



## Public Investment in Energy Technology: 2012 Overview & Outlook

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On December 31, 2011, the last section of the federal government's fiscal year 2012 budget was finalized with the President's approval of the National Defense Authorization Act (NDAA). Comprised of two prior appropriations bills,<sup>1</sup> a disaster-relief funding bill, and the NDAA, the 2012 federal budget represents an overall savings of nearly \$31 billion compared to the 2011 budget. Even as the overall level of government spending decreases, many funds that are crucial to the advanced energy technology sector remain intact. As discussed in the following analysis, several programs received an increase in funding, such as the Advanced Research Projects Agency—Energy (ARPA-E). There are also notable carve-outs for algal biofuels and marine and hydrokinetic technology, as well as creative approaches to fund energy storage projects. In light of the current fiscal environment, the relative stability for most energy-related program funding represents an encouraging view for the clean technology industry.

With billions of public and private dollars invested over the last three to five years, many clean technology companies have reached the tipping point for success. Given the noticeable absence of new funding for loan guarantee programs to support first commercial installations of innovative technologies, federal government funds for 2012 are expected to be more heavily skewed toward applied research and development. The best sources of demonstration-scale and/or commercial technology support will come from the states, the Department of Defense, and trade finance institutions such as the Export Import Bank and Overseas Private Investment Corporation. Companies that have reached or are approaching a significant milestone should consider the landscape of federal, state, and international options that can support their growth objectives *and* contribute to domestic economic and strategic initiatives.

Wilson Sonsini Goodrich & Rosati's government initiatives practice prepared the following report to highlight some of the key opportunities for clean energy technology in 2012. For more information, please contact:

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<sup>1</sup> The *Consolidated and Further Continuing Appropriations Act, 2012* was signed into Public Law on November 18, 2011; the *Consolidated Appropriations Act, 2012* was signed into Public Law on December 23, 2011; and the *Disaster Relief Appropriations Act, 2012* was signed into Public Law on December 23, 2011.



## Department of Defense

The Department of Defense (DOD) will support a variety of clean energy technologies in 2012, from the research and development of innovative, transformational technology to the utility-scale deployment of commercialized energy technologies. Companies and investors interested in creating, uncovering, or pursuing these opportunities will require strategic positioning at multiple levels and across various stakeholder groups.

*Project developers and commercial technology providers, particularly those focused on solar, wind, waste-to-energy, and energy efficiency, are best positioned.*

*ESTCP released its Installation Energy solicitation on February 2, 2012. Initial concept papers are due March 29, 2012. Strategic teaming approaches are encouraged.*

*Demonstrated technologies will fare better in this program, which seeks more commercial use of innovative technology.*

The **Department of the Army** significantly ramped up efforts to roll out its energy strategy in the last two quarters of 2011. The “Net Zero” Initiative was announced, nine Requests for Information were released<sup>2</sup> for energy technologies that could be utilized at Fort Bliss, and the Energy Initiatives Task Force (EITF) was created to coordinate and oversee utility-scale renewable power development across its military bases. The Army estimates that it needs to develop about 1,000 megawatts of new renewable power generation in order to fulfill its statutory obligations,<sup>3</sup> which involve tripling the amount of renewables it procures by 2013. The Army also is tasked with executing projects that reduce energy demand. With thousands of soldiers returning home and installations operating closer to capacity, energy efficiency will play a pivotal role for many Army bases. Coordination across a broad base of stakeholders, from technology providers and developers to banks and third-party financiers, is going to be essential. The success of each implementation plan depends on aligning public- and private-sector frameworks.

The **Environmental Security Technology Certification Program (ESTCP)** is DOD’s environmental technology demonstration and validation program. ESTCP aims to “identify and demonstrate cost-effective technologies that address DOD’s highest priority environmental requirements.” The ESTCP FY13 Energy Solicitation primarily will target early-stage energy efficiency, micro grid, storage, and energy-generation companies with pilot-ready technologies. ESTCP holds the authority to finance both a technical assessment and first-of-their-kind pilot demonstrations that will supply power to military installations. ESTCP has been appropriated between \$30 and 40 million in prior years and requested \$63.6 million for projects set to commence in FY12.

The **Energy Conservation Investment Program (ECIP)** also enables DOD to implement energy projects that complement its energy goals. This program

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<sup>2</sup> See WSGR Alert, “Department of Defense Announces Billions of Dollars in Opportunities for Renewable Energy and Energy Efficiency Companies,” at <http://www.wsg.com/WSGR/Display.aspx?SectionName=publications/PDFSearch/wsgalert-dod-renewable-energy.htm>.

