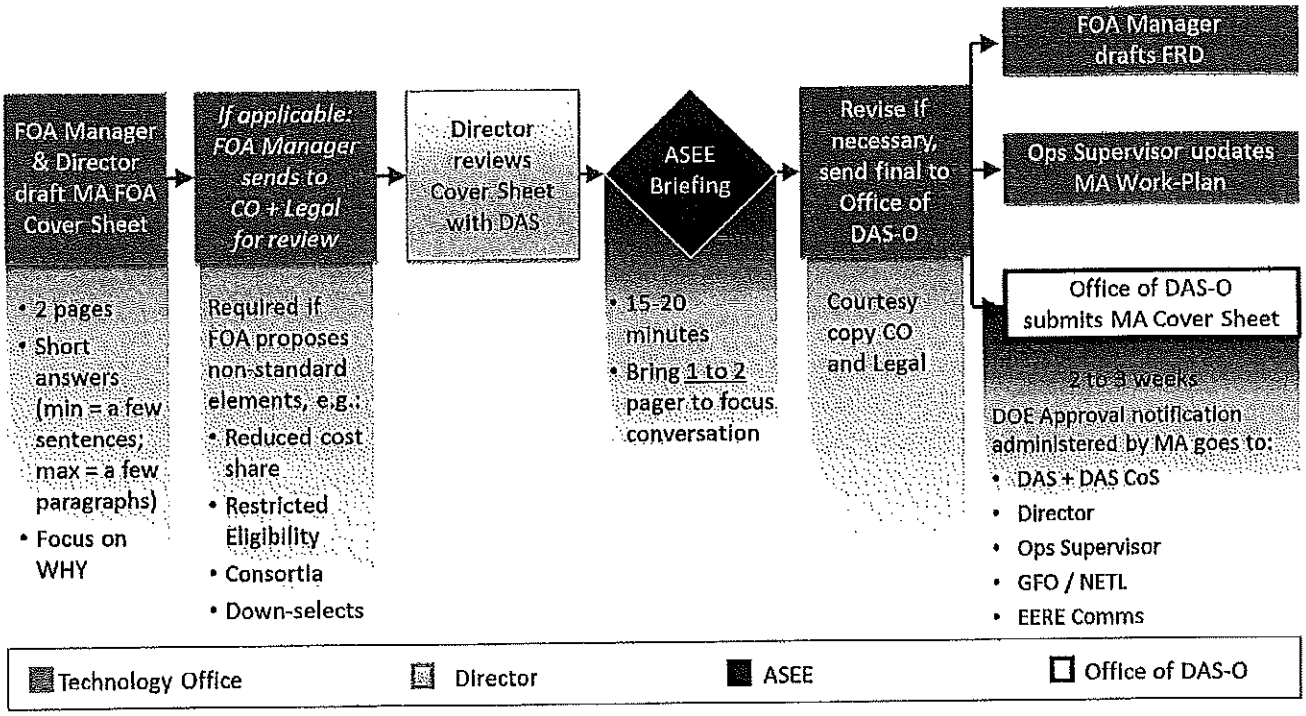
Step 2: The HCA sends high level FOA information (e.g. Technology Office, total funding amount, title of FOA, brief description, etc.) as specified in the Business Clearance request.

Step 3: Business Clearance determines which FOAs to review. For the complete Business Clearance process, see: https://www.energy.gov/sites/prod/files/2018/02/f49/FY18%20Acquisition%20Guide_FY2018_v3.pdf#chapter71.1.

V. DOE Review and Approval Process

Purpose: The DOE approval process was instituted DOE-wide in 2017 to ensure that all financial assistance actions, whether competitive (FOAs) or non-competitive (DNFAs), align with the Administration's energy priorities. The process is facilitated by the DOE Office of Management (MA). The approval requirement is not specific to EERE, rather, it applies to any office that conducts financial assistance actions across the DOE complex (e.g., Office of Electricity, Office of Fossil Energy, Office of Science, ARPA-E, etc.).

DOE Review and Approval Process (Figure 1)



A. MA FOA Cover Sheet

Step 1: The FOA Manager drafts the MA FOA Cover Sheet with input from the Technology Office Director and other Technology Office staff, as appropriate.

- If the FOA will include non-standard elements (e.g., cost share below the statutory minimum, restricted eligibility, consortia model, down-selection process, etc.), the FOA Manager must submit the MA FOA Cover Sheet for review to the CO and Legal Counsel that typically support the Technology Office. The CO and Legal Counsel review should occur before the MA FOA Cover Sheet is submitted to the DAS.
- The purpose of the CO and Legal Counsel review is to identify potential legal or contracting issues that could impact the proposed approach and provide early notification of non-standard elements that require more time to address than the standard review process allows (e.g., cost share waiver).

Step 2: The Technology Office Director consults with the DAS on the MA FOA Cover Sheet content. The DAS ensures the FOA concept is consistent with ASEE priorities, the President's budget request, and/or Congressional direction. The following criteria may be considered, among other factors:

- Does the FOA support EERE or Technology Office goals?
- Is the FOA consistent with the submitted budget?

- Are there any obstacles to issuing the FOA?

Step 3: The DAS Chief of Staff schedules a briefing with ASEE on the FOA concept. Typically, the ASEE sets aside a few hours each month for FOA briefings.

BEST PRACTICE: Schedule a briefing time as soon as the FOA Manager begins drafting the MA FOA Cover Sheet. ASEE has limited schedule availability, so early scheduling minimizes the risk of schedule delays.

B. ASEE Briefing

Purpose: The FOA briefing to ASEE allows the FOA Manager and Technology Office Director to explain the FOA concept and the rationale for choosing the FOA topic(s). It equips ASEE with the information needed to justify the FOA during the review process.

Step 1: Prior to the meeting, the Technology Office Director determines the format of the briefing (i.e., whether to just walk through the document itself or bring a presentation to focus the conversation), and prepares his/her staff accordingly.

Step 2: During the meeting, the Technology Office Director and FOA Manager brief ASEE on the FOA and answer ASEE questions.

Step 3: At the end of the meeting, ASEE determines whether the FOA concept can be submitted to MA as-is, or whether the Technology Office must revise certain information. Additionally, ASEE directs the Technology Office on any follow-up actions (e.g., coordination with another DOE element).

Step 4: The FOA Manager revises the MA FOA Cover Sheet, if applicable.

Step 5: The Sector DAS Chief of Staff sends the final MA FOA Cover Sheet (and presentation, if used) to the designated representative in the Office of DAS-O, the CO, and Legal Counsel.

C. Submit FOA Concept to MA

Schedule Note: DOE approval or rejection of the FOA concept takes approximately 2 to 3 weeks from ASEE briefing date.

Step 1: The designated representative in the Office of DAS-O submits the MA FOA Cover Sheet to the MA FOA mailbox.

Step 2: MA coordinates the DOE review and approval process, including the ASEE briefing of the FOA concept to the DOE Review Team.

Step 3: DOE Review Team either approves or rejects the FOA concept. MA coordinates notification of decision to EERE.

- If rejected, the Technology Office cancels the FOA and redirects the funds for a different purpose.
- If approved without comments, the Technology Office continues with the FOA process.
- If approved with comments, the Technology Office incorporates the feedback and resubmits the MA FOA Cover Sheet to the Office of DAS-O.

D. DOE Approval

Step 1: MA notifies ASEE, ASEE Chief of Staff, and Office of DAS-O by email that the FOA has been approved.

Step 2: Office of DAS-O forwards the approval to the following people:

- Sector DAS and his/her Chief of Staff
- Technology Office Director
- Operations Supervisor
- FAO Director (GFO or NETL)
- EERE Communications POC

Step 3: The Operations Supervisor confirms the FOA is listed on the MA Work Plan spreadsheet, so that the Office of DAS-O may begin reporting the FOA's progress via the weekly MA Work Plan submission (see Section V.E below).

