

**Advanced  
Research Projects  
Agency-Energy**

**Advanced Research Projects Agency–Energy (ARPA–E)**

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**Advanced Research Projects Agency - Energy  
Proposed Appropriation Language**

For Department of Energy expenses necessary in carrying out the activities authorized by section 5012 of the America COMPETES Act (Public Law 110-69), as amended, [\$280,000,000] \$325,000,000, to remain available until expended: Provided, That [\$28,000,000] \$29,250,000 shall be available until September 30, [2016] 2017 for program direction.

**Explanation of Changes**

The \$325,000,000 request for FY 2016 is a \$45,000,000 increase over the FY 2015 enacted level. The increase in funding will enable ARPA-E to fund additional early-stage innovative programs as well as exploit the technological opportunities developed in previous ARPA-E programs, leading to transformational energy technologies.

**Public Law Authorizations**

P.L. 95-91, "Department of Energy Organization Act" (1977)

P.L. 109-58, "Energy Policy Act of 2005"

P.L. 110-69, "America COMPETES Act of 2007"

P.L. 111-358, "America COMPETES Reauthorization Act of 2010"



## Advanced Research Projects Agency - Energy

(\$K)

FY 2014 Enacted	FY 2014 Current	FY 2015 Enacted	FY 2016 Request
280,000	280,000	279,982	325,000

### Overview

The Advanced Research Projects Agency-Energy (ARPA-E) catalyzes and accelerates energy technologies that will enhance the economic and energy security of the United States through the development of transformational technologies that reduce imports of energy from foreign sources, increase energy efficiency, and reduce energy-related emissions, including greenhouse gas emissions. ARPA-E funds high-potential, high-impact energy projects that are too early for private sector or other Department of Energy (DOE) program office investment and could lead to entirely new ways to generate, store, and use energy.

ARPA-E focuses on energy technologies that can be meaningfully advanced with a modest investment over a defined period of time. ARPA-E's rigorous program design, close coordination with other DOE offices and federal agencies, competitive project selection process, and hands-on engagement, ensure thoughtful expenditures while empowering America's energy researchers with funding, technical assistance, and market awareness.

ARPA-E was established by the America COMPETES Act of 2007 following a recommendation by the National Academies in the *Rising above the Gathering Storm* report. As of January 2015, ARPA-E has funded over 400 projects with approximately \$1.1 billion through 25 focused programs and open funding solicitations.

### Highlights and Major Changes in the FY 2016 Budget Request

In FY 2016, ARPA-E expects to release funding opportunity announcements (FOA) for 7 – 10 focused technology programs. In FY 2015, ARPA-E released a third open funding opportunity announcement (OPEN 2015); however, in keeping with a multi-year cycle for OPEN solicitations (2009, 2012, and 2015), ARPA-E does not anticipate an open solicitation in FY 2016. In FY 2016, ARPA-E will continue its stand-alone Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) program to provide additional support to small businesses beyond the significant number of awards that go to small businesses via ARPA-E's standard FOA process.

### FY 2014 Key Accomplishments

The success of ARPA-E programs and projects will ultimately be measured by impact in the marketplace. As the projects ARPA-E funds seek to create transformational energy technologies that do not exist today and funding is for a limited duration, ARPA-E looks at various metrics to measure progress towards eventual market adoption. ARPA-E gauges success by project hand-offs, including the formation of new companies and fostering public and private partnerships to ensure projects continue to move towards the market. In FY 2014, ARPA-E saw continued traction across several key indicators, including multiple teams launching demonstration projects in partnership with public and private entities, as well as four ARPA-E funded small companies being acquired by strategic industry partners. ARPA-E awardee Sun Catalytix was purchased by Lockheed Martin becoming Lockheed Martin Advanced Energy Storage LLC, awardee SolarBridge was acquired by SunPower, awardee Empirion was acquired Altera, and awardee Allilyx was acquired by Evolva.

### Program Roadmaps

- In accordance with the America COMPETES Act, Public Law 110-69, section 5012(g)(2)(2007) as amended, which has been codified as 42 U.S.C. § 16538(h)(2), ARPA-E's Strategic Vision Report can be found at: [http://arpa-e.energy.gov/sites/default/files/ARPA-E\\_Strategic\\_Vision\\_Report\\_101713.pdf](http://arpa-e.energy.gov/sites/default/files/ARPA-E_Strategic_Vision_Report_101713.pdf).



