U.S. DEPARTMENT OF ENERGY

Applying for AFFECT Funding: Best Practices and Lessons Learned

June 5, 2024

FEMP
Federal Energy Management Program

Agenda

- Federal Requirements and Goals
- Best Practices and Lessons Learned
- Application Response Examples
- Resources

Federal Requirements and Goals

AFFECT Authority 42 USC §8256

42 USC § 8256 (b) Federal Energy Efficiency Fund

1) The Secretary shall establish a Federal Energy Efficiency Fund to provide grants to agencies to assist them in meeting the requirements of section 8253 of this title.

2) Not later than June 30, 1993, the Secretary shall issue guidelines to be followed by agencies submitting proposals for such grants. All agencies shall be eligible to submit proposals for grants under the Fund.

3) The Secretary shall award grants from the Fund after a competitive assessment of the technical and economic effectiveness of each agency proposal. The Secretary shall consider the following factors in determining whether to provide funding under this subsection:

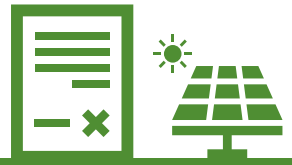
    A. The cost-effectiveness of the project.
    B. The amount of energy and cost savings anticipated to the Federal Government.
    C. The amount of funding committed to the project by the agency requesting financial assistance.
    D. The extent that a proposal leverages financing from other non-Federal sources.
    E. Any other factor which the Secretary determines will result in the greatest amount of energy and cost savings to the Federal Government.

42 USC §8253 Requirements

- Metering of Utility Use
- Water Use Intensity Reduction
- Energy Use Intensity Reduction
- Benchmark
- Evaluate, Identify, Implement, and Measure Performance Measures
- Invest and Implement Measures

AFFECT Supports Other Agency Requirements and Goals

Federal agency energy projects will enable progress toward several administration and congressional priorities focused on energy and water efficiency, decarbonization, investment, jobs and American manufacturing.



Energy Act of 2020

- Agencies to use performance contracting to address at least 50% of energy conservation measures (ECMs) identified
- Agencies to implement all cost-effective ECMs identified within two years
- FEMP to establish a Federal Smart Building Program

Executive Order 14057

- Government-wide targets for long-term and mid-term greenhouse gas (GHG) reductions
- 100% net-zero buildings, zero-emission fleets, 24/7 carbon pollution-free electricity
- Net-zero Federal Government operations by 2050 or sooner

Climate Smart Building Initiative

- Agencies to establish emissions reductions targets delivered through performance contracting
- Increase on-site clean electricity generation
- Support plan to reduce emissions from Federal buildings by 50% by 2032

