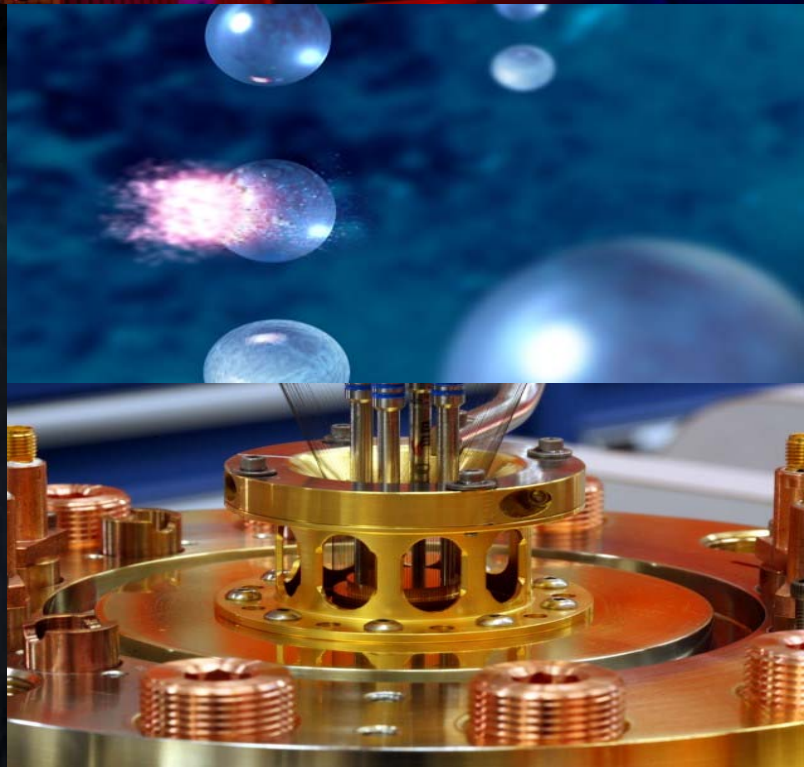


Fiscal Year 2014

# Summary of Performance and Financial Information



U.S. DEPARTMENT OF  
**ENERGY**

## Agency Reporting

The Reports Consolidation Act of 2000 authorizes federal agencies, with concurrence from the Office of Management and Budget, to consolidate various reports in order to provide performance, financial, and related information in a more meaningful and useful format. The Department of Energy has chosen alternative reporting to the consolidated Performance and Accountability Report for fiscal year 2014, and instead produces an *Agency Financial Report*, an *Annual Performance Report*, and a *Summary of Performance and Financial Information*, pursuant to the OMB Circular A-136. These reports are located on the following website:

[www.energy.gov/about-us/budget-performance.htm](http://www.energy.gov/about-us/budget-performance.htm)

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# Introduction

This report, the U.S. Department of Energy's (DOE) *Fiscal Year 2014 Summary of Performance and Financial Information*, provides key performance and financial information that demonstrates DOE's commitment to enhance America's security and economic growth through transformative science, technology innovation, and market solutions to meet energy, nuclear security, and environmental challenges.

The [DOE Strategic Plan](#) released in April 2014 provides a roadmap for DOE's work by establishing three broad strategic goals: (1) *Science and Energy* – advance foundational science, innovate energy technologies, and inform data driven policies that enhance U.S. economic growth and job creation, energy security, and environmental quality, with emphasis on implementation of the President's Climate Action Plan to mitigate the risks of and enhance resilience against climate change; (2) *Nuclear Security* – strengthen national security by maintaining and modernizing the nuclear stockpile and nuclear security infrastructure, reducing global nuclear threats, providing for nuclear propulsion, improving physical and cybersecurity, and strengthening key science, technology, and engineering capabilities; and (3) *Management and Performance* – position DOE to meet the challenges of the 21st century and the nation's Manhattan Project and Cold War legacy responsibilities by employing effective management and refining operational and support capabilities to pursue departmental missions.

Progress was made in achieving each of these goals in FY 2014 through continued investments in scientific research, renewable energy, energy efficiency, nuclear security, and environmental cleanup. For example, DOE is supporting implementation of the President's [Climate Action Plan](#) to cut carbon pollution through work in mitigation, adaptation, and international engagement. A major milestone was reached through the successful capture of more than 1 million metric tons of carbon dioxide at the hydrogen-production facility in Port Arthur, Texas. In addition, seven new efficiency standards were issued in 2014. These new rules, along with the full set of “building and equipment” standards to be issued by 2016 under the plan will reduce carbon pollution by at least 3 billion metric tons by 2030. Another part of the climate plan is the Quadrennial Energy Review (QER) that focuses on energy infrastructure and identifies the threats, risks, and opportunities for U.S. energy and climate security. The Department held thirteen QER meetings across the country and one in Canada.

The Department also took important steps in FY 2014 to make up to \$40 billion in loans and loan guarantees available to accelerate deployment of innovative clean energy projects and advanced vehicle manufacturing in the United States. Specifically, two new solicitations were issued and were accepting applications for up to \$8 billion in loan guarantees for Advanced Fossil Energy Projects and as much as \$4 billion in loan guarantees for Renewable Energy and Efficient Energy Projects. DOE announced key improvements to help deploy \$16 billion in remaining loan authority to support domestic manufacturing of fuel-efficient vehicles and components. A draft solicitation was issued that if finalized, would provide up to \$12.6 billion in loan guarantees to support Advanced Nuclear Energy Projects. On the energy technology front, DOE laboratories created a new class of highly efficient fuel cell catalysts; and advances were achieved in the efficiency of solar technology, vehicle batteries, and energy use in buildings.

Efforts to enhance nuclear security around the world include the last shipment of enriched uranium converted from Russian nuclear warheads to the United States to fuel nuclear power plants; development of a new method for analyzing airborne radiological monitoring data in coordination with the Japanese government; and deployment of a Global Positioning System IIF navigation satellite and a Global Burst Detector designed to detect, identify, and precisely locate nuclear explosions. Significant environmental cleanup achievements include the cleanout and demolition of the last reactor support facility at the Hanford site in Washington State; the demolition of the K-25 gaseous diffusion building in Oak Ridge, Tennessee; and the demolition of the last inactive facility at the Paducah Gaseous Diffusion Plant in Kentucky.