**Advanced Research Projects Agency - Energy  
Funding by Congressional Control (\$K)**

	<b>FY 2014 Enacted</b>	<b>FY 2014 Current</b>	<b>FY 2015 Enacted</b>	<b>FY 2016 Request</b>	<b>FY 2016 vs FY 2015</b>
ARPA-E Projects	252,000	252,000	252,000	295,750	+43,750
Program Direction	28,000	28,000	28,000	29,250	+1,250
<b>Subtotal, Advanced Research Projects Agency - Energy</b>	<b>280,000</b>	<b>280,000</b>	<b>280,000</b>	<b>325,000</b>	<b>+45,000</b>
Rescission of Prior Year Balance	0	0	-18	0	+18
<b>Total, Advanced Research Projects Agency - Energy</b>	<b>280,000</b>	<b>280,000</b>	<b>279,982</b>	<b>325,000</b>	<b>+45,018</b>
<b>Federal FTEs</b>	<b>49</b>	<b>49</b>	<b>49</b>	<b>56</b>	<b>+7</b>

**SBIR/STTR:**

- FY 2014 Current: \$9,374,993 total (SBIR \$7,649,993 / STTR \$1,725,000)
- FY 2015 Projected: \$9,759,750 total (SBIR \$8,576,750 / STTR \$1,183,000)
- FY 2016 Request: \$10,203,375 total (SBIR \$8,872,500 / STTR \$1,330,875)



## ARPA-E Projects

### Overview

The Advanced Research Projects Agency-Energy (ARPA-E) catalyzes and accelerates energy technologies that will enhance the economic and energy security of the United States through the development of transformational technologies that reduce imports of energy from foreign sources, increase energy efficiency, and reduce energy-related emissions, including greenhouse gas emissions. ARPA-E funds high-potential, high-impact energy projects that are too early for private sector or other Department of Energy (DOE) program office investment.

ARPA-E has created a nimble and adaptive structure that allows the Agency to quickly develop and execute programs, recruit a highly talented and experienced technical team, and provide awardees with technical assistance and market awareness to help projects succeed.

ARPA-E focused programs provide a unique bridge from basic science to early stage technology. These programs draw from the latest scientific discoveries and envision a viable path to commercial implementation through firm grounding in the economic realities and changing dynamics of the marketplace. The concept for a new focused program is developed through engagement with diverse science and technology communities, including some that may not have traditionally been involved in the topic area, and by learning from the outcomes of current ARPA-E programs and projects.

The ARPA-E program development cycle is primarily about identifying gaps where high-impact, high-potential investment by ARPA-E could lead to transformational technologies enabling entirely new ways to generate, store, and use energy. New programs are carefully constructed by Program Directors, working in an environment of constructive criticism where every aspect of a proposed program is intensely scrutinized for technical and economic viability, as well as impact on ARPA-E's mission. The program development cycle also involves careful coordination with ongoing research and development efforts in other DOE program offices, other federal agencies, and industry. For example, The *Reliable Electricity Based on Electrochemical Systems* (REBELS) program launched in FY 2014, which is aimed at developing fuel cell technology for distributed power generation, has been closely coordinated with other Department of Energy elements working on fuel cell technology, along with the work of industry stakeholders.

Each ARPA-E project includes clearly defined technical and commercial milestones that awardees are required to meet throughout the life of a project. Program Directors work closely with each awardee, through regular meetings and onsite visits, to ensure that milestones are being achieved in a timely fashion. When a project is not achieving the goals of the program, ARPA-E works with the awardee to rectify the issue or, in cases where the issue cannot be corrected, ARPA-E discontinues funding for the project.

The final element of the ARPA-E model is the Technology-to-Market program. Awardees are required to provide a Technology-to-Market plan prior to receiving an award and work closely with ARPA-E's Technology-to-Market advisors throughout the project to develop customized commercialization strategies. These include practical training and critical business information to equip projects with a clear understanding of market needs and thereby help guide technical development. In addition, ARPA-E facilitates relationships with investors, government agencies, small and large companies, and other organizations that are necessary to move awardees to the next stage of their project development.