Step 4: The FOA Manager requests either the NOI sensitivity check (see Section VII.D NOI), or if the FOA is not utilizing an NOI, the FOA Manager requests the FOA green light (see Section VII.B Green Light to Publish FOA).

E. MA Work Plan

Purpose: The Technology Office inputs all DOE-approved FOAs into the MA Work Plan, which is used to report the progress of approved FOAs to MA on a weekly basis.

Step 1: On a weekly basis, the designated representative in the Office of DAS-O sends a reminder to Operations Supervisors to update the MA Work Plan spreadsheet with any new information.

Step 2: The Operations Supervisor updates the MA Work Plan spreadsheet with any new information (e.g., new planned dates, actual dates, etc.).

Step 3: The designated representative in the Office of DAS-O submits the updated Work Plan to MA on a weekly basis.

F. Major Changes to DOE-Approved FOAs

For FOAs that already have DOE approval, certain changes require additional consideration before the Technology Office can proceed with the change.

The following changes require a new submission to MA (proceed to Section V.A MA FOA Cover Sheet):

- Change to Overall FOA Concept
- TRL Increase

The following changes require ASEE approval, who will determine whether an updated submission to MA is required:

- Increase of $500,000 or more in DOE Funding
- TRL Decrease
- Alternate Selections

For any other changes, the Operations Supervisor simply updates the MA Work Plan (see Section V.E MA Work Plan, above).

G. Special Considerations for MA Cover Sheet (If Applicable)

i. Determination of Restricted Eligibility (DRE)

Standard Practice: The EERE standard eligibility language lists the entities eligible to apply for EERE FOAs (see Section III.A of the FOA Template).

Exceptions: The EERE standard eligibility language should not be modified except in the following circumstances:

- Where there is an approved Determination of Restricted Eligibility
- Where the statutory authority for the FOA includes specific eligibility language. In this instance, the statutory eligibility language replaces the standard EERE eligibility section of the FOA, and a DRE is not necessary.
- Where the FOA restricts FFRDCs or National Laboratories from applying as a prime or subrecipient due to an actual or appearance of a conflict of interest, a DRE is not required; however, the rationale for excluding the Lab(s) would need to be stated in the FRD. For example, it would be appropriate to restrict a Lab from applying to the FOA without a DRE where:
  - The Lab participated in the development of the FOA concept;

- The Technology Office intends to make a specific Lab available to selectees for technical assistance; or
- The Technology Office intends to have a Lab provide some form of project verification or review for the projects selected under the FOA.

Step 1: The FOA Manager discusses and finalizes a list of eligible entities with the Technology Office Director, DAS, CO, and Legal Counsel while drafting the MA FOA Cover Sheet (see Section V.A).

Step 2: The CO and Legal Counsel determine if a DRE is necessary for the proposed applicant pool for the FOA. If yes, proceed to Step 3.

Step 3: The FOA Manager prepares the draft DRE and supporting justification (see DRE Template).

Step 4: The GMS/CS, CO, and Legal Counsel review the DRE.

- The CO determines if additional reviews are necessary, based on the procurement review matrix[8].
- If necessary, the FOA Manager revises the DRE and re-routes for review.

Step 5: CONCURRENCE
Once edits from the GMS/CS, CO, and Legal Counsel are incorporated, the Technology Office Director, CO, Legal, and DAS concur by signing the DRE.

Step 6: APPROVAL
The FOA Manager sends the DRE to the approver for review, and incorporates any comments from that review. The DRE requires approval from one level above the Contracting Officer[9]. For GFO, the Financial Assistance Division Director approves the DRE. For NETL, the Procurement Director approves the DRE.

Step 7: Once the DRE is approved, the FOA Manager sends the signed document to the GMS/CS and incorporates the eligibility language into the draft FOA. DREs must be approved before the CO publishes restricted eligibility language in the FOA.

[8] This is an internal process specific to the Golden Field Office (see Review Matrix tab of the SWEET). NETL Contract Specialists shall follow the guidance related to this topic in the appropriate Best Practices Guide.
[9] See 2 CFR 910.126(b)(3) Competition

ii. Cost Share Reduction and Waiver Determinations

Standard Practice: Section 988(b) of the Energy Policy Act of 2005 (EPACT 2005, Pub. L. 109-58, requires recipients to provide a specified percentage of cost share depending on the type of project (i.e., ≥50% demonstration, ≥20% research, 0% education/outreach).

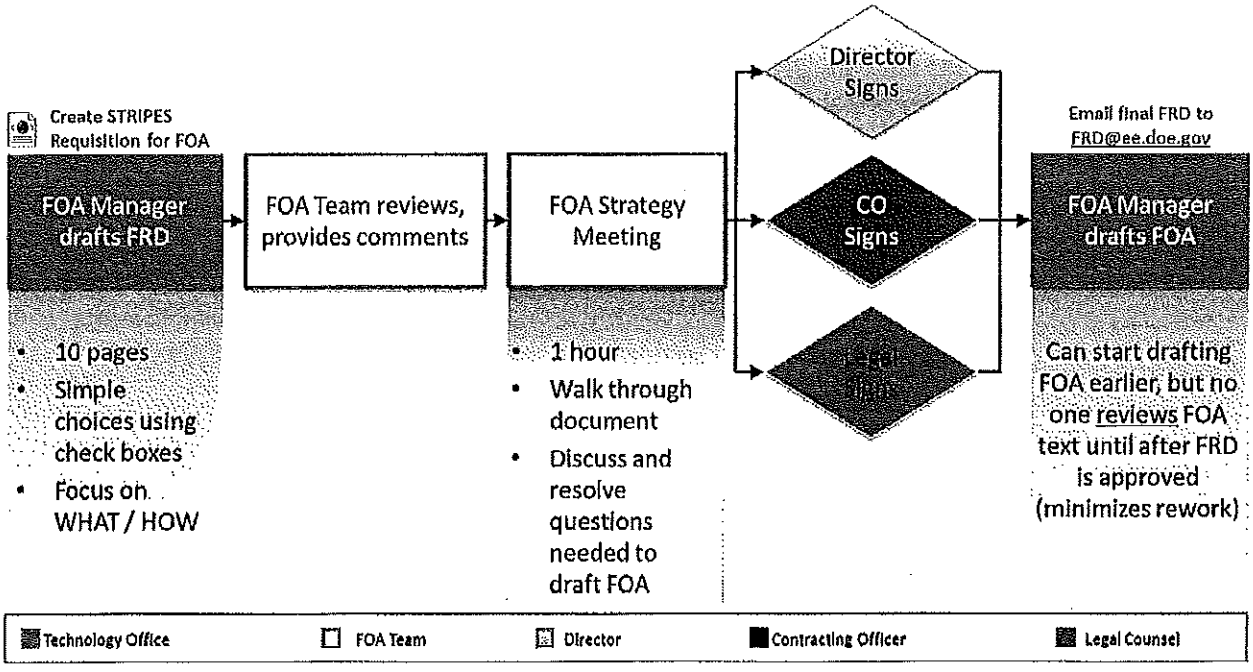
Exceptions:

- If available, apply the blanket EERE Cost Share Reduction Determination. The FOA Manager should check with Legal Counsel to determine if a current blanket EERE Cost Share Reduction Determination is in effect at the time of FOA development.
- Require cost share above the statutory minimums.
- Request a FOA-specific Cost Share Reduction Determination or FOA-specific Cost Share Waiver (see Cost Share Waiver/Reduction SOP)

VI. FRD Process

Purpose: The FOA Requirements Document (FRD) establishes approved parameters for FOA development, evaluation, and selection. The FRD review and approval process generates mutual understanding amongst all members of the FOA Team (see Section VI.A FOA Team) and the Technology Office Director as to how the FOA will be developed and executed. Once the FRD is concurred with and approved by all appropriate stakeholders, the FOA Manager adds the specific, approved decisions to the FOA template.