<sup>3</sup> The Energy Policy Act of 2005 requires federal agencies to purchase 7.5 percent of their energy from renewable sources by 2013; the NDAA of 2007 requires 25 percent of DOD electricity to come from renewable sources by 2025.



can fund a variety of renewable energy and energy efficiency projects, and projects with high energy-savings-to-investment ratios score particularly well. In FY 2012, ECIP received \$135 million. The program is particularly interested in game-changing waste and water technologies.

The **Defense Production Act Title III Program** is the vehicle through which DOD can invest in energy technologies deemed essential for national defense. As a result of the tri-agency memorandum of understanding (MOU) among the Navy, Department of Agriculture, and the Department of Energy (DOE), this program received \$150 million in fiscal year 2012. **Not all of this funding will be allocated to the biofuels initiative, and the program did not receive the capital it requested to fund up to five biorefineries, as originally announced. However, it does have the capital to fund one or two projects this fiscal year.**

The **Defense Advanced Research Projects Agency (DARPA)** focuses on the most far-reaching scientific discoveries and innovations. With an annual budget of approximately \$3 billion, DARPA's overall mission stretches across all matters of national security. **Because of its wide-reaching and cross-cutting mission, DARPA typically addresses challenges and technologies that may be three to ten years from commercial applications and have multiple end uses.** Illustrative programs include: (1) Surface Catalysis, or "SurfCat," which is focused on developing new catalytic materials that can be utilized in advanced chemical processes and a number of end-use applications (fuel cells, biomass-to-fuel conversion technologies, and carbon capture); (2) the Renewable At-Sea Power program, which will develop novel technologies for harvesting and storing ocean energy onboard unmoored platforms, enabling deployment of independent power stations; and (3) the Biofuels program, which is focused on cutting-edge methods for producing drop-in biofuels (60-90 percent conversion efficiency by energy content) to replace jet fuel (JP-8) consumption DOD-wide.

*Pursue this opportunity once alignment with DARPA's mission and programmatic targets has been vetted; prioritize it in the context of other agency funding alternatives.*



## Department of Energy

The Department of Energy (DOE) will manage approximately \$3 billion in 2012 for energy technology programs. The below offices represent diversified efforts and funding opportunities across renewable energy, energy efficiency, advanced fossil energy, and small nuclear reactor technology. In strategic areas where DOE funds are limited, collaborative efforts with the Departments of Defense and Agriculture will continue to advance technology commercialization.

*Topic-specific funding opportunities will be announced, as well as a return to a very broad call for research projects. Several Requests for Information have been released.*

*Companies should carefully consider specified technology goals as well as participate in program workshops, Requests for Information, and other methods for informing future funding opportunities.*

The **Advanced Research Projects Agency–Energy (ARPA-E)** was funded at a level of \$275 million, approximately \$100 million more than the 2011 level. Over the past two years, ARPA-E has strategically designed high-impact and cross-cutting initiatives by collaborating with DOD, DOE, and the national laboratories. The office excels at propelling technologies and strategic initiatives into a broader energy strategy that both the private and public sectors can leverage. Program managers are interested in cutting-edge technologies that will complement the existing portfolio, as well as research ideas that may be entirely new, stand-alone concepts.

The office of **Energy Efficiency and Renewable Energy’s (EERE’s)** budget is \$1.825 billion. This represents a decrease compared to 2010 (\$2.21 billion) and 2011 (\$2.24 billion); however, the reduction is due primarily to reduced congressionally directed spending and a reduced weatherization program budget, which funds state and local energy retrofit programs. Congress also provided substantially more direction for EERE programs in the 2012 budget than in fiscal year 2011. The following table provides a summary of this congressional direction, as well as insight gathered from recent discussions with each of the programs:

EERE Program Office	2012 Budget (\$M)	Change from 2010 (\$M)	2012 Priorities
Biomass	\$200	Decreased by \$20	\$30 million to be allocated to algal biofuels
Solar	\$290	Increased by \$43	Focus on disruptive technologies and system integration, including balance of systems cost reductions; new incubator concept funding opportunities expected in 2012, as well as technical support for validation
Wind	\$93.5	Increased by \$13.5	Support for advanced offshore wind technologies
Geothermal	\$38	Decreased by \$6	At least \$5 million to continue development and deployment of low-temperature geothermal systems
Water	\$59	Increased by \$9	\$34 million for marine and hydrokinetic R&D; \$25 million for conventional hydropower
Vehicles	\$330	Increased by \$19	Approximately \$28 million for lightweight materials and \$28 million for vehicle technologies deployment; interested in wireless vehicle-charging concepts
Industrial Technologies	\$116	Increased by \$20	\$20 million for a Critical Materials Energy Innovation Hub and at least \$4.2 million for production improvements in the steel industry
Fuel Cell & Hydrogen	\$104	Decreased by \$66	Funding is provided for technology validation of passenger vehicle and hydrogen infrastructure applications, hydrogen fuels R&D, and market transformation in early markets