### Highlights of the FY 2016 Budget Request

In FY 2016 ARPA-E expects to release funding opportunity announcements (FOA) for 7 – 10 focused programs each funded at approximately \$10 - \$40 million. The inherent design of ARPA-E makes it impossible to predict in detail the specific technologies that will garner investment in FY 2016. ARPA-E envisions building from existing learning, often in a nonlinear and unexpected fashion, with a focus on both transportation and stationary energy. As ARPA-E fully funds projects at the time of award, FY 2016 funds will be primarily used for new programs and projects. A portion of FY 2016 funding is likely to be used to supplement ongoing ARPA-E projects where a small amount of additional funding from ARPA-E could catalyze a substantial technological development and potentially lead to future support from outside ARPA-E that will help advance the technology towards the market. ARPA-E will also continue its stand-alone Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) program to provide additional support to small businesses beyond the significant number of awards to small businesses through ARPA-E's standard, non-SBIR/STTR solicitations. ARPA-E will continue the use of Innovative Development in Energy-Related Applied Science (IDEAS), a small, rolling, open solicitation to rapidly

support innovative applied energy research that has the potential to lead to new focused programs or that may complement portfolios in ongoing focused programs.

ARPA-E Projects  
Funding (\$K)

	FY 2014 Enacted	FY 2014 Current	FY 2015 Enacted	FY 2016 Request	FY 2016 vs FY 2015
ARPA-E Projects	100,800	100,800	126,000	118,300	-7,700
Transportation Systems	151,200	151,200	126,000	177,450	+51,450
Stationary Power Systems	<b>252,000</b>	<b>252,000</b>	<b>252,000</b>	<b>295,750</b>	<b>+43,750</b>

ARPA-E Projects

Transportation Systems  
Stationary Power Systems

**Total, ARPA-E Projects**

SBIR/STTR:

- FY 2014 Current: \$9,374,993 total (SBIR \$7,649,993 / STTR \$1,725,000)
- FY 2015 Projected: \$9,759,750 total (SBIR \$8,576,750 / STTR \$1,183,000)
- FY 2016 Request: \$10,203,375 total (SBIR \$8,872,500 / STTR \$1,330,875)

ARPA-E Projects

Explanation of Major Changes (\$K)

FY 2016 vs FY 2015	-7,700
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**Transportation Systems:** Based upon five years of experience in the development of focused technology programs and noting the distribution of applications to and awards made in the first two competitive OPEN solicitations in 2009 and 2012, ARPA-E anticipates a shift from an equal funding distribution between Stationary Power Systems and Transportation Systems to approximately a 60:40 split in FY 2016.

**Stationary Power Systems:** Based upon five years of experience in the development of focused technology programs and noting the distribution of applications to and awards made in the first two competitive OPEN solicitations in 2009 and 2012, ARPA-E anticipates a shift from an equal funding distribution between Stationary Power Systems and Transportation Systems to approximately a 60:40 split in FY 2016.