FRD Process (Figure 2)



A. FOA Team

The FOA Team includes the following:

- FOA Manager
- Co-FOA Manager, TPO, and/or support service contractors (as applicable)
- Contracting Officer (CO)
- Grants Management Specialist/Contract Specialist (GMS/CS)
- Legal Counsel
- IP Counsel
- NEPA Staff

Step 1: The Technology Office Director assigns the FOA Manager (see Section IV.C Annual FOA List) and may assign additional FOA Team members or delegate to the FOA Manager to assign additional FOA Team members.

Step 2: Upon receiving the MA FOA Cover Sheet (see Section V.A, MA FOA Cover Sheet), the Lead CO (or Branch Chief for GFO) assigns a CO and GMS/CS[10] to the FOA.

Step 3: The CO communicates all workload assignments to the FOA Manager.

Step 4: The FOA Manager ensures there is a current blanket COI/NDA form on file[11] for all FOA Team members (see Standard Evaluation and Selection Plan).

B. FOA Number Assigned

Purpose: EERE uses STRIPES, a DOE web-based information technology system, as the official FOA and award record. STRIPES is used to award and administer DOE acquisition and financial assistance instruments. The official FOA record in STRIPES contains all relevant documentation pertaining to the development, publication and modification of FOAs.

Step 1: The FOA Manager creates a requisition in STRIPES for the FOA (see the STRIPES User Guide).

Step 2: GMS/CS uses the requisition to create the STRIPES FOA Number (see the STRIPES User Guide).

[10] This role is the Grants Management Specialist (GMS) at the Golden Field Office and is the Contract Specialist (CS) at NETL.

[11] EERE employees and EERE support service contractors can complete a single blanket COI/NDA form that will apply to all evaluation and selection activities, across multiple FOAs.

Step 3: GMS/CS emails the FOA number to the FOA Manager and the CO for use on the FRD as well as future documentation.

Step 4: FOA Manger sends the STRIPES FOA number to the Operations Supervisor for use on the MA Work Plan spreadsheet.

Step 5: If the FOA is later cancelled (e.g., due to DOE rejection or otherwise), the GMS/CS cancels the FOA number in STRIPES, and the FOA Manager cancels the requisition.

C. Draft FRD

Schedule Note: FRDs must be approved by the end of October. For current year deadlines, refer to the latest FOA Memo or EERE Business Calendar.

The FOA Manager drafts the FRD using the FOA Requirements Document (FRD) template. Depending on what the FOA Manager selects in the FRD, more in-depth discussion and documentation may be necessary. Refer to the following sections of the SOP for more information:

- Determination of Restricted Eligibility (see Section V.G.i)
- Cost Share Reductions or Waivers (see Section V.G.ii)
- Selection Official Designation (see Evaluation and Selection SOP)
- Major changes to the EERE Standard Evaluation and Selection Plan (see Evaluation and Selection SOP)
- Property[12]

Through Section II.B of the FRD, the Technology Office documents the planned evaluation and selection process for the FOA, including selecting options where applicable, and obtains the necessary concurrences and approvals. For further information on the evaluation and selection process, and how to complete this section of the FRD, refer to the Evaluation and Selection SOP.

D. FOA Strategy Meeting

Purpose: To involve all members of the FOA Team (see Section VI.A FOA Team) in making key decisions relevant to the entire FOA process. It is an opportunity for the FOA Team to collaboratively develop the FRD by providing expert advice and counsel in their subject matter areas.

[12] If you expect large equipment purchases on the FOA awards or if the FOA is for large, demonstration-scale projects, the best practice is to discuss a strategy for property disposition at the FRD stage.

Format: The FOA Strategy Meeting should be a single meeting. FOA Team members should participate in the FOA Strategy Meeting in-person or via teleconference if in another duty location.

Step 1: BEFORE THE MEETING
The FOA Manager schedules a FOA Strategy Meeting with the entire FOA Team.

Step 2: The FOA Manager distributes the approved MA FOA Cover Sheet and draft FRD to the FOA Team for review ***at least 3 business days*** before the meeting.

Step 3: The FOA Team reviews the FRD and comes to the meeting prepared to discuss their comments.

BEST PRACTICE: FOA Team members send red-lined comments to FOA Manager prior to the meeting. FOA Manager consolidates all comments into one document for use at the meeting[13].

Step 4: DURING THE MEETING
The FOA Manager presents the FRD to the FOA Team and seeks feedback. The discussion should focus on the rationale for and the proposed implementation of each approach selected. The meeting objectives are to:

- Ensure the FOA Team has a complete understanding of the FOA and critical elements of the FRD
- Ensure the CO, GMS/CS, and Legal Counsel have a complete understanding of how the evaluation and selection process will be conducted, particularly if there are any changes to the standard EERE Evaluation and Selection Plan (see Evaluation and Selection SOP)
- Allow Legal Counsel to determine if a new Selection Official designation is needed and review any non-standard approaches (see Evaluation and Selection SOP)
- Allow IP Counsel to develop an IP Strategy for the FOA
- Allow NEPA staff to develop a NEPA Strategy for the FOA
- Establish agreement and commitment of all team members to complete all FOA activities in accordance with the FOA schedule, as described in Section VI of the approved FRD

E. FRD Approval

Step 1: The FOA Manager resolves all FOA Team comments and incorporates any

[13] To combine comments from multiple documents automatically in Word, select the "Review" menu in the ribbon, click the "Compare" drop down button and select "Combine".

agreed upon outcomes and decisions from the FOA Strategy Meeting into a clean copy of the FRD for the Technology Office Director, CO, and Legal Counsel to sign. The FOA Manager must address all CO and Legal Counsel comments and edits prior to sending the FRD to the Technology Office Director for approval. Once the FOA Manager receives confirmation from the CO and Legal that their comments have been addressed, proceed to Step 2.

Step 2: TECHNOLOGY OFFICE DIRECTOR REVIEW
The FOA Manager meets with the Technology Office Director to discuss the FRD. If the FRD is modified as a result of the Technology Office Director's review, the FOA Manager must consult with the CO and Legal Counsel on the changes before the Technology Office Director signs the FRD.

Step 3: TECHNOLOGY OFFICE DIRECTOR APPROVAL
The Technology Office Director approves the FRD after any necessary changes are incorporated.

Step 4: CO & LEGAL CONCURRENCE
CO and Legal sign the FRD to indicate final concurrence.

Step 5: The FOA Manager sends the MA FOA Cover Sheet and signed FRD to the following:

- CO
- GMS/CS
- Legal Counsel
- Technology Office Communications Lead

F. FRD Modifications (IF APPLICABLE)

If the FOA Manager contemplates changing an aspect of the FOA or Evaluation and Selection approach after the FRD has been signed, he/she should consult the FRD Modification Template to determine the appropriate course of action.