Federal Building Performance Standard

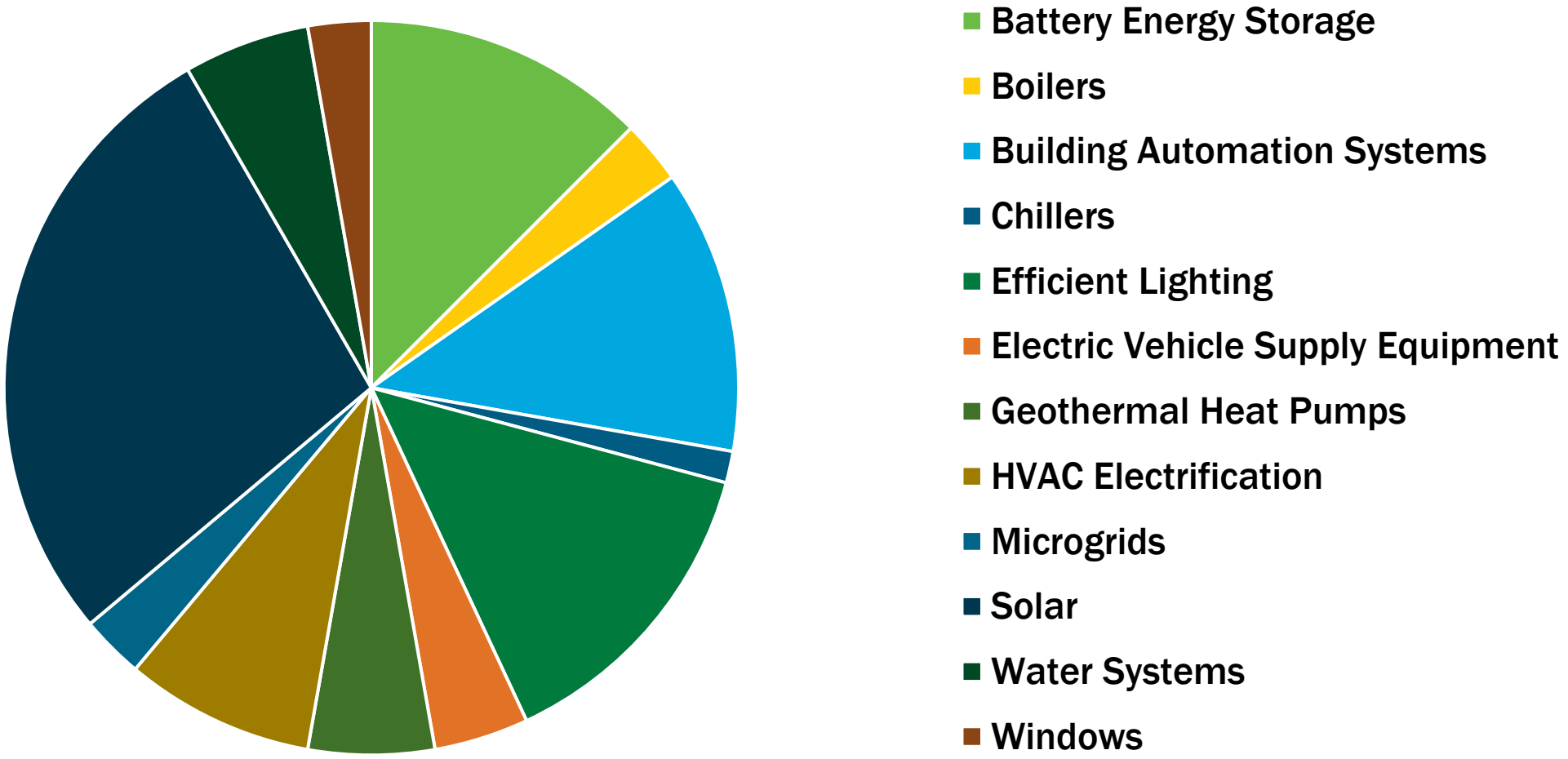
- Support achievement of net-zero emission for Federal building portfolio
- Zero scope 1 emissions from on-site fossil fuel use in 30% of agency's Federal buildings (by gross square feet) by Fiscal Year (FY) 2030
- Applies to federally owned, Energy Independence and Security Act (EISA)-covered facilities in United States and U.S. territories

Note: Descriptions are illustrative and not comprehensive.

AFFECT Supports Energy and Water Savings Measures That…

- ✓ Electrify your facilities
- ✓ Decarbonize your operations
- ✓ Enhance site resilience and security
- ✓ Automate energy systems
- ✓ Install carbon pollution-free electricity
- ✓ Identify sites for renewable energy projects
- ✓ Leverage performance contracting
- ✓ Establish replicable decarbonization plans

AFFECT Supports a Variety of Technologies



AFFECT BIL Phase 1 Selected Projects Cite Technologies Shown

Best Practices and Lessons Learned

Review Steps in the AFFECT Grant Cycle

Application Period

~3 months

Evaluation and Selection

~6 months

Negotiation

~2-3 months

Award Performance

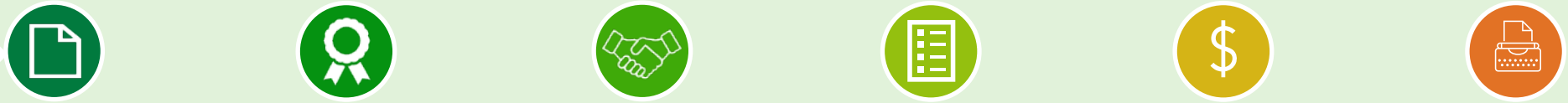
Depends on several factors and varies by Topic Area

Funding Disbursement

Dependent on meeting the conditions for distribution in FAC, including deliverables