**Total, ARPA-E Projects**

**+43,750**

FY 2015 Enacted	FY 2016 Request	Explanation of Changes FY 2016 vs FY 2015
<p><b>\$252,000,000</b></p> <p>In FY 2015, ARPA-E released a third open funding opportunity announcement (OPEN 2015). ARPA-E anticipates new programs in both Transportation Systems and Stationary Power Systems in one or more of the following areas:</p>	<p><b>\$295,750,000</b></p> <p>In FY 2016, ARPA-E plans to release funding opportunity announcements for 7 – 10 focused programs.</p>	<p><b>+ \$43,750,000</b></p> <p>The number of focused programs expected to be released in FY 2016 will increase because ARPA-E will not release a large, open funding opportunity announcement. ARPA-E plans to release open funding solicitations every two-to-three years to maximize the quality of applications and to explore focused programs based on learning from previous ARPA-E projects.</p>
<p>ARPA-E anticipates new focused programs in both Transportation Systems and Stationary Power Systems in the general areas below. New ARPA-E programs are increasingly taking advantage of key learnings and technological developments from previous ARPA-E focused programs and OPEN solicitation portfolios. These programs have built new communities of scientists and engineers that are approaching the many challenges of energy technology in new and exciting ways, with the potential for amplification of learning through crossovers between programs.</p>	<p>ARPA-E anticipates new focused programs in both Transportation Systems and Stationary Power Systems in the general areas below. New ARPA-E programs are increasingly taking advantage of key learnings and technological developments from previous ARPA-E focused programs and OPEN solicitation portfolios. These programs have built new communities of scientists and engineers that are approaching the many challenges of energy technology in new and exciting ways, with the potential for amplification of learning through crossovers between programs.</p>	<p>The inherent design of ARPA-E makes it impossible to predict in detail the specific technologies that will garner future investment. ARPA-E envisions building from existing learning, often in a nonlinear and unexpected fashion, with a focus on both transportation and stationary energy. ARPA-E works to quickly leverage new scientific breakthroughs and market developments. ARPA-E explores uncharted territories of energy technology and the intersections of those territories in order to create options for entirely new paths to accelerate the pace of innovation.</p>
<p><b>Transportation Fuels:</b> The utility and energy storage capacity of liquid fuels suggest that they will remain in our transportation infrastructure for years to come. The challenge lies in finding innovative ways to produce fuels from an ever increasing variety of feedstocks. Novel routes to create fuels from carbon-neutral feedstocks (biomass or carbon dioxide) offer the potential for transformative reductions in greenhouse gas emissions associated with transportation. ARPA-E continues to use advances in bio-engineering and biochemistry to develop photosynthetic and non-photosynthetic routes to carbon-neutral fuels.</p>	<p><b>Transportation Fuels and Feedstocks:</b> The utility and energy storage capacity of liquid fuels suggest that they will remain in our transportation infrastructure for years to come. The challenge lies in finding innovative ways to produce fuels from an ever increasing variety of feedstocks. Novel routes to create fuels from carbon-neutral feedstocks offer the potential for transformative reductions in greenhouse gas emissions associated with transportation. ARPA-E will continue to explore innovative ways to improve the yield of current and newly developed biofuel crops and to use advances in bio-engineering and biochemistry to develop photosynthetic and non-photosynthetic routes to carbon-neutral fuels. This</p>	

FY 2015 Enacted	FY 2016 Request	Explanation of Changes FY 2016 vs FY 2015
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area of technology focus is applicable to Transportation Systems.

**Energy Materials and Processes:** Advanced materials are central to the development of innovative energy conversion processes that improve efficiency in the generation and use of energy, with concomitant reduction in greenhouse gas emissions. ARPA-E continues to build upon new discoveries in fundamental material science to develop a broad range of materials for energy: catalysts, photovoltaics, structural materials, thermoelectrics, intelligent materials, semiconductors, magnetic materials, membranes, and others. Many of these new materials are well tailored for specific function at the nanoscale level, but pathways for their cost-effective manufacture at the scale needed for energy technology does not yet exist. ARPA-E continues to invest in research and development devoted to moving nanoscale materials from the realm of scientific discovery into real-world processes for improved energy utilization in a variety of technologies, including engines, heating and air conditioning units, electric motors, power electronics, solar cells, wind turbines, and other technologies that are only beginning to be envisioned for energy applications.

**Energy Materials and Processes:** Advanced materials are central to the development of innovative energy conversion processes that improve efficiency in the generation and use of energy, with concomitant reduction in greenhouse gas emissions. Increasingly, such technologies must also have minimal impact on important natural resources, such as critical minerals or water. ARPA-E will continue to build upon new discoveries in fundamental material science to develop a broad range of materials for energy: catalysts, photovoltaics, structural materials, thermoelectrics, intelligent materials, semiconductors, magnetic materials, membranes, and others. Many of these new materials are well tailored for specific function at the nanoscale level, but pathways for their cost-effective manufacture at the scale needed for energy technology does not yet exist. ARPA-E will continue to invest in research and development devoted to moving nanoscale materials from the realm of scientific discovery into real-world processes for improved energy utilization in a variety of technologies, including engines, heating and air conditioning units, electric motors, power electronics, solar cells, wind turbines, power plant cooling systems, gas separations, and other technologies that are only beginning to be envisioned for energy applications. This area of technology focus is applicable to both Transportation Systems and Stationary Power Systems.