If an FRD Modification is required, the FOA Manager sends the final, approved FRD Modification to the following people:

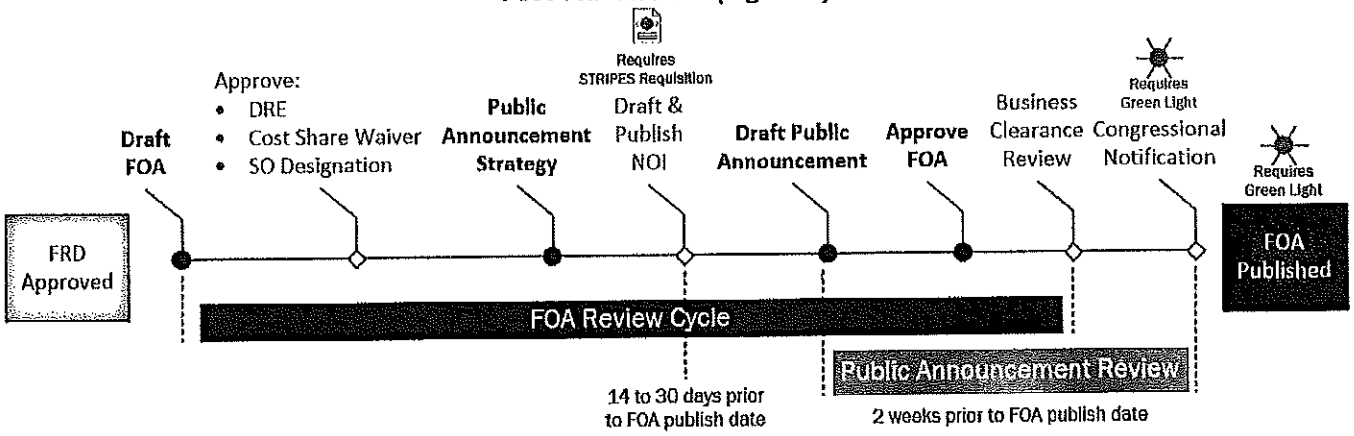
- CO
- GMS/CS
- Legal Counsel

VII. FOA Process

Schedule Note: FOAs must be ready for publication no later than mid-December. For the current year deadlines, refer to the latest FOA Memo or EERE Business Calendar.

All the actions in Figure 3 (below) can take place concurrently with the FOA review cycle (see Section VII.F FOA Review & Approval) and Public Announcement review cycle (see Section VII.E Public Announcement Review & Approval), but must be completed prior to FOA publication.

Post-FRD Actions (Figure 3)



Actions shown in grey text in Figure 3 above are only applicable to some FOAs. See the relevant sections below to determine applicability:

Action	Required If...	More Details
Determination of Restricted Eligibility	Approved in FRD	Section V.G.i
FOA-Specific Cost Share Reduction or Waiver Determination	Approved in FRD	Section V.G.ii
New Selection Official Designation	Approved in FRD	Evaluation and Selection SOP
Notice of Intent	Approved in FRD	Section VII.D
Business Clearance Review	Selected by Business Clearance	Section VII.G
Congressional Notification	FOA ≥ $50M (DOE + Cost Share)	Section VIII.A

A. FOA Drafting

The FOA Manager prepares the FOA using the FOA Template. Information and decisions in the approved MA FOA Cover Sheet and FRD are used to create the FOA. The FOA Manager should follow all instructional text in the FOA Template. Because the template follows the OMB-required format for FOAs, the template cannot be altered without input and concurrence from CO and Legal Counsel in order to ensure that proposed changes do not conflict with OMB requirements.

The final FOA will be reviewed by the Technology Office Director for conformance to the MA FOA Cover Sheet and FRD before publication (see Section VII.F FOA Review & Approval).

B. Plan Public Announcement Strategy

Schedule Note: The FOA Manager must discuss the proposed FOA Announcement Strategy with the Technology Office Communications Lead six to eight weeks prior to the planned FOA publication date.

Step 1: The FOA Manager discusses the following topics with the Technology Office Communications Lead:

- Public Announcement Strategy[14] (see Figure 4 below)
- Congressional and Stakeholder Engagement Approach
- Timing of NOI Publication (if approved in the FRD)
- Timing of FOA Publication

Public Announcement Strategies (Figure 4)

Stakeholder Email Blast	EERE Progress Alert	DOE Press Release
• Default for NOIs[15] • Distributed to a targeted email list by the Tech Office Comms Lead • For FOAs, can opt to send *in addition to* Progress Alert or Press Release	• Default for FOAs up to $10M DOE Share • Distributed to an email list of 70,000+ general stakeholders and reporters in government and the clean energy industry • Posted on EERE website by EERE Comms	• Default for FOAs > $10M DOE Share • Distributed to hundreds of reporters nationwide and to EERE's Progress Alert email subscribers • Posted by DOE Public Affairs

Step 2: The Technology Office Communications Lead adds the FOA (and NOI, if applicable) to the Policy Calendar. For more information on the Communications process, refer to Public Announcement Approval Process.

[14] Note: No public announcement will be made if the subject matter is sensitive or otherwise does not require an announcement. The most common reason not to publicly announce a FOA would be due to political or internal sensitivity at the time the FOA is published.

[15] Stakeholder email blasts are also the default for RFIs.

C. FOA Mailbox

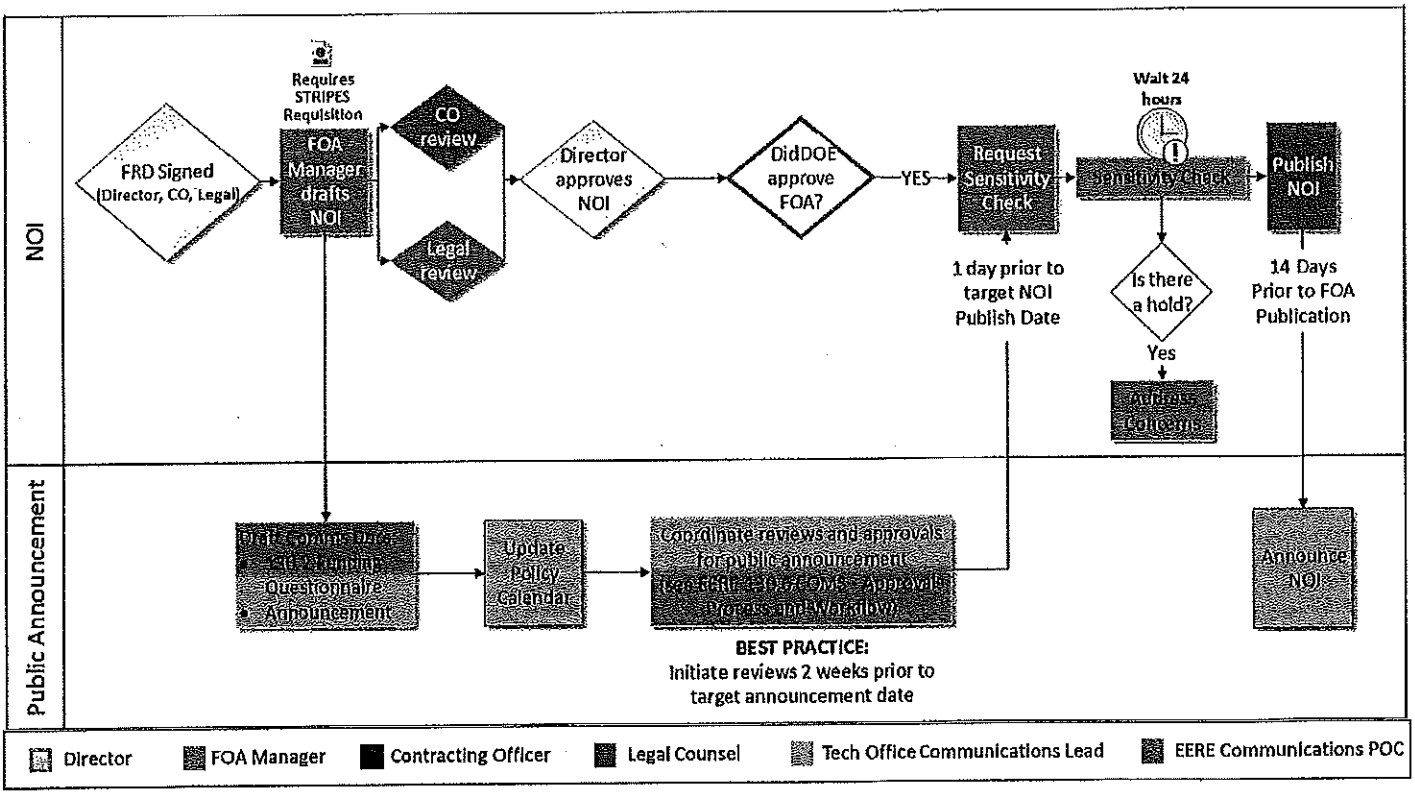
All applicant questions are received in the FOA mailbox once the FOA is published. The GMS/CS is responsible for creating the FOA Mailbox and sending the email address to the FOA Manager to include in the FOA document. Refer to FOA Q&A Process for detailed instructions[16].