Project and Congressional Reporting

Ongoing throughout the timeline of the project

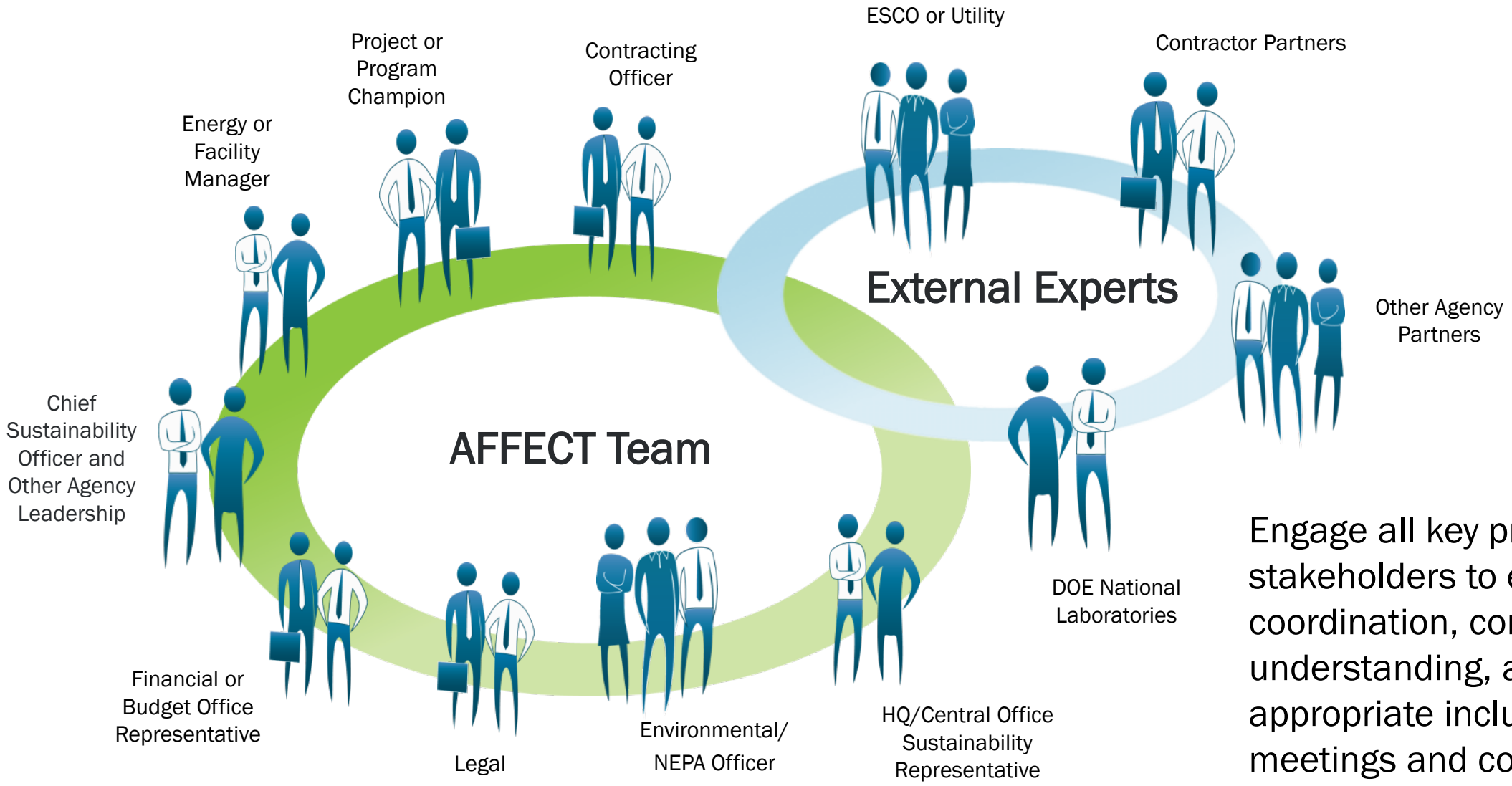


Set Yourself up for Success

- ✓ Closely read the open grant announcement, posted Q&A, and past project selections for examples.
- ✓ Maintain access and accounts in the required systems.

- ✓ Use FEMP's technical assistance, services, and trainings.

Build a Strong AFFECT Team



Engage all key project stakeholders to ensure coordination, common understanding, and appropriate inclusion in meetings and coordination.