EERE Program Office	2012 Budget (\$M)	Change from 2010 (\$M)	2012 Priorities
Building Technologies	\$220	Decreased by \$2	\$24.3 million for the Energy Efficient Building Systems Design Energy Innovation Hub, including House direction for a strategic plan regarding geothermal heat pumps; \$25.8 million for lighting research and development, including \$12 million for research and development of manufacturing improvements for general illumination solid-state lighting
Weatherization	\$128	Decreased by \$142	\$3 million for technical assistance and training; \$50 million for state energy program grants

*State-level partnerships, agencies, and alliances will maximize success for energy storage and smart grid companies interested in pilot or demonstration-scale opportunities.*

*This opportunity is attractive for Carbon Capture and Storage (CCS) and fuel cell system developers.*

The **Office of Electricity Delivery and Energy Reliability (OE)** received \$139.5 million, slightly below the 2011 budget of \$141 million. In 2012, OE will allocate funds across the following initiatives:

\$25.5 million	Clean energy transmission and reliability technology to support renewable energy integration activities
\$24 million	Smart grid research and development
\$20 million	Energy storage programs, which will incorporate state-level support and partnerships
\$30 million	Cybersecurity technology

The **Office of Science (OS)** will be funded at a level of \$4.88 billion. Basic Energy Sciences, one of the primary divisions that funds energy technology, will receive \$1.694 billion for 2012, which includes: \$24.3 million for the Fuels from Sunlight Energy Innovation Hub; **\$20 million to create a Battery and Energy Storage Energy Innovation Hub**; and up to \$100 million for the existing Energy Frontier Research Centers.

The **Office of Fossil Energy (FE)** received \$564 million in new budget authority for fossil energy research and development, which includes **\$368.6 million for carbon capture and storage and power systems**. Of this amount, \$100 million will be utilized for advanced energy systems, including at least \$5 million for coal and coal-to-liquids technology and not less than \$25 million for solid oxide fuel cell research, development, and demonstration.

The **Office of Nuclear Energy (NE)** received funding for nuclear energy-enabling technologies and small modular reactors. This includes: \$452 million over five years, which is expected to fund two projects employing small modular reactor technologies; \$115.5 million for reactor concepts R&D, including \$28.6 million for Small Modular Reactors Advanced Concepts and \$21.8 million for Advanced Reactor Concepts; \$67 million to provide licensing and first-of-a-kind engineering support for small modular reactor designs; \$24.3 million for a Modeling and Simulation Energy Innovation Hub; \$36 million for cross-cutting research; and \$30 million for the Next Generation Nuclear Plant program to accelerate fuel development and qualification activities.



## United States Department of Agriculture

The FY12 budget appropriated \$2.5 billion for agricultural research programs, including the **Agricultural Research Service (ARS)** and the **National Institute of Food and Agriculture (NIFA)**. This is a reduction of \$53 million from the fiscal year 2011 level, including many drastic cuts to renewable energy. While trimming spending, this funding level still will support research on critical agricultural issues, in addition to supporting biomass production.

*Consortia-based approaches are preferred.*

*The 2012 Farm Bill negotiations will greatly impact future energy-related programming and funding opportunities from this office.*

The **Biomass Research and Development Initiative (BRDI)**, a joint research effort between DOE and USDA NIFA’s program, aims to support the production of biofuels, bioenergy, and high-value biobased products from a variety of biomass sources. This initiative funds a balanced portfolio of research in biomass feedstocks and conversion technologies that will help increase the availability of alternative renewable fuels and biobased products to diversify the nation’s energy resources. The program received \$40 million for FY12 and the solicitation typically opens in the spring.

The **Office of Rural Development (RD)** assists rural small businesses and agricultural producers by providing financial and technical assistance. The office received \$2.25 billion in funding for FY12, much of which will fund small businesses through the **Rural Business and Cooperative Service (RBS)**. The two primary programs for 2012 include:

Program Name	2012 Budget (\$M)	Change from 2011 (\$M)	Program Description
Section 9007 – Rural Energy for America (REAP)	Loans: \$48 Grants: \$12.5	Decreased by two-thirds	REAP provides feasibility study grants, renewable energy or energy efficiency system grants, and loan guarantees to purchase renewable energy systems and/or conduct energy efficiency improvements. The program opened for new proposals in January. <sup>4</sup>
Business and Industry (B&I) Loan Guarantee Program	\$823 million in loan authority	Reduced by \$223 million due to rate subsidy changes	The B&I loan guarantee program remains the largest in the RBS division. B&I loan guarantees provide protection against loan losses so that lenders are willing to extend credit to establish, expand, or modernize rural businesses. Funding in the B&I program will focus on supporting high-priority areas of the administration, such as regional innovation and renewable energy.