D. Notice of Intent (NOI)[17]

Schedule Note: NOI publication should occur at least 14 calendar days prior to FOA publication; however, it is a best practice to publish an NOI 30 calendar days prior to FOA publication.

Purpose: The NOI notifies the public and stakeholders of the Technology Office's intention to publish a new FOA. This notification serves to heighten public awareness of the upcoming FOA, which allows potential applicants additional time to assemble project teams and prepare for applying. An NOI is highly encouraged, but not required. The content of the NOI should be cut and pasted from the draft FOA.

NOI Process (Figure 5)



[16] This document is GFO-specific. For NETL, refer to internal procedures.

[17] Note: RFIs follow the same public announcement approval process as NOIs, however, RFIs take place earlier in the FOA process (see Section IV.A Initial FOA Planning).

Step 1: Once the FRD is approved, the FOA Manager drafts the NOI using the Notice of Intent (NOI) Template.

Step 2: The FOA Manager (or his/her delegate) initiates a requisition in STRIPES for the NOI (see STRIPES User Guide).

Step 3: The GMS/CS creates an NOI number in STRIPES (see STRIPES User Guide).

Step 4: The FOA Manager sends the draft NOI to the Technology Office Director, CO, GMS/CS and Legal Counsel for review and comment.

- The GMS/CS, CO, and Legal Counsel review.
- The CO determines if additional reviews are necessary based on the local procurement review matrix[18].

Step 5: While the draft NOI is in review, the FOA Manager coordinates with the Technology Office Communication Lead to draft and obtain approval for the NOI public announcement (typically a stakeholder email blast). See Approval Process Workflow and Review Levels for details.

Step 6: The FOA Manager incorporates any comments and edits from Step 4 into the draft NOI.

Step 7: **APPROVAL**

The Technology Office Director reviews the final NOI for publication.

- If the NOI is not approved for publication, the FOA Manager revises the NOI based on the Director's comments and re-submits it for Director's approval a second time.
- Any changes made as the result of the Technology Office Director's review also need CO and Legal concurrence.

Step 8: At least 1 business day prior to publication, the FOA Manager, in coordination with the Technology Office Communications Lead and the EERE Communications POC, requests the sensitivity check[19] for the NOI.

[18] This is an internal process specific to the Golden Field Office (see the Review Matrix tab of the SWEET). NETL Contract Specialists shall follow the guidance related to this topic in the appropriate Best Practices Guide.

[19] No explicit green light approval is required for NOIs, however, if a hold is requested during the 24 hour waiting period, the hold continues indefinitely until the holding office explicitly approves the publication of the NOI.

Step 9: If no holds are requested in Step 8, proceed to the Step 10. If a hold is requested, the FOA Manager contacts the EERE Communications POC to discuss ways to address the concern.

Step 10: The FOA Manager emails the GMS/CS and CO indicating the waiting period has expired and to proceed with publishing the NOI.

Step 11: To publish the NOI, the GMS/CS enters the NOI into STRIPES and into the Exchange system and routes the NOI to the CO for approval (see STRIPES User Guide and Exchange User Guide[20] for instructions).

Step 12: The CO approves the NOI in STRIPES and publishes the NOI in the Exchange system.

Step 13: The GMS/CS publishes the NOI Synopsis to Grants.gov via STRIPES and notifies the FOA Manager that the NOI has been published.

Step 14: The FOA Manager informs the Technology Office's Communications Lead that the NOI has been published and stakeholders should be notified.

E. Public Announcement Review & Approval

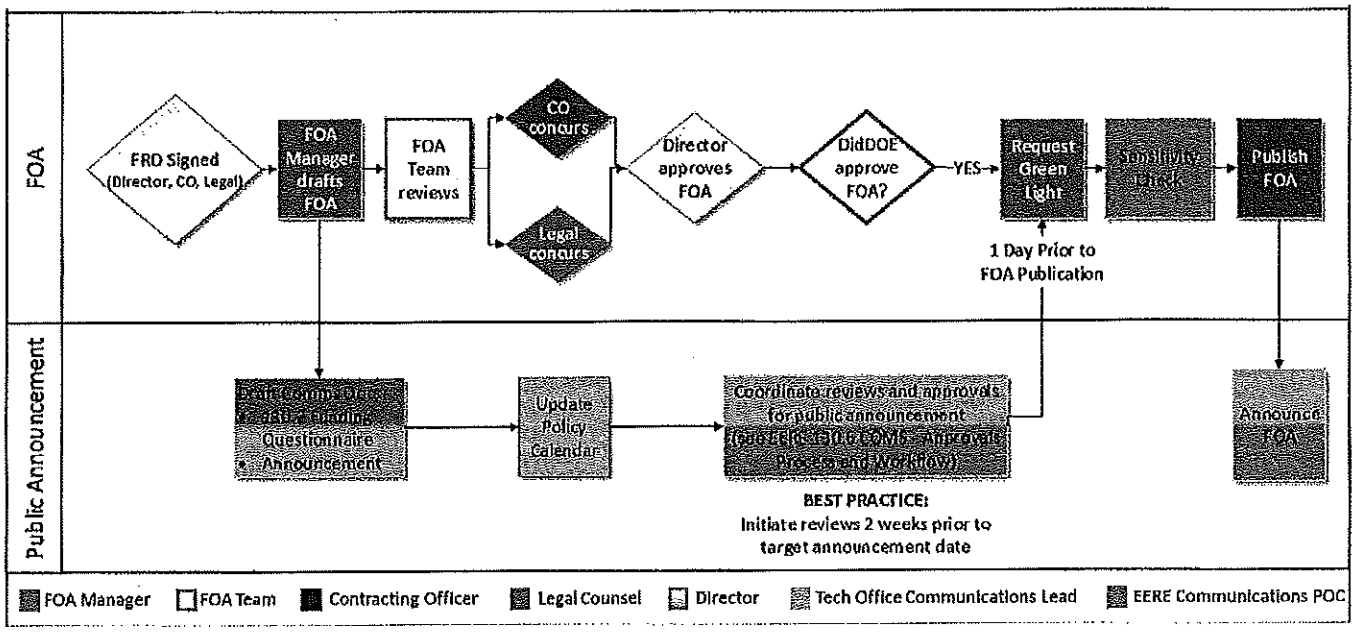
Purpose: A public announcement of the FOA both increases awareness of the FOA for potential applicants and provides an opportunity to persuade average Americans to care about a particular initiative. Because the announcement is public-facing, EERE must:

- Coordinate the FOA announcement into DOE's overall communication strategy and messaging.
- Ensure awareness and coordination across various DOE offices (including CI, CF, and PA) via sensitivity checks prior to going public.

The public announcement review and approval process takes place concurrently with the FOA review and approval process (see Figure 6 below).

[20] Please note, you must log in to the Exchange systems to view user guides for EERE employees.

FOA Public Announcement Process (Figure 6)



Step 1: The Technology Office Communications Lead begins writing the communications materials (press release, progress alert, or stakeholder email). For assistance, see Tips for Writing Public Announcements.