Boost Your Project Impact and Meet Goals

- ✓ Put Federal and non-Federal funding sources to work to meet the Energy Act 2020 requirement of 50% performance contracts.
- ✓ Consider comprehensive projects that contribute to multiple agency goals on sustainability, climate, electrification, resilience, and clean energy consumption.
- ✓ Leverage the Investment Tax Credit through Energy Sales Agreements to reduce related costs by more than 50%.
- ✓ $1 of operations and maintenance (O&M) savings can yield $15 of additional investment.

Combine AFFECT Funding with Performance Contracting

Performance Contract Without AFFECT

Completely financed and funded through savings resulting from ECMs

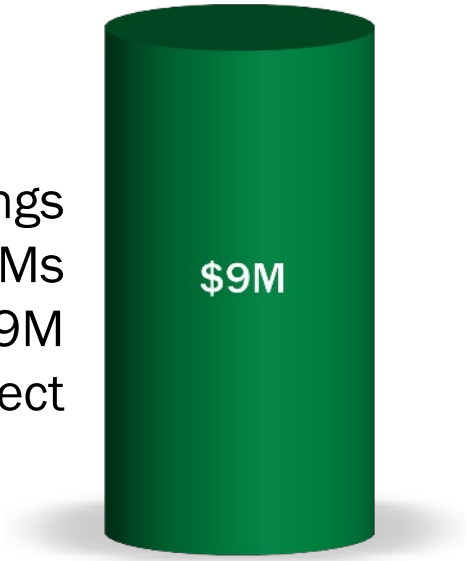
Standard AFFECT-Funded Project

Energy costs are reduced, but savings cannot be captured to fund additional scope

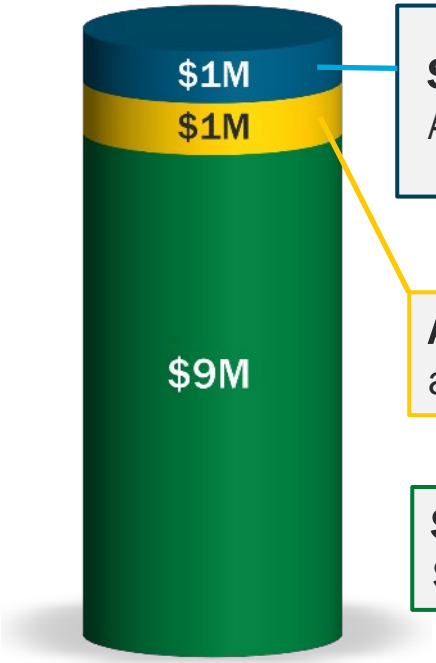
Combined Performance Contract/AFFECT Project

Savings from AFFECT-funded measures added to savings generated by ECMs, leveraged to fund additional scope

Savings from ECMs fund $9M project



AFFECT funds $1M project



Savings* resulting from AFFECT funded measures

AFFECT funds $1M in additional measures

Savings from ECMs fund $9M project

**Analysis of DOE ESPC IDIQ project awards indicates that leveraging performance contracting can as much as double the impact of AFFECT funds.*

Select Realistic Projects To Yield Real Results

- ✓ **Keep the project realistic and plan for supply chain issues**
- ✓ **Address efficiency first: reduce load across entire site**
  - Fence-to-fence for greater impact
  - Deep energy retrofit for significant energy reductions
- ✓ **Consider resilience: reduced cost and size requirements due to addressing efficiency first**
- ✓ **Show how AFFECT grant funding improves the baseline project by**
  - Allowing additional ECMs
  - Expanding the scope of projects
  - Addressing additional buildings/sites

Check Your Work

- ✓ Closely read the FAC and make sure all information requested is included in your application.
- ✓ Double-check that eProject Builder (ePB) schedules are correct and the data is consistent with what you've entered into your application.
- ✓ Review all application documents for consistency and accuracy of information.