**Energy Storage:** Effective, inexpensive, reversible conversion of electrical energy to a more easily stored form, such as chemical, mechanical, and thermal

**Dispatchable Energy:** Energy storage remains a central challenge to the widespread adoption of electric vehicles and the increased penetration of

FY 2015 Enacted	FY 2016 Request	Explanation of Changes FY 2016 vs FY 2015
<p>energy, remains a central challenge to the widespread adoption of electric vehicles and the increased penetration of intermittent renewable energy sources onto the electric grid. ARPA-E plans to build upon previous investments in electrical energy storage for both transportation and the grid. These programs have built new communities of scientists and engineers that are approaching the challenge of energy storage in new and exciting ways. Moreover, these projects exhibit an amplification of learning through crossovers between programs. Because of these new insights, ARPA-E continues to envision new technology approaches as well as additional areas where efficient and inexpensive energy storage technologies are required.</p>	<p>intermittent renewable energy sources onto the future electric grid. Recognizing that electricity in the future will be derived from many sources at a variety of scales, ARPA-E will continue to explore technologies that enable the cost-effective production and storage of electricity suitable to a more flexible electric grid that may feature substantial distributed generation. Such efforts will focus on improving the dispatchability of electricity through effective, inexpensive, and reversible conversion of electrical energy to a more easily stored form, such as chemical, mechanical, and thermal energy. This area of technology focus is applicable to both Transportation Systems and Stationary Power Systems.</p>	
<p><b>Sensors, Information, and Integration:</b> As energy technology meets the information age, the need to collect, analyze, standardize, and protect energy information will grow and diversify over many energy systems. The transition to smart and resilient energy systems will be enabled by reliable and inexpensive sensors to provide essential data, analytical tools capable of dealing with the vast amounts of data created, and sophisticated control algorithms to optimize system performance. ARPA-E has invested in building the innovative new components that need to be integrated into larger systems to achieve full impact and now sees a broad opportunity in the combination of sensor technology, informatics, and system integration. ARPA-E currently invests in the development of advanced sensors and control technologies for battery management and control algorithms for the power grid. ARPA-E plans to explore the further development of hardware and software tools needed to characterize, optimize, and control additional smart, integrated energy systems of</p>	<p><b>Sensors, Information, and Integration:</b> As energy technology meets the information age, the need to collect, analyze, standardize, and protect energy information will grow and diversify over many energy systems. The transition to smart and resilient energy systems will be enabled by reliable and inexpensive sensors to provide essential data, analytical tools capable of dealing with the vast amounts of data created, and sophisticated control algorithms to optimize the performance of increasingly automated energy systems. ARPA-E has invested in building the innovative new components that need to be integrated into larger systems to achieve full impact and now sees a broad opportunity in the combination of sensor technology, informatics, and system integration. ARPA-E will continue to invest in the development of advanced sensors and control technologies for battery management and control algorithms for the power grid. ARPA-E plans to explore the further development of hardware and software tools needed to characterize, optimize, and</p>	

FY 2015 Enacted	FY 2016 Request	Explanation of Changes FY 2016 vs FY 2015
<p>the future. Future investments in systems integration will not replicate scale-up and manufacturing issues that are best addressed by the Department of Energy applied technology programs or private industry.</p>	<p>control an even broader range of smart, integrated energy systems of the future. Future investments in systems integration will not replicate scale-up and manufacturing issues that are best addressed by the Department of Energy applied technology programs or private industry. This area of technology focus is applicable to both Transportation Systems and Stationary Power Systems.</p>	



## Program Direction

### Overview

Program direction provides ARPA-E with the necessary resources to execute ARPA-E's mission. Program direction funds are utilized for salaries and benefits of federal staff; travel; support services contracts to provide technical advice and assistance; and other related expenses, including the DOE Working Capital Fund.