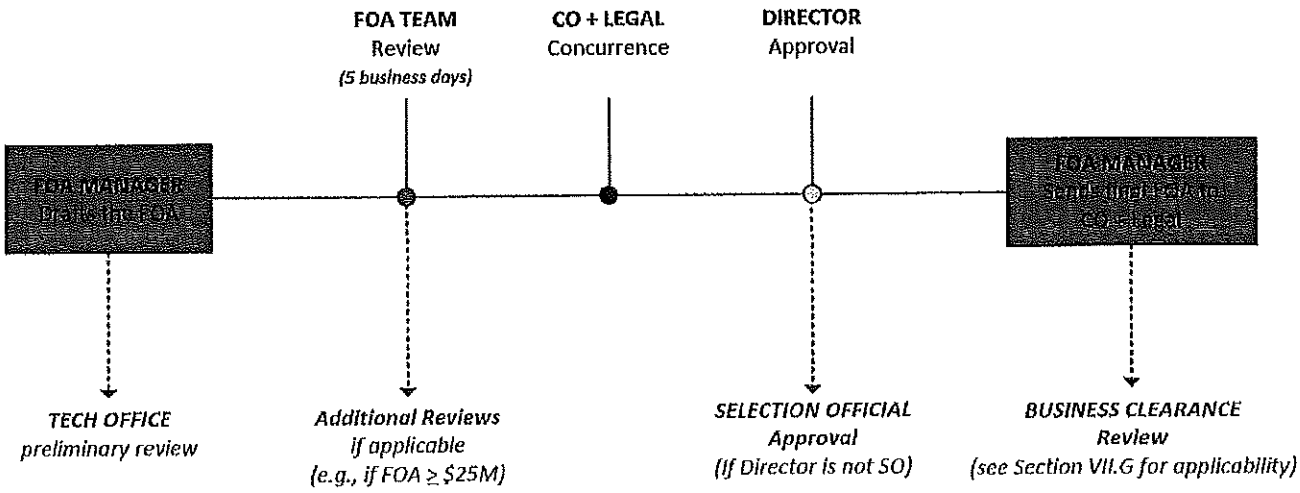
Step 2: The Technology Office Communications Lead updates the FOA details on the policy calendar.

Step 3: At least 2 weeks before the target FOA Announcement release date, the Technology Office's Communications Lead initiates the public announcement review process. For details, see Public Announcement Approval Process.

F. FOA Review & Approval

Purpose: The FOA review process supports quality control, compliance, and data verification of the final FOA. Special emphasis is placed on ensuring that the FOA conforms to the approved FOA template as well as the approved MA Cover Sheet and FRD. Successive reviews by senior management are prescribed for FOAs above specified dollar thresholds per the local procurement review matrix. The FOA Manager is responsible for drafting the FOA and obtaining the required reviews and approvals.

FOA Review and Approval Process (Figure 7)



Step 1: After drafting the FOA (see Section VII.A), the FOA Manager coordinates any preliminary internal Technology Office reviews. This varies by Technology Office, so consult the Technology Office Director for specific requirements.

Step 2: If anything in the FOA does not reflect the decisions approved in the final MA Cover Sheet and FRD, the FOA Manager follows the guidance in Section VII of the FRD to determine what actions are necessary.

Step 3: The FOA Manager sends the draft FOA to the FOA Team, providing a ***minimum of five business days*** for review and comments.

Step 4: The CO will determine if additional reviews outside of the standard reviews are required based on the local procurement review matrix and coordinate those reviews[21].

Step 5: The FOA Team reviews the draft FOA and provides feedback to the FOA Manager.

Step 6: The FOA Manager revises the FOA, maintaining a record of all comments and how they were addressed or resolved.

Step 7: After all comments are resolved, the FOA Manager sends the final draft FOA to CO and Legal.

[21] This is an internal process specific to the Golden Field Office (see the Review Matrix tab of the SWEET). NETL Contract Specialists shall follow the guidance related to this topic in the appropriate Best Practices Guide.

Step 8: CONCURRENCE
The CO and Legal Counsel review the final draft FOA and provide concurrence.

Step 9: If the Technology Office's internal policies require any additional reviews/concurrences on the program side prior to the Technology Office Director's review, the FOA Manager obtains those at this time. If anything changes due to these reviews, the FOA Manager re-sends the FOA to CO and Legal Counsel for final concurrence.

Step 10: The FOA Manager collects the final versions of the FOA Package (contents listed below) and sends the FOA Package to the Technology Office Director for review and approval.

FOA Package contents:

- Approved MA FOA Cover Sheet and FRD
- Final draft FOA concurred on by CO and Legal
- If applicable, also include:
  - Approved Determination of Restricted Eligibility (DRE) (see Section V.G.i)
  - Approved Cost Share Reduction or Waiver Determination (see Section V.G.ii)
  - Signed FRD Modification (see Section VI.F)

Step 11: APPROVAL
The Technology Office Director reviews the FOA Package. If the Director is not the Selection Official, the FOA Manager must also send the FOA to the Selection Official for approval.

- If the FOA conforms to the approved MA FOA Cover Sheet and FRD, the Technology Office Director approves the FOA and the FOA Manager can proceed to Step 12 below.
- If the FOA does not conform to the approved MA FOA Cover Sheet and FRD, the FOA Manager follows the guidance in Section VII of the FRD to determine if an FRD modification is necessary.

Step 12: FOA Manager sends the final FOA to the CO and Legal Counsel.

BEST PRACTICE: FOA Manager sends both the clean copy of the FOA and a red-lined version that specifically highlights what changes (if any) were made to the FOA since the CO and Legal Counsel last concurred.

Step 13: If Business Clearance elected to review the FOA (see Section IV.D Business Clearance Review Initiated), the CO coordinates the review of the final draft FOA, through the HCA and Office of Management's Field Assistance &

Oversight Division (MA-621) for Business Clearance review. Additional time must be allocated to accommodate the review and incorporation of any Business Clearance comments and edits provided after Business Clearance review. See Section VII.G below for additional detail on when this might be necessary.

G. DOE Business Clearance Review (If Applicable)

Applicability: At the beginning of the FOA season, a subset of FOAs from the EERE Annual FOA List is sent to Business Clearance (see Section IV.D Business Clearance Review Initiated). From that subset, Business Clearance identifies the EERE FOAs they plan to review. If the FOA was not originally intended to be $50M or greater, or if the FOA was added to the EERE Annual FOA List after the subset of FOAs was offered to Business Clearance, the CO offers the FOA to Business Clearance at this time. For the complete Business Clearance process, see Chapter 71 of the current DOE Acquisition Guide.

Timing: Business clearance review will take at least ten business days. Business Clearance will only review the final draft FOA.

Step 1: The GMS/CS drafts the Transmittal Memo for Business Clearance. In addition to the Memo, the Business Clearance Submission package should include the following information:

- Final draft FOA
- Evidence of reviews and approvals from all required reviewers, including all comments and resolution of comments
- Any applicable supporting documents (e.g., DRE, Cost Share Waiver, etc.)

Step 2: The GMS/CS coordinates all reviews of the Memo and the Business Clearance Submission package according to the local procurement review matrix[22]. As part of the review, the CO ensures all necessary reviews have been completed for the supporting documents (e.g., legal review for FOA).

Step 3: The CO coordinates submission of the final package to Business Clearance.

Step 4: Within ten business days, Business Clearance informs the CO if the FOA is "approved," "not approved," or "conditionally approved" and if it needs to be re-submitted for subsequent Business Clearance review after revisions are made.

[22] Golden Field Office GMSs, see the Review Matrix tab of the SWEET). NETL Contract Specialists shall follow the guidance related to this topic in the appropriate Best Practices Guide.

Step 5: The CO distributes the comments to the GMS/CS, Legal Counsel, and the FOA Manager.