Application Response Examples

Weak Application Response Characteristics

- x Minimal details
- x No baseline project that is being expanded
- x No description of ECM size or capacity
- x Copy and paste of requirements rather than how the project will help the applicant
- x Incomplete or blank tables
- x Project solely dependent on the grant
- x No discussion of risks and how they will be addressed
- x Questionable estimates
- x Did not use the ePB template, neither the calculating nor not calculating, or provided incomplete ePB template

Strong Application Response Characteristics

- ✓ Detailed responses
- ✓ Responded fully to the questions
- ✓ Completed all tables in the application form
- ✓ Recognized possible risks and outlined possible solutions to mitigate
- ✓ Leveraged multiple funding sources to maximize impact of project and grant
- ✓ Demonstrated an existing project that would be expended with the grant
- ✓ Provided baseline and grant project values
- ✓ Included a complete list of ECMs by type, count, size, and capacity
- ✓ Used consistent data and story in application, summary slide, and ePB templates
- ✓ Used the correct ePB template and completed all required fields
- ✓ Used the correct application form

Example 1: Weak Response

Q) Describe the extent to which the addition of AFFECT funding would change the scope, contract length, life cycle cost effectiveness, etc. of the project.

The project will retrofit an existing building to achieve net-zero energy requirements. The existing building is a critical facility. The proposed bi-facial PV array will eliminate the energy consumption and demand on the campus internal grid. Likewise, the power generation from the PV will assist the campus to meet goals related to electrification, E.O. 14057 and climate requirements by reducing the carbon footprint of the existing building. The excess generation from the solar will help to stabilize the grid and can be utilized for future EV charging. This project is dependent on AFFECT funding to develop this project 100%.

Example 1: Strong Response

Q: Describe the extent to which the addition of AFFECT funding would change the scope, contract length, life cycle cost effectiveness, etc. of the project.

The addition of AFFECT grant funding will support our progress toward a net-zero building portfolio and climate change adaptation goals set forth in Executive Order 14057, while ensuring enhanced energy security and resilience. The grant will support the expansion and installation of a microgrid with photovoltaic (PV), battery energy storage system (BESS), and microgrid control system (MCS).

Microgrid Scope and Impact: Install a ballasted, ground-mount 3.0 MW PV system on the landfill cap in the northeast corner of the base. Install a BESS using lithium iron phosphate (LFP) battery modules with a capacity of 3.0-MW/3.0-MWh and connect to the main switchgear.

An MCS will interface with the new BESS, PV inverters, automatic switchgear, new and existing utility metering, and the existing base utility monitoring and control systems (UMCS).

Example 1: Strong Response (Cont'd)

New automated main switchgear will electrically connect the existing base feeders and the new BESS modules with the utility. Manual selector switches on the distribution system will be selectively replaced with automated switches with overcurrent protection. The MCS will operate the new switches to dynamically isolate loads so that power is directed to critical facilities during a utility outage. New electrical meters will be installed on the three primary distribution feeders for the base, the new PV system, and the new BESS modules, and integrated into the MCS to provide real-time load feedback at key nodes in the network. Load shedding, deferral of non-critical loads, and restart of systems will be managed by the MCS communicating with the existing UMCS. Electricity from the large PV system will provide carbon pollution-free electricity (CFE) to the base and contribute to a net-zero building portfolio.

The BESS, MCS, and electrical system upgrades will augment energy resiliency by providing power to critical loads during electric utility outages. The current scope of the project consists of UMCS upgrades and optimization, lighting improvements, and HVAC upgrades.

Example 1: Strong Response (Cont'd)

UMCS Upgrades and Optimization Scope and Impact: Upgrade controls in 51 buildings to enhance monitoring, control, and energy efficiency of HVAC systems. Implement system scheduling and energy savings control strategies including unoccupied setback, supply air temperature reset, and chilled water supply temperature reset. Connect new zone occupancy sensors to control variable air volume (VAV) terminal units where zones are intermittently occupied. For an estimated 40 buildings install new smart thermostats.

Example 2: Weak Response

Q: What are the additional net-zero building energy conservation measures (ECMs) and their impacts for which you are seeking AFFECT funding? (Note: this should be consistent with information entered in tab "Sch2a-Imp Price by ECM" of the ePB Calculating Template with AFFECT BIL Grant)

ECMs	Estimated Cost	Requested Grant
None		

Example 2: Strong Response

Q: What are the additional net-zero building energy conservation measures (ECMs) and their impacts for which you are seeking AFFECT funding? (Note: this should be consistent with information entered in tab "Sch2a-Imp Price by ECM" of the ePB Calculating Template with AFFECT BIL Grant)

ECMs	Estimated Cost	Requested Grant
1.0-MW Solar PV with 1.93-MW/3.85-MWh BESS	$10,760,505	$9,000,000

Example 3: Weak Response

Q: For both the project with AFFECT ECMs and the project without AFFECT ECMs, illustrate the impact of the proposed project by providing the percentage reduction of usage and cost savings relative to your organizational boundary (e.g., campus, site, installation) and provide a description of what constitutes as your organizational boundary.