# DOE at a Glance

## Mission

Enhance U.S. security and economic growth through transformative science, technology innovation, and market solutions to meet our energy, nuclear security, and environmental challenges

## Strategic Goals

1. *Science and Energy* – Advance foundational science, innovative energy technologies, and inform data driven policies that enhance U.S. economic growth and job creation, energy security, and environmental quality, with emphasis on implementation of the President’s Climate Action Plan to mitigate the risks of and enhance resilience against climate change
2. *Nuclear Security* – Strengthen national security by maintaining and modernizing the nuclear stockpile and nuclear security infrastructure, reducing global nuclear threats, providing for nuclear propulsion, improving physical and cybersecurity, and strengthening key science, technology, and engineering capabilities
3. *Management and Performance* – Position the Department of Energy to meet the challenges of the 21st century and the nation’s Manhattan Project and Cold War legacy responsibilities by employing effective management and refining operational and support capabilities to pursue departmental missions

## Organization

Three Under Secretaries manage the core functions that carry out the DOE mission with significant cross-cutting work spanning across the enterprise. The DOE enterprise is comprised of approximately 14,000 federal employees and over 90,000 contractor employees at the Department’s headquarters in Washington, D.C., and at 85 field locations. DOE operates a nationwide system of 17 national laboratories that provides world-class scientific, technological, and engineering capabilities, including the operation of national scientific user facilities used by over 29,000 researchers from academia, government, and industry. The Department’s organizational chart is located at: <http://energy.gov/about-us/organization-chart>. Offices, laboratories, and facilities are listed at: <http://energy.gov/offices>.

## Performance

	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014
Targets Met	273	165	142	127	138
Targets Not Met	65	25	27	24	31
Results Unknown	6	1	0	0	1
<i>Total Number of Measures</i>	<i>344</i>	<i>191</i>	<i>169</i>	<i>151</i>	<i>170</i>
<i>Share Met</i>	<i>79%</i>	<i>86%</i>	<i>84%</i>	<i>84%</i>	<i>81%</i>

## Financials

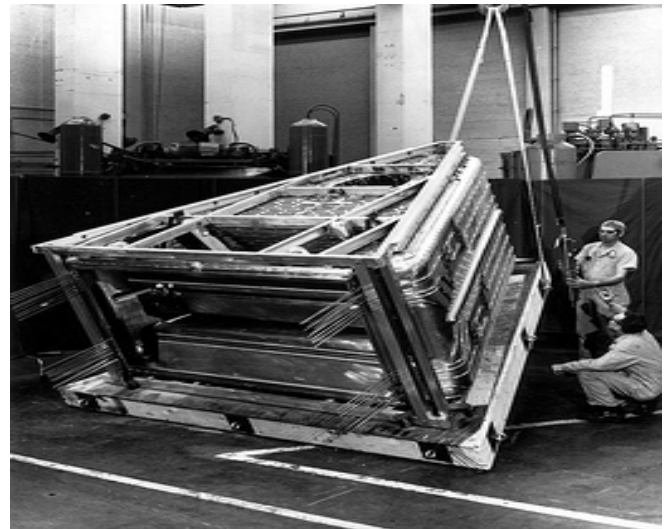
(dollars in billions)	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014
Total Assets	\$ 181.7	\$ 182.0	\$ 180.9	\$ 179.9	\$ 181.1
Total Liabilities	\$ 355.6	\$ 371.4	\$ 398.6	\$ 404.5	\$ 427.1
Net Cost of Operations	\$ 23.8	\$ 44.0	\$ 55.4	\$ 33.6	\$ 51.5
Total Budgetary Resources	\$ 66.7	\$ 63.0	\$ 51.3	\$ 48.9	\$ 53.9
Net Agency Outlays	\$ 32.0	\$ 34.7	\$ 37.2	\$ 27.2	\$ 24.6
<i>Audit Opinion</i>	<i>unqualified</i>	<i>unqualified</i>	<i>unqualified</i>	<i>unmodified</i>	<i>unmodified</i>

## DOE History

The Department of Energy has one of the richest and most diverse histories in the Federal Government, with its lineage tracing back to the Manhattan Project and the race to develop the atomic bomb during World War II. Following that war, Congress created the Atomic Energy Commission (Commission) in 1946 to oversee the sprawling nuclear scientific and industrial complex supporting the Manhattan Project and to maintain civilian government control over atomic research and development (R&D). During the early Cold War years, the Commission focused on designing and producing nuclear weapons and developing nuclear reactors for naval propulsion. The creation of the Commission ended the exclusive Government use of the atom and began the growth of the commercial nuclear power industry, with the Commission having authority to regulate the new industry.

In response to changing needs and an extended energy crisis, the Congress passed the Department of Energy Organization Act in 1977, creating the Department of Energy. That legislation brought together for the first time, not only most of the Government's energy programs, but also science and technology programs and defense responsibilities that included the design, construction and testing of nuclear weapons. The Department provided the framework for a comprehensive and balanced national energy plan by coordinating and administering the energy functions of the federal Government. The Department undertook responsibility for long-term, high-risk R&D of energy technology, federal power marketing, some energy conservation activities, the nuclear weapons programs, some energy regulatory programs, and a central energy data collection and analysis program.

Over its history, the Department has shifted its emphasis and focus as the energy and security needs of the nation have changed.



Oak Ridge Y-12 Plant craftsmen pose with one of two reactor units made by the plant for Indiana University's cyclotron facility. (circa 1975)