The key components of the ARPA-E model are the team, particularly the Agency's Program Directors and Technology-to-Market advisors, and hands-on engagement with awardees. ARPA-E Program Directors provide awardees with technical guidance that combines scientific expertise and real-world experience. ARPA-E Technology-to-Market advisors supply critical business insight and direction to enable awardees to develop strategies to move technologies towards the market. Each ARPA-E project includes clearly defined technical and commercial milestones that awardees are required to meet throughout the life of a project. Program Directors work closely with each awardee, through regular meetings and on-site visits, to ensure that milestones are being achieved in a timely fashion. When a project is not achieving its milestones or the goals of the program, ARPA-E works with the awardee to rectify the issue or, in cases where the issue cannot be corrected, ARPA-E discontinues funding for the project. To ensure the efficiency of ARPA-E's hands-on engagement with awardees, ARPA-E has in-house legal, procurement, and contracting staff, co-located with the Program Directors, to provide direct access and timely communication. Finally, to help enable ARPA-E to rapidly move into new technology areas in response to scientific discoveries, breakthroughs, and opportunities, ARPA-E utilizes technical support contractors for technical advice and program management assistance.

### Highlights of the FY 2016 Budget Request

ARPA-E Program Directors and Technology-to-Market Advisors serve limited terms. The FY 2016 program direction request therefore supports recruitment of sufficient staff and support service contractors to manage ARPA-E programs funded in FY 2016 and provide quality program oversight of new and ongoing projects. Since additional focused programs are expected to be developed in FY 2016, the increase in funding and FTEs support the additional staff required to develop new programs and manage a larger number of projects. ARPA-E will continue to build its Technology-to-Market team to ensure that appropriate resources are available to work closely with all ARPA-E awardees. Starting in FY 2014, ARPA-E's program direction funds also support embedded procurement staff; the costs of which are included in the FY 2016 request.

Program Direction  
Funding (\$K)

	FY 2014 Enacted	FY 2014 Current	FY 2015 Enacted	FY 2016 Request	FY 2016 vs FY 2015
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Program Direction Summary

<b>Washington Headquarters</b>					
Salaries and Benefits	8,880	8,880	9,315	10,103	+788
Travel	1,003	1,003	1,003	1,316	+313
Support Services	13,330	13,330	12,895	12,858	-37
Other Related Expenses	4,787	4,787	4,787	4,973	+186
<b>Total, Program Direction</b>	<b>28,000</b>	<b>28,000</b>	<b>28,000</b>	<b>29,250</b>	<b>+1,250</b>
Federal FTEs	49	49	49	56	+7

Support Services and Other Related Expenses

<b>Support Services</b>					
Technical Support	4,665	4,665	4,513	4,465	-48
Management Support	8,665	8,665	8,382	8,393	+11
<b>Total, Support Services</b>	<b>13,330</b>	<b>13,330</b>	<b>12,895</b>	<b>12,858</b>	<b>--37</b>

Other Related Expenses

Rental payments to GSA	2,202	2,202	2,202	2,283	+81
Communications, utilities, and misc. charges	500	500	500	550	+50
Printing and reproduction	10	10	10	10	0
Other services from non-Federal sources	465	465	465	475	+10
Other goods and services from Federal sources	1,510	1,510	1,510	1,550	+40
Supplies and materials	100	100	100	105	+5
<b>Total, Other Related Expenses</b>	<b>4,787</b>	<b>4,787</b>	<b>4,787</b>	<b>4,973</b>	<b>+186</b>

**Program Direction**

**Activities and Explanation of Changes**

FY 2015 Enacted	FY 2016 Request	Explanation of Changes FY 2016 vs FY 2015
<b>Program Direction \$28,000,000</b>	<b>\$29,250,000</b>	<b>+\$1,250,000</b>

**Salaries and Benefits**

At the FY 2015 enacted level ARPA-E will fund 49 FTEs.	At the FY 2016 request level ARPA-E anticipates needing up to 56 Federal FTEs.	+\$788 The increase in funding and FTEs support the additional staff required to develop new programs and manage a larger number of projects.
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**Travel**

At the FY 2015 enacted level ARPA-E Program Directors and Technology-to-Market advisers will continue visit performers regularly as part of ARPA-E's hands-on engagement, which is the primary component of ARPA-E travel.	At the FY 2016 request level ARPA-E Program Directors and Technology-to-Market advisers will continue to visit performers regularly. The number of site visits will continue to be commensurate with the number of ongoing projects.	+\$313 The increase in travel is commensurate with increased projects and FTEs.
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**Support Services**