	Electric Energy Savings (%/yr)	Natural Gas Savings (%/yr)	Total Energy Cost Savings (%/yr)	Water Savings (%/yr)	Total Water Cost Savings (%/yr)
Project w/ AFFECT ECMs	0	30%	30%	0	0
Project w/o AFFECT ECMs	0	0	0	0	0
Describe your organizational boundary	Campus with several facilities.				

Example 3: Strong Response

Q: For both the project with AFFECT ECMs and the project without AFFECT ECMs, illustrate the impact of the proposed project by providing the percentage reduction of usage and cost savings relative to your organizational boundary (e.g., campus, site, installation) and provide a description of what constitutes as your organizational boundary.

	Electric Energy Savings (%/yr)	Natural Gas Savings (%/yr)	Total Energy Cost Savings (%/yr)	Water Savings (%/yr)	Total Water Cost Savings (%/yr)
Project w/ AFFECT ECMs	34.5%	21.0%	34.3%		
Project w/o AFFECT ECMs	28.4%	21.0%	28.5%		
Describe your organizational boundary	We are an installation and report up based on location.				

Example 4: Weak Response

Q: Describe any other energy, water, waste, or cost savings from the net-zero buildings ECMs and explain the degree to which you will increase savings (e.g., through operations and maintenance (O&M) improvements, bulk purchasing, bundling) for the Federal government.

No response provided.

Example 4: Strong Response

Q: Describe any other energy, water, waste, or cost savings from the net-zero buildings ECMs and explain the degree to which you will increase savings (e.g., through operations and maintenance (O&M) improvements, bulk purchasing, bundling) for the Federal government.

The project bundles energy conservation measures (ECMs) with different payback periods to maximize energy cost savings. It will reduce O&M costs by replacing fluorescent lighting fixtures with LED fixtures. Improved monitoring of HVAC control systems will allow the base to identify energy savings opportunities and to troubleshoot operational issues. The 33% increase in photovoltaic (PV) capacity enabled through the AFFECT grant will increase bulk purchasing capabilities and decrease the total $/MW cost of PV capacity for the project and related annual MR&R costs. The project's benefits (e.g., decarbonization per dollar invested) is greater than the incremental increase in PV capacity.

Example 5: Weak Response

Q: What funding source(s) and amount of funding is intended to be committed to the project?

Funding Type		Amount $
a. Agency Annual Appropriations (federal)		0
b. Agency Bipartisan Infrastructure Law funding, Inflation Reduction Act funding (federal)		0
c. Other (federal)	Explain:	0
c. Performance Contract Investment (non-federal)		0
d. Incentives (utility, rebates, etc.)		0
e. Other (non-federal)	Explain:	0
f. Past AFFECT Grant(s) (federal)		0
g. Requested AFFECT BIL Grant (federal)		$9M
Total Committed Funds (Sum of rows a thru e)		
Total Grant (sum of rows f thru g)		
Cost Leverage Ratio (Total committed Funds/ Total Grant)		

Example 5: Strong Response

Q: What funding source(s) and amount of funding is intended to be committed to the project?

Funding Type		Amount $
a. Agency Annual Appropriations (federal)		
b. Agency Bipartisan Infrastructure Law funding, Inflation Reduction Act funding (federal)		
c. Other (federal)	Explain: Agency One Time	$32M
c. Performance Contract Investment (non-federal)		$6.3M
d. Incentives (utility, rebates, etc.)		
e. Other (non-federal)	Explain:	
f. Past AFFECT Grant(s) (federal)		$0
g. Requested AFFECT BIL Grant (federal)		$9M
Total Committed Funds (Sum of rows a thru e)		**$47.3**
Total Grant (sum of rows f thru g)		**$9**
Cost Leverage Ratio (Total committed Funds/ Total Grant)		**5:1**

Example 6: Weak Response

Q: Describe how the project with the AFFECT ECMs would accelerate efforts in meeting EA2020, E.O. 14057, and E.O. 14008 goals and requirements.