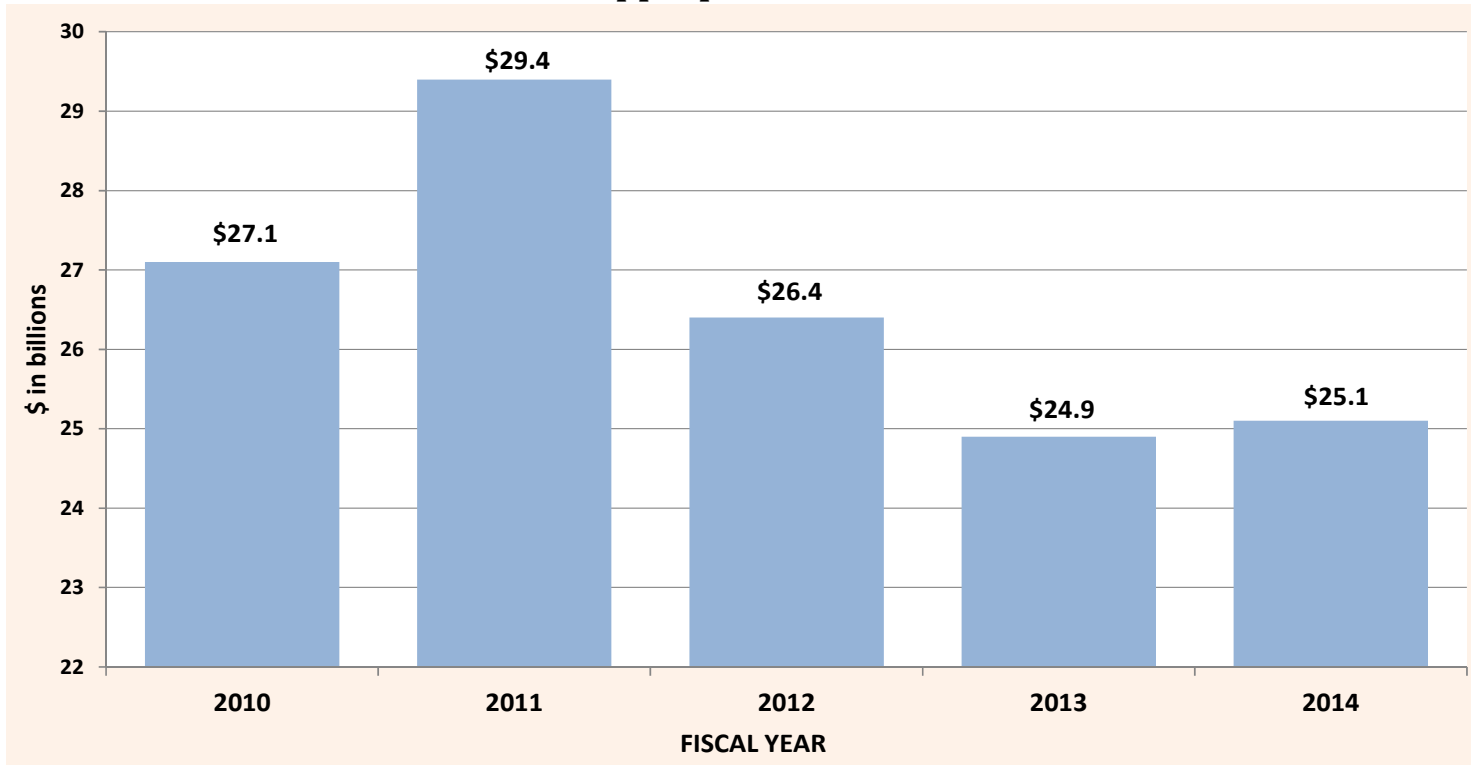
The Ivanpah Solar Energy Generating System, located in the Mojave Desert, is the largest solar thermal energy facility in the world. DOE provided a \$1.6 billion loan guarantee to the project. (Photo courtesy of Gilles Mingasson/Getty Images for Bechtel)



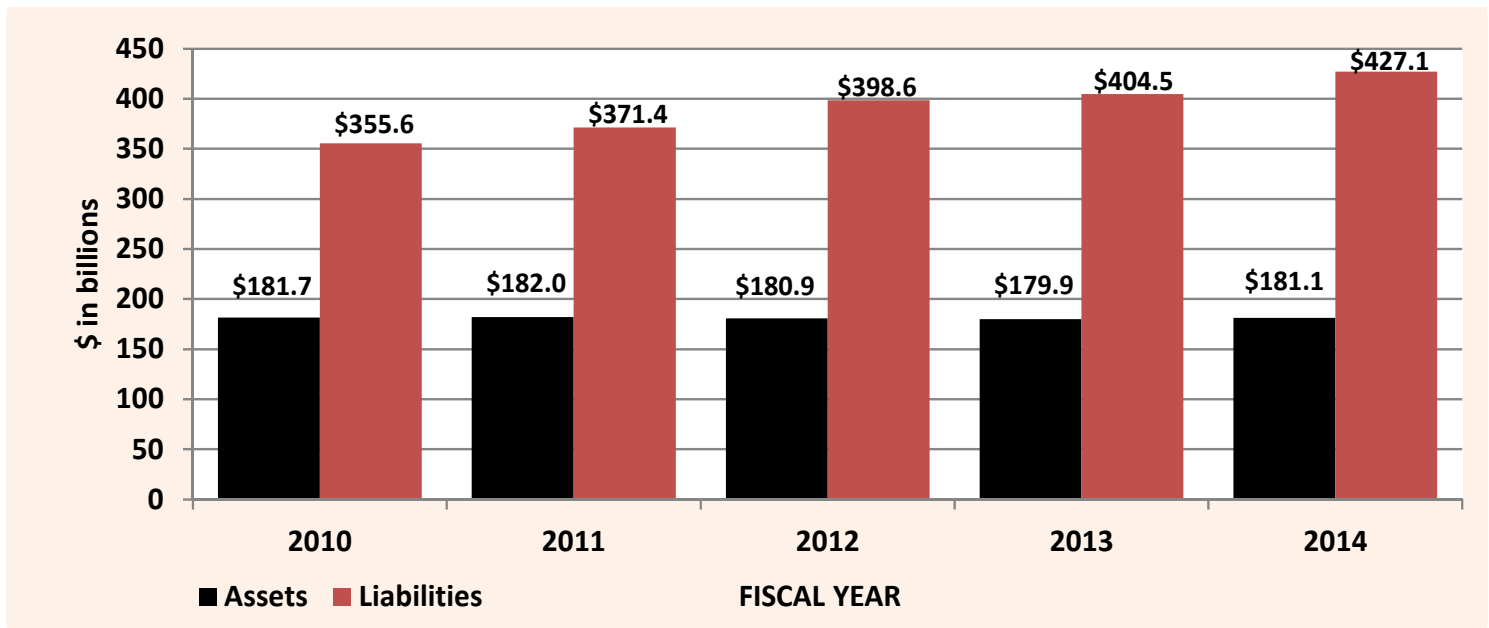
The Dunlite turbine, with 3 blades and a 12-foot rotor diameter, was tested at Rocky Flats. (circa 1977)