At the FY 2015 enacted level ARPA-E anticipates a continued level of support commensurate to the number of ongoing and anticipated projects.	At the FY 2016 request level ARPA-E anticipates maintaining the use of support service contractors, at a slightly reduced level, to support ARPA-E federal staff in the management and oversight of projects and other required functions. The level of support commensurate to the number of ongoing and anticipated projects. ARPA-E will continue to optimize federal staff and contractor support based on funding levels and the number of projects under management.	-\$37 The amount for support services is reduced in FY 2016 as ARPA-E continues to optimize contractor support based on federal staffing and program requirements.
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**Other Related Expenses**

The FY 2015 enacted level for other related expenses reflects the anticipated costs for these activities based on the number of ongoing and anticipated projects.	The FY 2016 request level for other related expenses primarily consists of Working Capital Fund and Information Technology support costs, which are commensurate with the level of FTEs and support services requested.	+\$186 The increase in other related expenses is commensurate with management of a larger number of projects and increased FTEs.
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Advanced Research Projects Agency - Energy  
Research and Development (\$K)

	FY 2014 Current	FY 2015 Enacted	FY 2016 Request	FY 2016 vs FY 2015
Basic	0	0	0	0
Applied	126,000	126,000	147,875	+21,875
Development	126,000	126,000	147,875	+21,875
Subtotal, R&D	252,000	252,000	295,750	+43,750
Equipment	0	0	0	0
Construction	0	0	0	0
<b>Total, R&amp;D</b>	<b>252,000</b>	<b>252,000</b>	<b>295,750</b>	<b>+43,750</b>

Advanced Research Projects Agency - Energy  
Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) (\$K)

	FY 2014 Current	FY 2015 Enacted	FY 2016 Request <sup>1</sup>	FY 2016 vs FY 2015 Projected
ARPA-E Projects	7,650	8,577	8,872	+295
SBIR	1,725	1,183	1,331	+148
STTR				
<b>Total, SBIR/STTR</b>	<b>9,375</b>	<b>9,760</b>	<b>10,203</b>	<b>+443</b>

<sup>1</sup> In FY 2016, ARPA-E will continue its stand-alone Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) program to provide additional support to small businesses beyond the significant number of awards to small businesses via ARPA-E's standard non-SBIR/STTR solicitations.

**ARPA-E Projects  
Performance Measures**

In accordance with the GPRA Modernization Act of 2010, the Department sets targets for, and tracks progress toward, achieving performance goals for each program.

	FY 2014	FY 2015	FY 2016
<b>Performance Goal (Measure)</b>	<b>Award Funding</b> - Cumulative percentage of award funding committed 45 days after award selections are announced.		
<b>Target</b>	70%	70%	70%
<b>Result</b>	Met	Not applicable	Not applicable
<b>Endpoint Target</b>	No endpoint – continuous measure of efficiency in awarding funds		

<b>Performance Goal (Measure)</b>	<b>New Company Formation</b> – Number of new companies formed as a direct result of ARPA-E funding. This was a new performance measure for ARPA-E in FY 2015. As of the end of FY 2013 ARPA-E funded research has led to the formation of at least 24 new companies. That is the baseline from which we would expect to add at least 3 new companies per year.		
<b>Target</b>	≥+3	≥+3	≥+3
<b>Result</b>	Met	Not applicable	Not applicable
<b>Endpoint Target</b>	No endpoint – continuous measure of impact of ARPA-E awards on creating new jobs and industries		

Department Of Energy  
 FY 2016 Congressional Budget  
 Funding By Appropriation By Site  
 (\$K)

<b>Advanced Researched Projects Agency-Energy</b>	<b>FY 2014 Current</b>	<b>FY 2015 Enacted</b>	<b>FY 2016 Request</b>
<b>Washington Headquarters</b>			
<b>Advanced Researched Projects Agency-Energy</b>			
Projects	252,000	252,000	295,750
Program Direction	28,000	28,000	29,250
<b>Total, Advanced Researched Projects Agency-Energy</b>	<b>280,000</b>	<b>280,000</b>	<b>325,000</b>
<b>Total, Washington Headquarters</b>	<b>280,000</b>	<b>280,000</b>	<b>325,000</b>
<b>Total, Advanced Researched Projects Agency-Energy</b>	<b>280,000</b>	<b>280,000</b>	<b>325,000</b>