Signed December 8, 2021, Catalyzing Clean Energy Industries and Jobs Through Federal Sustainability, requires agencies to:

- Achieve 100% carbon pollution-free electricity by 2030.
- Reach 100% zero-emission vehicle acquisition by 2035.
- Achieve net-zero building emissions by 2045.
- Reduce scope 1 and 2 greenhouse gas emissions by 65% from 2008 levels by 2030.
- Establish targets to reduce energy and potable water use intensity by 2030.
- Reduce procurement emissions to net-zero by 2050.
- Have climate resilient infrastructure and operations.
- Develop a climate- and sustainability-focused workforce.
- Advance environmental justice and equity-focused operations.
- Accelerate progress through domestic and international partnerships.

The ECMs outlined in this submittal will assist the agency-owned building toward reaching net-zero goals. It will save the building $## a year.

Example 6: Strong Response

Q: Describe how the project with the AFFECT ECMs would accelerate efforts in meeting EA2020, E.O. 14057, and E.O. 14008 goals and requirements.

The project with the AFFECT ECMs contributes to the base meeting numerous goals and requirements of EA2020, E.O. 14057, and E.O. 14008, as summarized below.

Energy Act of 2020:

- The analysis performed for this project supports the base's completion of comprehensive evaluations of each covered facility at least once every four years.
- Combining AFFECT funding into the utility energy service contract (UESC) project supports the base's implementation of cost-effective ECMs identified within two years of audit, as well as using performance contracting to address at least 50% of ECMs identified.

Example 6: Strong Response (Cont'd)

E.O. 14057:

- Installing additional on-site renewable generation capacity to offset carbon-based grid power; this will also support the achievement of a net-zero emissions building portfolio and net-zero emissions from Federal operations.
- Climate resilient infrastructure and operations will be enhanced by interconnecting the new PV to the new BESS and MCS to ensure power during disruptions.
- The active and ongoing involvement of base's staff in this project supports a climate- and sustainability-focused workforce.

E.O. 14008:

- The integration of the UESC, agency funds, and AFFECT programs and their related contractual requirements increases the use of American-made clean energy products and technologies and ensures alignment with Davis-Bacon Act prevailing wage and benefit requirements.

Example 7: Weak Response

Q: Please describe the project's viability, execution plan and risks, including: a project implementation timeline; potential risks related to the technology, timeline, funding, personnel capacity, etc. and how you would address them; and other project contingencies.

Federal orders have directed sites toward renewable energy, carbon pollution-free electricity and net-zero buildings. To execute on this project, the funding would need to be fully provided; we do not currently have the funding mechanisms to execute on a project of this scope. Logistical challenges of labor and material shortages have delayed recent projects in the surrounding areas; close work with contractors, vendors, and suppliers throughout design and procurement would mitigate potential roadblocks on this project.

Example 7: Strong Response

Q: Please describe the project's viability, execution plan and risks, including: a project implementation timeline; potential risks related to the technology, timeline, funding, personnel capacity, etc. and how you would address them; and other project contingencies.

The complete project, using a UESC to leverage energy savings, can be implemented at other bases and campuses that need to make progress toward net-zero building goals and improve their energy resiliency. PV and BESS capacities can be easily scaled to match critical loads and base-wide electric demand profiles. MCS programming can use similar control strategies with controllers customized for different distribution system infrastructure, submeters, and UMCS.

Resources

AFFECT BIL FAC Resources

Visit the Clean Energy Infrastructure eXCHANGE and select **DE-FOA-0003026** to access the following resources:

FAC Documents:

- Federal Agency Call (FAC)
- Questions and Answers
- Application Forms
- Summary Slide Templates
- SF-424 Guide *(Coming Soon)*

FAC Trainings:

- AFFECT 2023 BIL FAC Informational Webinar (April 4, 2023)
- eProject Builder Template for AFFECT Grants Webinar (April 18, 2024)
- AFFECT BIL FAC Phase 2 Informational Webinar (May 14, 2024)

Questions related to the Clean Energy Infrastructure eXCHANGE website: InfrastructureeXCHANGEsupport@hq.doe.gov