# Financial Resources

## Appropriations

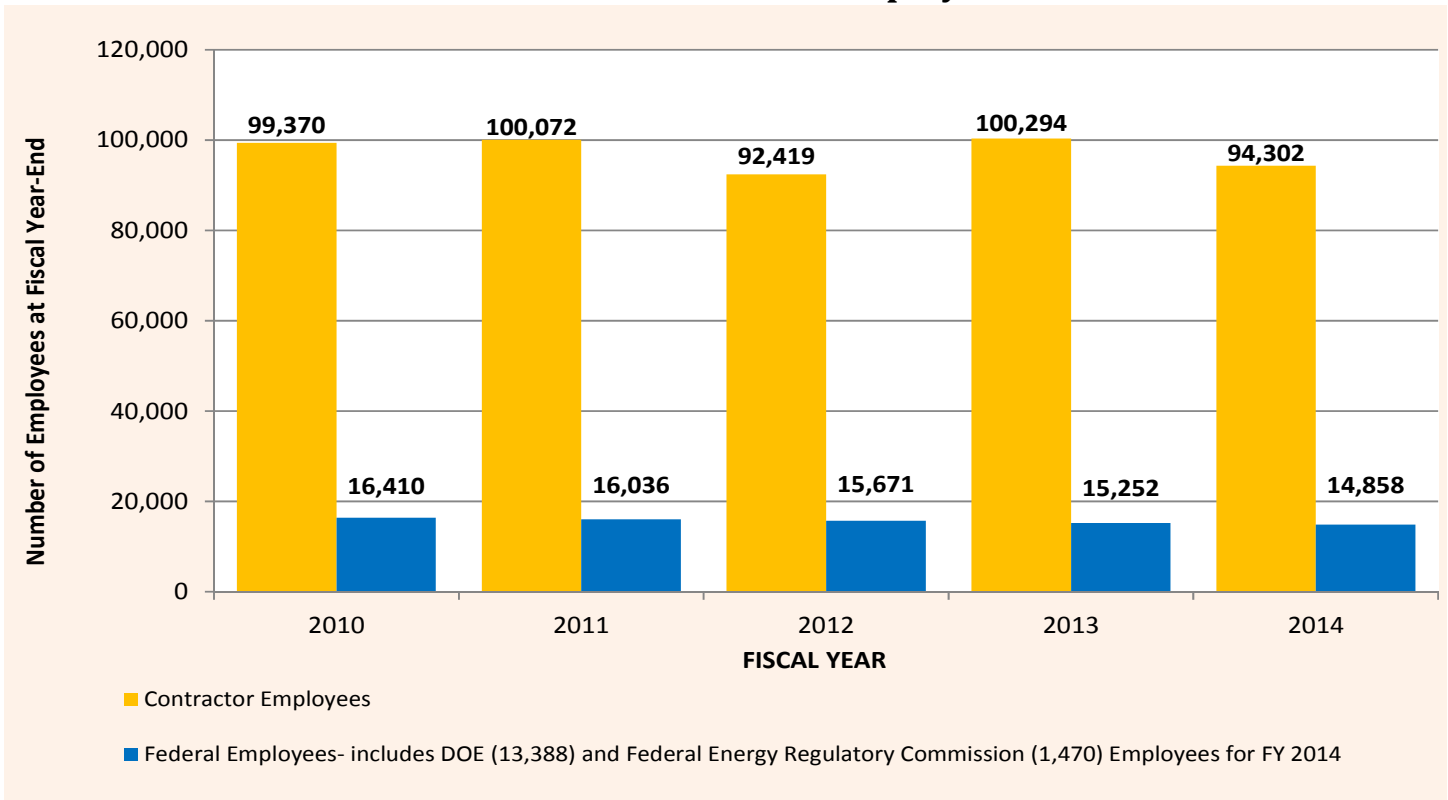


## Assets and Liabilities



# Human Capital Resources

## Federal and Contractor Employees



# Financial Management Report Card

COMPLIANCE		REQUIREMENT OR INITIATIVE	SUPPORTING INDICATORS (see page references for more detail)
YES	NO		
<input checked="" type="checkbox"/>		Government Management Reform Act –Financial Statement Audit	Unmodified Audit Opinion (see pages 106-116)
<input checked="" type="checkbox"/>		Federal Managers’ Financial Integrity Act – Internal Controls (Section II) Financial Systems (Section IV)	No Material Weaknesses (Section II) (see pages 25-26 and 122) Financial Systems generally conform to (Section IV) requirements and no FISMA significant deficiencies identified (see pages 25-26 and 122)
<input checked="" type="checkbox"/>		OMB Circular A-123, Appendix A	No Material Weaknesses (see pages 25-26 and 122)
<input checked="" type="checkbox"/>		Federal Financial Management Improvement Act	Substantially comply with federal financial management system requirements (see pages 25-26 and 122)
<input checked="" type="checkbox"/>		Federal Information Security Management Act (FISMA)	Substantially comply with FISMA requirements as evidenced by annual FISMA reporting data (see pages 25-26 and 122)
<input checked="" type="checkbox"/>		Improper Payments Information Act, as amended by the Improper Payments Elimination & Recovery Act and the Improper Payments Elimination and Recovery Improvement Act	<1% overall Erroneous Payment Rate and not susceptible to significant improper payments (see pages 124-125)



# Strategic Plan and Program Performance

The narrative below discusses FY 2014 results and outcomes for DOE programs as aligned with the strategic goals presented in the [2014-18 DOE Strategic Plan](#). A detailed discussion of results for the Department's FY 2014 performance goals, assessment methodologies, metrics, external reviews, and documentation of performance data will be presented in the *FY 2014 DOE Annual Performance Report*. Additional performance information is available at <http://energy.gov/about-us/budget-performance>.

## Goal 1: Science and Energy

*Advance foundational science, innovate energy technologies, and inform data driven policies that enhance U.S. economic growth and job creation, energy security, and environmental quality, with emphasis on implementation of the President's Climate Action Plan to mitigate the risks of and enhance resilience against climate change*

### Objective 1

Advance the goals and objectives in the President's Climate Action Plan by supporting prudent development, deployment, and efficient use of "all of the above" energy resources that also create new jobs and industries

### Objective 2

Support a more economically competitive, environmentally responsible, secure and resilient U.S. energy infrastructure

### Objective 3

Deliver the scientific discoveries and major scientific tools that transform our understanding of nature and strengthen the connection between advances in fundamental science and technology innovation

### Contributing Programs

Advanced Research Projects Agency-Energy, Electricity Delivery and Energy Reliability, Energy Efficiency and Renewable Energy, Energy Information Administration, Energy Policy and Systems Analysis, Fossil Energy, Indian Energy Policy and Programs, International Affairs, Loan Programs, Nuclear Energy, Power Marketing Administrations, Science, Strategic Petroleum Reserve

DOE leads the nation in the transformational research, development, demonstration, and deployment of an extensive range of clean energy and efficiency technologies, supporting the President's Climate Action Plan and an "all of the above" energy strategy. DOE identifies and promotes advances in fundamental and applied sciences; translates cutting-edge inventions into technological innovations; and accelerates transformational technological advances in energy areas that industry by itself is not likely to undertake because of technical or financial risk. DOE also leads national efforts to develop technologies to modernize the electricity grid, enhance the security and resilience of energy infrastructure, and expedite recovery from energy supply disruptions. DOE also conducts robust, integrated policy analysis and regional engagement to support the nation's energy agenda. DOE is the largest federal sponsor of basic research in the physical sciences. Below are examples of FY 2014 program results and outcomes from DOE investments in Science and Energy.