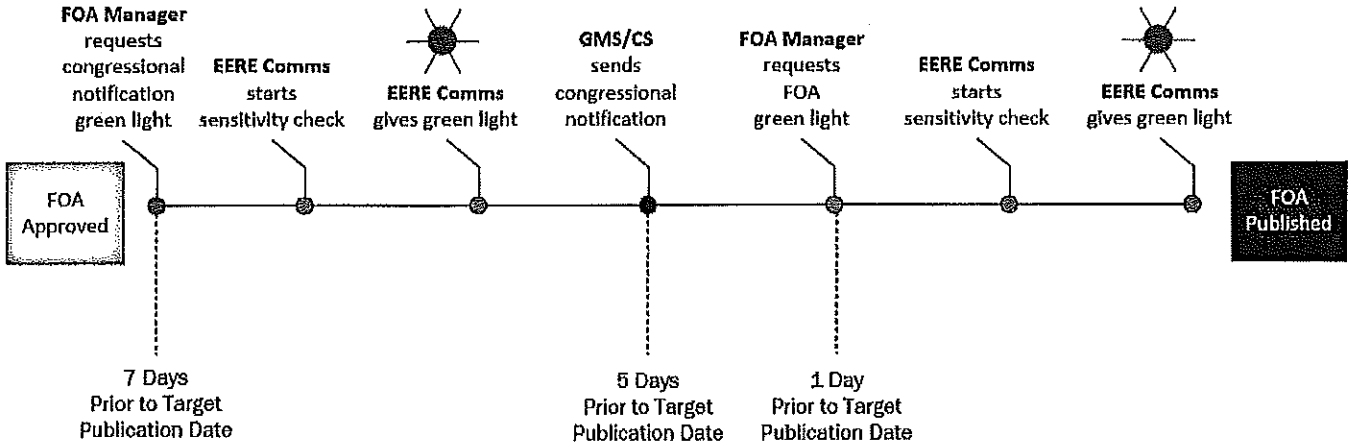
- "Mandatory" comments must be corrected by the GMS/CS, CO, Legal Counsel and the FOA Manager prior to FOA publication.
- "Highly Recommended," "Clarification," "Suggestion", and "Editorial" comments are reviewed by the GMS/CS, CO, Legal Counsel and the FOA Manager and are incorporated where appropriate.

VIII. FOA Publication

A. Congressional Notifications (If Applicable)

Purpose: FOAs over $50 million (DOE Share + Cost Share) require a 72 hour (3 full business days) Congressional Notification (DOE F 541) prior to FOA publication. See Chapter 5.1 of the current DOE Acquisition Guide, "Congressional Notification" and Chapter 2 of the current DOE Guide to Financial Assistance.

Green Light for Congressional Notifications (Figure 8)



Step 1: The FOA Manager confirms that DOE Approval for the FOA concept has been received (see Section V.D DOE Approval) and the Public Announcement for the FOA has been approved (see Section VII.E Public Announcement Review & Approval).

Step 2: The FOA Manager emails the EERE Communications POC to request the Congressional Notification green light. This should occur at least 7 days before the target FOA Announcement publication date.

Step 3: The EERE Communications POC performs the sensitivity check (see Public Announcement Approval Process for details) and emails the Green Light to the FOA

Manager to send congressional notifications.

Step 4: The FOA Manager forwards the green light email to the CO and GMS/CS.

Step 5: GMS/CS sends a completed DOE F 541: CI Solicitation Notification form to CI.Notification@hq.doe.gov with the subject line: "ACTION: CI Solicitation Notification."

B. Green Light to Publish FOA

Timing:

- The FOA Manager initiates the FOA Announcement Green Light Process at least one business day before the FOA is scheduled to be published (see Figure 8).
- If congressional notifications WERE required (see Section VIII.A Congressional Notifications), wait to request the FOA green light until 24 hours before the congressional notification waiting period is scheduled to expire.
- If congressional notification WERE NOT required, prior to requesting the green light the FOA Manager must confirm that DOE Approval for the FOA concept has been received (see Section V.D DOE Approval) and the Public Announcement for the FOA has been approved (see Section VII.E Public Announcement Review & Approval).

Step 1: The FOA Manager emails the EERE Communications POC to request the green light and confirms that the FOA is ready to publish.

Step 2: The EERE Communications POC performs the sensitivity check and emails the green light to the FOA Manager to post the FOA. For details, see Public Announcement Approval Process.

Step 3: The FOA Manager forwards the Green Light email from the EERE Communications POC to the CO and GMS/CS.

C. Publish FOA

Step 1: The GMS/CS enters the FOA into STRIPES and into EERE Exchange and routes the FOA to the CO for review and approval (see STRIPES User Guide and Exchange User Guide[23] for instructions).

Step 2: **APPROVAL**
The CO publishes the FOA in STRIPES and in EERE Exchange.

[23] Please note, you must log in to the Exchange systems to view user guides for EERE employees.

Step 3: The GMS/CS publishes the FOA Synopsis to Grants.gov via STRIPES (see STRIPES User Guide for instructions)

Step 4: The GMS/CS sends the live EERE Exchange link to the FOA Manager, who forwards it to the Technology Office Communication Lead.

Step 5: The Technology Office Communications Lead publishes the FOA synopsis on the Technology Office's website. If a public announcement is planned for the FOA, the EERE Communications POC ensures the publication of the announcement. For details, see Public Announcement Approval Process.

IX. Post-FOA Publication

A. FOA Webinar (Optional)

Purpose: A FOA webinar provides potential applicants with an overview of the FOA objectives, the applicant submission process, and the evaluation and selection process.

Step 1: The FOA Manager prepares the FOA Webinar slide deck using the FOA Webinar Template.

Step 2: CO and Legal Counsel review the tailored FOA Webinar slide deck before it is finalized and used.

Step 3: The FOA Manager sets up a webinar format that can be recorded (e.g., WebEx, GoToMeeting, etc.) and invites the CO, GMS/CS, and Legal Counsel to participate in the webinar.

Step 4: In order to meet the requirements of the Section 508 Amendment to the U.S. Rehabilitation Act[24], the FOA Manager emails DL-EEREActioNetWebTeam@Hq.Doe.Gov to request a transcription service, copying the Technology Office's Technical Monitor. The request must include:

- Anticipated length of the webinar
- Title of the webinar
- Deliverables, i.e., a transcript and text alternative that includes the following information so that someone could read the transcript and understand everything that occurred during the webinar:
    - All spoken dialogue (except ums and ahs)

[24] Requires Federal agencies to make their electronic and information technology accessible to people with disabilities.

- Description of all important events and actions that occurred during the webinar
- Description of anything visually displayed during the webinar

Step 5: The FOA Manager leads the webinar. Live Q&A can take place during the webinar; however the FOA Manager cannot express opinions or ideas not included in the FOA.

BEST PRACTICE: The FOA Manager should ensure the webinar recording has good audio quality. It is important that all speech is audible, otherwise, the transcript will cost more.

Step 6: The FOA Manager sends the recording of the webinar and the slides to DL-EEREActioNetWebTeam@Hq.Doe.Gov, who creates a Section 508-compliant transcript and sends it to the FOA Manager to forward to the GMS/CS[25].

Step 7: The GMS/CS posts a link to the webinar recording, Section 508-compliant transcript, and any Q&A to Exchange. This ensures all potential applicants receive the same information.

Step 8: Additional webinars are optional and are conducted at the Technology Office's discretion.

B. FOA Q&A

Purpose: The FOA Q&A process:

- Ensures all applicants have access to the same information about the FOA.
- Prevents the appearance of competitive advantage or applicant "coaching" that could arise from DOE communicating with applicants one-on-one.

For GFO, the details of the FOA Q&A process are explained in FOA Q&A Process. For NETL, the CS posts all questions and answers to the respective FAQs webpage in the Exchange system.