Questions regarding the content of this Federal Agency Call: AFFECTBIL@hq.doe.gov

Systems Resources

EERE PMC

- NEPA EQ1 Submission Guidance: https://www.eere-pmc.energy.gov/RefDocs/EQ1SubmissionGuide.pdf
- Sample NEPA EQ1 Form: https://www.eere-pmc.energy.gov/PMCRecipient/EQ_Sample.docx

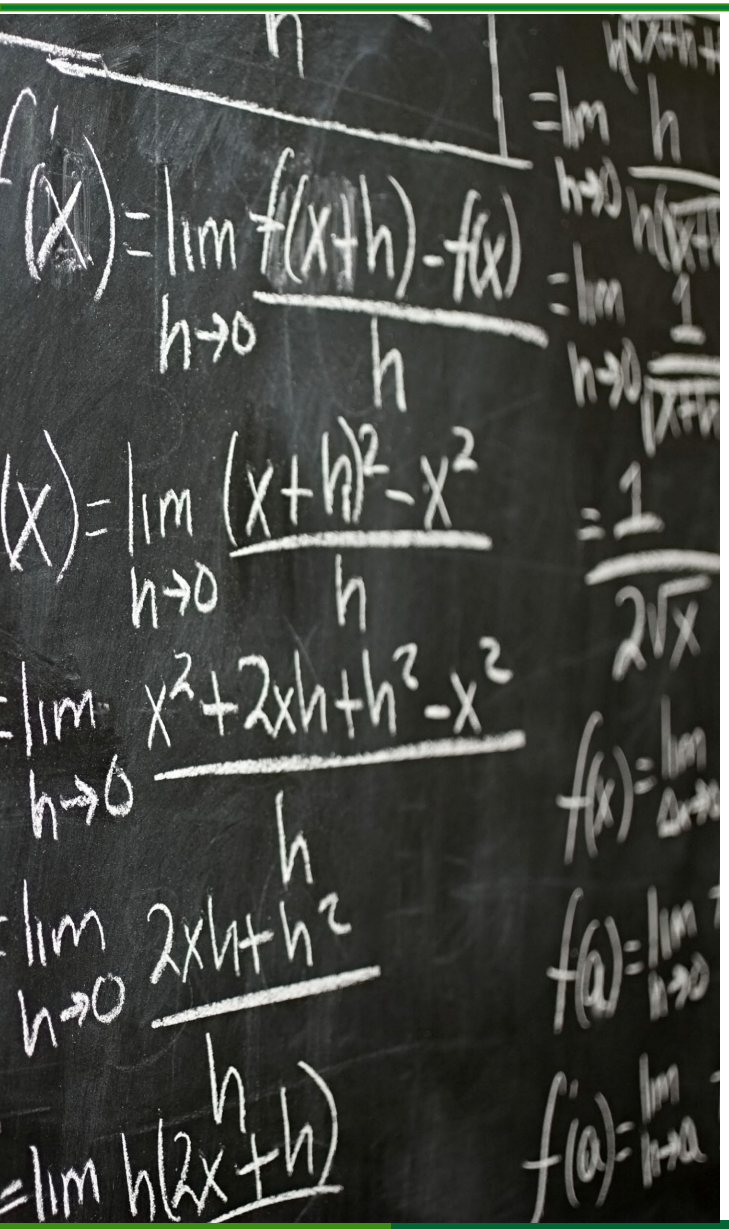
FedConnect

- Guidance: https://www.fedconnect.net/FedConnect/Marketing/Documents/FedConnect_Ready_Set_Go.pdf

IPAC

- Overview: https://www.fiscal.treasury.gov/files/ipac/ipac-101-overview.pdf
- Tutorials: https://www.fiscal.treasury.gov/ipac/Tutorial/default.html

Learn More



- Energy Savings Performance Contracts (ESPC)
- ESPC ENABLE
- ESPC ESA
- Utility Energy Service Contracts (UESC)
- Enhanced Use Leases (EUL)
- NIST Building Life Cycle Costing Program Information
- Guidance on Life Cycle Cost Analysis, 2016
- Energy Price Indices and Discount Factors for Life Cycle Cost Analysis - 2019, Annual Update

Thank You!