**Carbon Capture Technology:** In partnership with Air Products and Chemicals, Inc., DOE reached a major milestone, successfully capturing more than 1 million metric tons of carbon dioxide (CO<sub>2</sub>) at the hydrogen-production facility in Port Arthur, Texas. Using an innovative technology called vacuum swing adsorption, the project captures more than 90% of the CO<sub>2</sub> from the

product stream of two commercial-scale steam methane reformers that would otherwise be emitted into the atmosphere. In addition to the secure storage, captured carbon from the project will be used to increase oil production from nearby fields that were once thought to be exhausted.

**Climate Model:** A DOE scientist at Lawrence Berkeley National Laboratory developed a simple model for vegetation carbon response that predicts how a given climate for a region would evolve over time. This "climate analogue" method tracks the change in the most statistically similar climate at every location in an Earth System Model over an interval of time and recalculates the carbon flux within the models participating in the project.

**Pantex Wind Farm Completion:** Building on President Obama's Climate Action Plan, which calls for steady, responsible steps to reduce carbon pollution, DOE completed the nation's largest federally owned wind farm at the Pantex Plant near Amarillo, Texas. Pantex will now be powered largely by the Pantex Renewable Energy Project, an 11.5 megawatt, five-turbine wind farm that is on 1,500 acres of DOE-owned land adjacent to the Pantex Plant. Construction of the wind farm was completed in June 2014 under an Energy Savings Performance Contract, which resulted in no upfront cost to the taxpayers. The

contractor will be paid directly from the value of guaranteed energy savings generated by the turbines, an amount expected to average \$2.8 million annually. This wind farm will generate approximately 47 million kilowatthours of electricity annually, which is enough to power nearly 3,500 homes. It will reduce CO<sub>2</sub> emissions by over 35,000 metric tons per year, the equivalent of removing 7,200 cars from the road each year or planting 850,000 trees.

**Water-Energy Nexus:** A report was released in July 2014 that frames an integrated challenge and opportunity around the water-energy nexus. Present day water and energy systems are tightly intertwined. Water is used in all phases of energy production and electricity generation. Energy is required to extract, convey, and deliver water of appropriate quality for diverse human uses. Recent developments have focused national attention on these connections. When severe drought affected more than a third of the United States in 2012, limited water availability constrained the operation of some power plants and other energy production activities. Hurricane Sandy demonstrated the compounding ramifications of vital water infrastructure losing power. The recent boom in domestic unconventional oil and gas development has added complexity to the national dialogue on the relationship between energy and water resources.

**Fuel Cell Catalysts:** Researchers from DOE's Berkeley and Argonne National Laboratories developed a new class of fuel cell catalysts that use roughly 85% less platinum and have more than 30 times the catalytic activity than conventional catalysts. Scientists created a dodecahedron nanoframe – a 3-dimensional, 12-sided hollow structure smaller in diameter than a human hair. In addition to lowering catalyst costs – and thereby the overall cost of fuel cells – the new nanoframe catalyst produces power more efficiently by extracting more electrical energy during the electrochemical reaction. This means that manufacturers could reduce the size and weight of fuel cells while achieving the same – or better – performance, potentially making fuel cells even cheaper for consumers. While still in the very early stages of research, these new catalysts hold strong promise for fuel cell vehicles – not to mention other fuel cell applications like stationary and portable power.

**Solar Power Efficiency:** A new approach to harvesting solar energy could improve efficiency by using sunlight to heat a high-temperature material whose infrared radiation would then be collected by a conventional photovoltaic cell. This technique could also make it easier to store the energy for later use. This work was performed as part of the MIT-led Solid-State Solar-Thermal Energy Conversion Center, one of 46 Energy Frontier Research Centers led by DOE. A conventional silicon-based solar cell does not take advantage of all the photons. That's because converting the energy of a photon into electricity requires that the photon's energy level match that of a characteristic of the photovoltaic material called a bandgap. Silicon's bandgap

responds to many wavelengths of light, but misses many others.

**New Solar Capacity:** The Department provided a \$967 million loan guarantee to the Agua Caliente solar project, owned by NRG Energy in 2011. The project came online in early 2014 and is now the world's largest photovoltaic power plant. This facility has the capacity to generate 290 megawatts of solar electricity in Yuma County, Arizona. The completion of Agua Caliente represents a series of recent achievements in bringing large-scale solar energy to Americans. In October 2013, supported in part by a \$1.4 billion loan guarantee, the Solana concentrating solar power plant started delivering "night-time solar" to Arizona homes and businesses as the world's largest solar facility with thermal storage. In February 2014, the Secretary of Energy attended the dedication of Ivanpah, the world's largest concentrating solar power (CSP) plant, which was built with the help of a \$1.6 billion DOE loan guarantee. In early 2014, the 250-megawatt Genesis CSP project, which received an \$852 million loan guarantee by DOE, came online in Riverside County, California.

**Advanced Energy Projects:** Through DOE's Advanced Research Projects Agency – Energy (ARPA-E) innovative projects are being developed that will transform the way Americans use and produce energy. Over the past 5 years, 22 ARPA-E projects have attracted more than \$625 million in private-sector follow-on funding after an initial investment of approximately \$95 million. At least 24 ARPA-E project teams have formed new companies to advance their technologies and more than 16 ARPA-E projects have partnered with other Government agencies for further development. During 2014, ARPA-E launched focused programs to develop transformational electrochemical technologies to enable low-cost distributed power generation; low-cost highly sensitive systems to detect and measure methane; localized heating and cooling devices to expand temperature ranges within buildings; low-cost tools to aid in the future development of fusion power; highly efficient and scalable dry-cooling technologies for thermoelectric power plants; and technologies to rapidly accelerate biomass yield gains through automated, predictive and systems-level approaches to biofuel crop breeding.

**Energy Efficiency Standards:** New energy efficiency standards for furnace fans were issued in June 2014. These new standards will help reduce harmful carbon pollution by up to 34 million metric tons – equivalent to the annual electricity use of 4.7 million homes – and save over \$9 billion in home electricity bills through 2030.