If DOE/EERE employees or contractors receive a question outside of the FOA Q&A process (e.g., by phone or to a non-FOA Mailbox email), the person receiving the question should:

1. Immediately notify the FOA Manager and the Contracting Officer.
2. Direct the person asking the question to Exchange and explain that for fairness purposes, all questions must go through the public process.

[25] This should take approximately one week, however, if multiple offices request a webinar transcript at the same time, it could take longer. Similarly, if the Technology Office does not have sufficient funds on the web services contract, new funds would need to be added, which could take six weeks or more.

C. FOA Modifications (If Applicable)

Purpose: After the FOA is published, modifications may be needed based on the needs of the Technology Office or as a result of questions submitted during the Q&A period. For example, if there are many questions requesting clarification of a certain section or a technical requirement, the FOA Manager may see the need to clarify that section of the FOA by publishing a modification for the public to view.

The FOA Manager is responsible for initiating all modifications to the FOA and obtaining the necessary reviews and approvals.

Step 1: The FOA Manager revises the FOA document, noting changes on the modifications table (copy from the FOA Template and paste into the modified FOA).

Step 2: If the FOA is within 30 days of closing, the CO and FOA Manager, in consultation with Legal Counsel, should consider whether the modification is significant enough to extend the FOA close date.

Step 3: The FOA Manager discusses the FOA modification with the Technology Office Director (and the Selection Official, if different from Technology Office Director).

Step 4: The FOA Manager sends a red-lined copy of the FOA modification to the GMS/CS and CO for review.

- The CO determines if additional reviews are necessary, based on the local procurement review matrix[26].
- Depending on the scope of the modification, the CO will determine if Legal Counsel concurrence is necessary, however, Legal will always receive notice that the FOA is being modified (see Step 8 below).

Step 5: The GMS/CS enters the FOA modification into STRIPES and into the Exchange system and routes the FOA modification to the CO for approval (see STRIPES User Guides and Exchange User Guides[27] for instructions).

Step 6: The CO publishes the FOA modification in STRIPES and in the Exchange system.

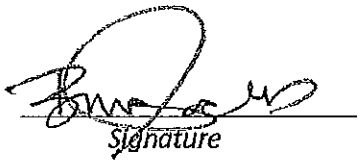
Step 7: The GMS/CS publishes the FOA modification Synopsis to Grants.gov via STRIPES.

[26] Golden Field Office GMSs, see the Review Matrix tab of the SWEET). NETL Contract Specialists shall follow the guidance related to this topic in the appropriate Best Practices Guide.
[27] Please note, you must log in to the Exchange systems to view user guides for EERE employees.

Step 8: The GMS/CS notifies the FOA Team, Technology Office Director, and Selection Official (if different from the Technology Office Director) once the FOA modification is approved.

This concludes the FOA Development Phase. For guidance on what comes next, see the Evaluation and Selection SOP. For questions, contact PMHelpDesk@ee.doe.gov.

FOA Development Standard Operating Procedure
EERE S 540.110
Issued on August 31, 2018


Signature

Bindu Jacob
Acting Director, Project Management Coordination Office
Office of Energy Efficiency and Renewable Energy
U.S. Department of Energy

Attachment 5
EE4S Gay FOIA Certification

FREEDOM OF INFORMATION ACT SEARCH CERTIFICATION FORM

(PLEASE COMPLETE CERTIFICATION SECTION BELOW)

DATE: November 5, 2018

TO: Tia Alexader/EE

FROM: Stephanie Ostrowski/MA-46

RE: REQUEST NUMBER: HQ-2018-01594-F

DESCRIPTION OF RECORDS REQUESTED:

2. All correspondence, including any attachments, regarding Acting Assistant Secretary Tripodi's use of the terms "political", "midterms", or "geographic diversity", sent to or from the Covered Individuals.

The time period for this request is March 23, 2018, to the date the search is conducted.

Requested Responsive Document Format Type: Electronic	**Responsible Program Office: EE**
FOIA Response Due Date: November 13, 2018	**Requester Willing to Pay $:Fee Waiver**

The attached request has been referred to your office to conduct a search for responsive records. Please return this certification and any responsive records.

SCOPE OF SEARCH & SEARCH PARAMETERS

☐ **Requested information not under _____ jurisdiction; refer/reassign to: _____.**

☐ **Requested information may also be found: _____.**

☒ **Responsive documents exist and retrieval will not exceed agreed upon fees (see above amount).**

☐ **Responsive documents exist and retrieval will exceed agreed upon fees.**
(Prior to search contact DOE FOIA Specialist to discuss projected charges)

☐ **Responsive documents will be numerous and will take a significant amount of time to complete.**
(Prior to search contact the requester to try and narrow the scope of request and/or notify them of an approximate completion time. DOE FOIA Specialist must be notified of results of discussion)

Date(s) of Search: 8 November 2018

Name: CHARLES F. GAY Hourly Rate: N/A Search Time: 3 HOURS	Name: Hourly Rate: Search Time:	Name: Hourly Rate: Search Time:

CFG

Type of Search	List Files/Areas Searched (physical and electronic)	Dates/Keywords/Other Criteria Used in Search
☒ Manual ☐ Automated ☐ Other	☒ C. GAY staff records ☒ C. GAY email accounts ☐ Employee self-searched ☐ CIO Group Search ☐ x Archived e-mail accounts ☐ Archived onsite records holdings ☐ Archived offsite records holdings ☐ eDOCS records ☐ Other records	23 MARCH - 8 NOVEMBER 2018 KEY WORDS: POLITICAL, MIDTERMS, GEOGRAPHIC DIVERSITY

SEARCH FINDINGS

☐ We have been unable to locate any documents/records responsive to this request.

☒ We have located ALL unclassified documents that are responsive to this request.

☒ The responsive documents fall within the scope of and time frame of the request.

☒ We have located 0 responsive audio / video records.

☐ Responsive records have been sent to NARA under File Name/Number_____

☐ The records/_____some records located contain classified and have been referred for review to the Office of Classification (memo attached)

☒ Total number of unclassified documents that have been identified 52 NET OF THIS MEMO

RECOMMENDATIONS/OTHER

☐ Documents should be released in their entirety.

☒ Please advise of any sensitivities/issues the FOIA Office should be aware of regarding these documents and should note for possible redaction/withholding (e.g., drafts, confidential business information, or privacy information).

SELECTEES SHOULD BE REDACTED IN 14a, 15a, 16a, 17a, 20a, 26a, 28a, 31a, 34a

☐ Recommendations if any of other offices that need to concur/review response before issuance: _____.

NO Has your office had any communications with the requester regarding scope/clarification? If so, please attach records of your communications.

CFS

SUBJECT MATTER EXPERT CONCURRENCE

Name and extension of Subject Matter Expert should the FOIA Office have additional questions:

CHARLES F. GAY
Name

202-287-1987
Phone number

I CERTIFY BY SIGNATURE BELOW THAT A THOROUGH SEARCH HAS BEEN CONDUCTED FOR RECORDS/INFORMATION RESPONSIVE TO THIS REQUEST AND ALL RESPONSIVE MATERIAL HAS BEEN BROUGHT TO THE ATTENTION OF THE FOIA GROUP.

Charles F. Gay
SIGNATURE (Federal Employee)

8 November 2018
(DATE)

CHARLES F. GAY DIRECTOR, SOLAR ENERGY TECHNOLOGIES OFFICE
U.S. DEPARTMENT OF ENERGY
PRINTED NAME AND TITLE

SPECIAL INSTRUCTIONS

1. All responsive records are to be provided to the FOIA Office in paper and on CD. The scanned version should mirror the paper copy.

2. When the package is ready for the FOIA Office, please contact the FOIA contractor assigned to your office to schedule a time for pick-up and overview. (At this time, you may want to have the SME available to answer questions that may arise)

3. If you have any questions about the request in general, prior to or during the search, please contact the FOIA Analyst assigned to the case.

EFS