<sup>4</sup> See WSGR Alert, “Applications Now Being Accepted for Key USDA Renewable Energy and Energy Efficiency Program,” at <http://www.wsgr.com/WSGR/Display.aspx?SectionName=publications/PDFSearch/wsgralert-USDA-renewable-energy.htm>.



## Small Business Innovation Research

The NDAA for 2012 contains several important provisions related to Small Business Innovation Research (SBIR) programs. In addition to reauthorizing the SBIR program for six years, it requires SBIR agencies to increase the percentage of their budget that is allocated to SBIR awards from 2.5 percent to 3.2 percent. For most agencies, this slight increase translates into millions of additional dollars tagged for small businesses. The maximum threshold for awards also was increased as part of the NDAA reauthorization: Phase I award ceiling levels will increase by \$50,000 to \$150,000, and Phase II award ceilings will increase by \$250,000 to \$1 million.

**The NDAA also contains language that would permit small companies that are majority owned by venture capital firms to compete for up to 25 percent of SBIR funds at DOE and NSF, and up to 15 percent of SBIR funds at other agencies.** The Small Business Administration also is directed to promulgate a rulemaking within one year regarding eligibility for companies that are majority owned by venture capital firms.

In addition to SBIR programming, under the “Startup America” initiative, SBA is implementing an **Early Stage Small Business Innovation Corporation (SBIC)** licensing program for qualified investment funds. Over the next five years, SBA proposes committing \$1 billion of capital to venture capital funds that intend to invest in early-stage businesses. A venture capital fund that obtains an SBIC license and applies to SBA may obtain up to \$50 million of leverage, and SBA is expected to announce the first call for proposals in the first quarter of 2012.





## Trade and Export Finance Institutions

Trade finance institutions such as the **Export Import Bank (EX-IM)** and **Overseas Private Investment Corporation (OPIC)** are excellent sources of capital for companies seeking to access international markets. There are several distinctions between the programs and specific mission for each of these quasi-governmental agencies, but it is important to note that these programs are not dependent on annual appropriations; their loan and investment portfolios are well-established and diversified such that the agencies often return money to the Treasury each year.

*U.S. manufacturers that seek to sell their products abroad can obtain low-cost, government-guaranteed financing that facilitates and supports international sales.*

*Companies seeking to build their second, third, or fourth facility abroad should evaluate OPIC leverage.*

**EX-IM** is the official export credit agency of the United States, and provides a variety of financial products to assist companies in exporting their U.S.-manufactured goods and services to international markets. In 2011, EX-IM's renewable energy portfolio exceeded \$700 million. The bank approved multiple deals involving lines of working capital to U.S. manufacturers, as well as loans and loan guarantees that will support exports and project financing for solar, small wind, and wastewater treatment technologies. In financing overseas renewable power projects, as long as the components utilized in the project consist of U.S. exported goods, the overseas sponsor may obtain financing through EX-IM's loan or loan guarantee programs. EX-IM will continue to build its energy portfolio and investments in energy technology in 2012, particularly as the Obama administration's National Export Initiative continues to build momentum.

**OPIC** provides loans and loan guarantees to U.S. companies and investors seeking to expand operations or invest in entities overseas, respectively. Investments in the clean energy sector have become one of OPIC's top priorities. In 2011, the agency committed more than \$1 billion of capital to the sector, including more than 50 solar projects in Thailand, the first wind project on St. Kitts, and a commitment of \$500 million in leverage toward investment funds that will invest in the renewable energy sectors in Asia and Africa. Small and medium-sized enterprises are eligible for direct loans of up to \$250 million (eliminating the need to find a third-party lender). The application process is streamlined in a manner that facilitates agency feedback prior to a company expending significant time and resources in pursuing financing.

For more information related to the specific programs at OPIC and EX-IM, please see the following WSGR publications:

**OPIC:** <http://www.wsgr.com/PDFSearch/overseas-private-investment-corporation.pdf>

**Export Import Bank:** <http://www.wsgr.com/PDFSearch/export-import-bank-financing-programs.pdf>