New energy efficiency standards were also issued during 2014 for electric motors and walk-in coolers and freezers. These standards combined will help reduce harmful carbon pollution by up to 158 million metric tons – equivalent to the annual electricity use of more than 21 million homes – and save businesses \$26 billion on utility bills through 2030.

**Building Upgrades:** The Department's Better Buildings Neighborhood Program has helped more than 40 state and local governments upgrade more than 100,000 buildings and save families and businesses over \$730 million on utility bills. Over the last 4 years, these state and local governments have partnered with utilities, nonprofit organizations, financial institutions and building efficiency experts to upgrade homes and other buildings. The \$508 million federal investment leveraged another \$1 billion in other public and private sector funding and supported more than \$740 million in direct invoices to local workers for energy assessments and upgrades they performed. Local direct investments and savings will continue to grow as leveraged funds are used to finance future energy efficiency project upgrades. More than 1,400 home improvement contractors completed upgrades for homeowners. Approximately 30 programs out of the original 40 are continuing without federal support, including programs in Oregon, Maine, Virginia, and Florida.

**Vehicle Battery Research:** Researchers at DOE's Lawrence Berkeley National Laboratory have demonstrated in the laboratory a lithium-sulfur battery that has more than twice the "specific energy"—or energy density per weight—of lithium-ion batteries, and that lasts for more than 1,500 cycles of charge-discharge with minimal decay of the battery's capacity. This is the longest cycle life reported so far for any lithium-sulfur battery. These cells may provide a substantial opportunity for the development of zero-emission vehicles with a driving range similar to that of gasoline vehicles.

**Biofuels Research:** Scientists at DOE's Brookhaven National Laboratory have identified the key genes required for oil production and accumulation in plant leaves and other vegetative plant tissues. Enhancing expression of these genes resulted in vastly increased oil content in leaves, the most abundant sources of plant biomass. The research is described in two recent publications in *The Plant Journal* and *Plant Cell*. Plants do not normally store much oil in their leaves and other vegetative tissues. In nature, oil storage is the job of seeds, where the energy-dense compounds provide nourishment for developing plant embryos. The idea behind these studies was to find a way to "reprogram" plants to store oil in their more abundant forms of biomass.

**New Biorefinery Facility:** Scientists at Project LIBERTY, the nation's first commercial-scale cellulosic ethanol plant to use corn waste as a feedstock, began production in

September 2014. Once operating at full, commercial-scale, the biorefinery in Emmetsburg, Iowa, will produce 25 million gallons of cellulosic ethanol per year – enough to avoid approximately 210,000 tons of CO<sub>2</sub> emissions annually. Developed with the support of approximately \$100 million in investments and research from DOE, the facility uses biochemical conversion technologies such as yeast and enzymes to convert cellulosic biomass into transportation fuels. Project LIBERTY will produce cellulosic ethanol from corncobs, leaves, husks, and corn stalk harvested by local farmers located within a 30 to 40 mile radius of the plant, producing 2,600,000 million Btu per year from the anaerobic digester and solid fuel boiler to power the entire facility as well as a co-located existing corn ethanol plant. This is enough to power about 70,000 American homes for a year.

**Energy Information:** The Department initiated a new monthly Drilling Productivity Report, which takes into account technological changes that have led to rapid increases in U.S. oil and gas production and contains metrics intended to be more informative than traditional indicators of future production. First released in October 2013, the report provides region-specific insights into oil and natural gas drilling rig efficiency, new well productivity, existing well decline rates, and overall oil and natural gas production trends. The six regions covered account for 90% of domestic oil production growth in 2011-12 and virtually all domestic natural gas production growth.

Preliminary data from the 2012 Commercial Buildings Energy Consumption Survey (CBECS) was released in June 2014. This survey, which is collected on a quadrennial basis, provides the only statistically reliable source of information on energy consumption, expenditures, and end uses in U.S. commercial buildings and serves as a basis for benchmarking and performance measurement for energy efficiency programs. The 2012 survey was the largest active field collection in CBECS history, with more than 200 trained interviewers visiting about 7,000 commercial buildings to collect building characteristics and consumption data through in-person interviews. This initial release is the first of many reports that will be published for the 2012 CBECS. The preliminary data provide a first look at the building stock and the attributes that drive commercial energy use, while subsequent releases will show more detailed characteristics and cross-tabulations among key energy categories.

## Goal 2: Nuclear Security

*Strengthen national security by maintaining and modernizing the nuclear stockpile and nuclear security infrastructure, reducing global nuclear threats, providing for nuclear propulsion, improving physical and cybersecurity, and strengthening key science, technology, and engineering capabilities*

### Objective 4

Maintain the safety, security, and effectiveness of the nation's nuclear deterrent without nuclear testing

### Objective 5

Strengthen key science, technology, and engineering capabilities and modernize the national security infrastructure

### Objective 6

Reduce global nuclear security threats

### Objective 7

Provide safe and effective integrated nuclear propulsion systems for the U.S. Navy

### Contributing Programs

National Nuclear Security Administration, Intelligence and Counterintelligence, International Affairs

The DOE national security mission supports nuclear security, intelligence and counterintelligence operations, and related national security needs. The President's 2010 National Security Strategy, the Nuclear Posture Review (NPR), and the ratification of the New Strategic Arms Reduction Treaty underscored the importance of the DOE's nuclear mission, and renewed the mandate for DOE to maintain a safe, secure, and reliable stockpile for as long as nuclear weapons exist. The NPR presented a path to reduce global nuclear security threats while permitting access to peaceful nuclear power for nations that respect the international nonproliferation regime. DOE advances the President's vision to move toward a world free of nuclear weapons by both dismantling retired weapons and improving global stability through increased transparency and confidence building measures.

Through the National Nuclear Security Administration's (NNSA) nuclear security enterprise, DOE plays a central role in sustaining a safe, secure, and effective nuclear deterrent and combating proliferation and nuclear terrorism. The science, technology, engineering and manufacturing capabilities resident in the nuclear security enterprise underpin our ability to conduct stockpile stewardship and solve the technical challenges of verifying treaty compliance, combating nuclear terrorism and proliferation, and guarding against the threat posed by nuclear technological surprise. For example, the unique knowledge gained in nuclear weapons design developed to support the U.S. stockpile plays a critical role in the nation's ability to understand strategic threats worldwide. DOE is responsible for providing the design, development, and operational support required to provide militarily effective naval nuclear propulsion plants and ensure their safe, reliable and long-lived operations.

By providing a modernized, responsive infrastructure, DOE prepares the nation for a range of potential future nuclear deterrence challenges. With its extensive science

and technology capabilities and nuclear expertise, DOE provides support to defense, homeland security, and intelligence missions, primarily through DOE's system of national laboratories and sites. DOE also provides expert knowledge and operational capabilities for physical security, classification, emergency preparedness and response, nuclear forensics and cybersecurity. Below are examples of FY 2014 program results and outcomes from DOE investments in national security.

**Reducing Global Nuclear Dangers:** NNSA efforts to reduce global nuclear dangers include removing all HEU from Hungary. In November 2013, NNSA's Global Threat Reduction Initiative (GTRI) and Hungary's Atomic Energy Research Institute, in a joint operation with the Russian Federation, announced the successful removal of 49.2 kilograms of HEU from the Hungary's Budapest Research Reactor. Shipments also occurred from Poland, Kazakhstan, Italy, Belgium, and Canada. As of September 30, 2014, GTRI has removed or confirmed the disposition of a cumulative total of 5,210 kilograms of nuclear material and eliminated all HEU from 26 countries and Taiwan. In July 2014, the NNSA's Global Threat Reduction Initiative completed the conversion of Russia's Argus research reactor in cooperation with Rosatom and the Kurchatov Institute. This was the first conversion of a Russian research reactor from HEU to LEU fuel.

**Training on Insider Threats:** NNSA supported the third International Atomic Energy Agency (IAEA) International Training Course held in Tokai, Japan, on the Preventive and Protective Measures Against Insider Threats. This course was held in April 2014 and included case studies of actual insider events and multiple practical exercises that teach measures that can be taken to prevent and mitigate the threat of the insider at nuclear facilities. The course was attended by 37 participants from 20 countries including Brazil, Bulgaria, Egypt, Ghana, Hungary, India, Indonesia, Japan, Jordan, Lithuania, Malaysia, Mexico,

Pakistan, Romania, Serbia, South Africa, Thailand, Turkey, Ukraine, and Vietnam. Six instructors representing Finland, Japan, Pakistan, the United Kingdom, and the United States conducted the course for the IAEA. The participants consisted of regulators, operators, physicists, and engineers, representing many disciplines such as Physical Security Systems; Cyber Security; and Material Control and Accounting.

**Preventing Illicit Trafficking:** NNSA and the government of Argentina recently completed the transition of the radiation detection systems located at the Port of Buenos Aires and Port of Dock Sud. This event was commemorated at an official signing in Argentina's capital of Buenos Aires in April 2014. The transition reflects the strong commitment of Argentina's government to deter, detect, and interdict illicit or smuggled nuclear and other radioactive materials in cargo containers shipped through the ports. Argentina's Administracion Federal de Ingresos Publicos International Affairs and Customs Divisions worked with NNSA's Second Line of Defense (SLD) program to implement and operate a tailored detection system designed to scan nearly 99% of cargo containers for dangerous nuclear and radiological materials at its seaport. Buenos Aires Customs has operated the system since late 2012 with support from the SLD program. During the 18-month transition period, SLD provided maintenance, spare parts, technical assistance, training, and advanced workshop opportunities in order to support Argentina's capacity to sustain the system. This work is an important part of NNSA's growing nuclear security cooperation within Latin America. NNSA is expanding its collaboration within the region to advance shared nuclear nonproliferation, safety, and security goals in areas such as nuclear security, border and port security, radioactive waste, and environmental management.

**Nuclear Detonation Detection:** In May 2014, with the support of the NNSA, a U.S. Air Force Delta IV rocket lifted off from Cape Canaveral. Hosted onboard was a GPS IIF navigation satellite and a Global Burst Detector (GBD) payload designed to detect, identify, and precisely locate nuclear explosions. The 300-pound GBD payload, supported by NNSA's Defense Nuclear Nonproliferation Research and Development Program and built by Sandia and Los Alamos National Laboratories, is the latest space-based sensor addition to the U.S. Nuclear Detonation Detection System, which monitors compliance with the international Limited Test Ban Treaty. The treaty, signed by 108 countries, prohibits nuclear testing in the atmosphere, outer space, and underwater. The launch is another milestone in the successful, 50-year partnership between the U.S. Air Force, the NNSA, and the national laboratories, which will continue to work together to employ advanced technologies for nuclear detonation detection instruments that improve system performance while reducing overall cost. Future systems will collect more data, process information faster, and improve discrimination, requiring fewer platforms to monitor the globe for nuclear events.

**Nonproliferation and Arms Control Verification:** In 2014, NNSA established two new university-led consortia to advance technologies for nonproliferation and nuclear arms control verification. The consortia are funded as 5-year grants and are viewed as sizeable, long-term investments. The Consortium for Nonproliferation Enabling Capabilities is led by North Carolina State University and focuses on simulation capabilities, algorithms, and modeling. The Consortium for Verification Technology is led by the University of Michigan and focuses on technologies that can support nuclear arms control commitments. These two new consortia join the Nuclear Science and Security Consortium, which was established in 2011 and is led by University of California, Berkeley, to round out an R&D university program that advances technologies in nuclear nonproliferation that is linked with, and complementary to, R&D in the national laboratories.

**Nuclear Forensics Workshop:** NNSA completed a nuclear forensics workshop at the Pacific Northwest National Laboratory in Richland, Washington. Twenty-six participants from 10 countries participated in the event, which was jointly sponsored with the International Atomic Energy Agency and focused on tools to help law enforcement investigations of incidents in which nuclear or other radioactive material is found outside of regulatory control. Nuclear scientists, law enforcements officials, and forensic specialists from around the world came together for the international workshop. The participating countries were Algeria, Bulgaria, the Czech Republic, Indonesia, Malaysia, Mexico, Pakistan, Singapore, Thailand, and Vietnam.

**National Security Campus:** In August 2014, DOE and NNSA formally dedicated the new National Security Campus (NSC) in Kansas City, Missouri. The Kansas City Plant (KCP) was relocated from its home of 64 years, Bannister Federal Complex, a 70-year-old facility, to the NSC. The relocation safely and securely moved a wide range of equipment including tools weighing as little as six ounces to a milling machine weighing 87,000 pounds. Despite this major effort, the move was completed one month ahead of the original schedule and \$10 million under budget. The KCP manufactures or purchases 85% of the non-nuclear components that make up our nuclear weapons, and thus plays a huge role in keeping the nation's stockpile safe, secure, and effective. This dedication represents not only the successful execution of a major project, but also the replacement of badly aging infrastructure. One of NNSA's highest priorities is to provide safe and modern facilities for the highly skilled and dedicated workforce to accomplish the work that remains critical to the security of the United States.

**Strategic Nuclear Deterrent:** The W76-1 Life Extension Program (LEP) reached the 50% total-production mark and is ahead of schedule to complete production in 2019. Savannah River Site received 704 Tritium Producing Burnable Absorber Rods irradiated at Watts Bar nuclear

power plant to produce tritium critical for the readiness of the stockpile. NNSA production sites completed dismantlement and component disposition necessary to be on track to meet the goal of dismantling all weapons retired prior to 2009 by 2022.

Los Alamos and Sandia national laboratories successfully completed the first full-system mechanical environment test of the B61-12 as part of the NNSA's ongoing effort to refurbish the B61 nuclear bomb. This first full-system mechanical environment test is one of several critical milestones for the B61-12 LEP. The B61-12 LEP is an essential element of the U.S. strategic nuclear deterrent and of the United States' commitments to extended deterrence.

**Radiological Dose Assessment:** The NNSA and the Japan Atomic Energy Agency (JAEA) have developed a novel method for analyzing airborne radiological monitoring data. This new method has been used to perform a detailed study of survey data taken by the NNSA and JAEA in the months following the March 2011 radiological incident in Japan. Aerial surveys were employed in the region surrounding the stricken Fukushima Daiichi Nuclear Power Plant to cover the area impacted by the accident

quickly, thoroughly, and safely. This new analysis provides a complete map of Iodine-131 deposition – an important contributor to radiological dose.

**R&D Awards:** Three NNSA sites – Lawrence Livermore, Los Alamos, and Sandia National Laboratories – have received a total of nine R&D Magazine's 2014 R&D 100 Awards. The awards recognize a variety of technologies created by researchers, scientists, and engineers from throughout the nuclear security enterprise. Examples of discoveries include a noninvasive, real-time and accurate estimate of oil production for a given well, achieving measurement rates as high as 100 readings per second; and an anthrax detector cartridge, about the size of a credit card, that can detect anthrax through a microculture chamber.

## Goal 3: Management and Performance

*Position the Department of Energy to meet the challenges of the 21st century and the nation's Manhattan Project and Cold War legacy responsibilities by employing effective management and refining operational and support capabilities to pursue departmental missions*

### **Objective 8**

Continue cleanup of radioactive and chemical waste resulting from the Manhattan Project and Cold War activities

### **Objective 9**

Manage assets in a sustainable manner that supports the DOE mission

### **Objective 10**

Effectively manage projects, financial assistance agreements, contracts, and contractor performance

### **Objective 11**

Operate the DOE enterprise safely, securely, and efficiently

### **Objective 12**

Attract, manage, train, and retain the best federal workforce to meet future mission needs

### **Contributing Programs**

Congressional and Intergovernmental Affairs, Economic Impact and Diversity, EERE Sustainability, Enterprise Assessments, Environmental Management, Financial Management (CFO), General Counsel, Environment, Health, Safety and Security, Hearings and Appeals, Human Capital, Information Technology (CIO), Inspector General, Legacy Management, Management, Public Affairs

Attaining mission success requires a sustained commitment to performance-based management and expectations of excellence from DOE headquarters to every site office, service center, laboratory, and production facility. At the center of this goal is a highly qualified, capable, and flexible federal workforce that can execute the mission in a safe, secure, efficient, and sustainable manner. DOE cultivates a performance-based system that links work to meeting agency and Administration goals and achieves results. Management of research and development involves prioritization of those activities with the greatest potential and likelihood for impact. Research decisions are informed by rigorous peer reviews at the portfolio level and solicitation levels. A top priority has been to improve contract and project management across the DOE enterprise, along with vigilant protection of DOE's cyber networks. Below are examples of FY 2014 program results and outcomes from management investments.

**Hanford Site:** The Richland Operations Office recently completed the cleanup and demolition of the last reactor support facility as part of the River Corridor Closure Contract. Workers demolished the last structure at Hanford's 100 Area under its contract. The building was the 183-B Clearwell, an old water treatment facility for the B Reactor. Hanford's 100 Area is located along the banks of the Columbia River in Washington State, where nine former plutonium production reactors are located. They were built from 1943 through 1965 and were constructed next to the river because of an abundance of cooling water needed by the reactors during operation.

**K-25 Building:** The demolition of the K-25 gaseous diffusion building was completed in December 2013. The

contractor that took over the project in 2011 completed the demolition over one year ahead of schedule and approximately \$300 million under budget while maintaining strong safety standards. The K-25 building, located at the East Tennessee Technology Park formerly known as the Oak Ridge Gaseous Diffusion Plant, was built in 1943 as part of the Manhattan Project. At the time of the Manhattan Project, K-25 was the world's largest building under one roof. This building operated until 1964, producing enriched uranium for defense and commercial purposes. During the past decades, as the facility deteriorated, its demolition was considered among the highest priorities for the environmental cleanup program in Oak Ridge. With the demolition of the K-25 building, only two of the five original gaseous diffusion buildings remain.

**Property Transfer:** In May 2014, DOE transferred its 12th property, approximately 25 acres at the Heritage Center, to the Community Reuse Organization of East Tennessee (Community) for private sector use. Through 2014, eight of the properties which have been transferred to Community have been sold or optioned to private industry, saving DOE nearly \$6.5 million. Additionally, more than 200 acres of underutilized DOE property has been transferred to the Community and re-developed with more than 100,000-square-feet of new construction.

**Paducah Site:** Heavy equipment operators demolished the last of 32 inactive facilities at the Paducah Gaseous Diffusion Plant in Kentucky, the C-410 Feed Plant, ridding the site of a structure contaminated with asbestos and a low-level radioactive chemical compound called uranium hexafluoride (UF6). With an original footprint of almost five acres — roughly equivalent to four football fields —

the feed plant operated from 1957 to 1977 to produce UF<sub>6</sub> and fluorine.

**Mill Tailings:** DOE safely moved another million tons of uranium mill tailings from the Moab site in Utah under the Uranium Mill Tailings Remedial Action Project. This brings the total tailings shipped to an engineered disposal cell near Crescent Junction, Utah, to 7 million tons. The project is nearly 45% complete in relocating the 16-million-ton uranium mill tailings pile away from the Colorado River. In addition to tailings removal operations, the project is beginning the process of segregating and sizing debris from the former ore mill buildings that were buried in the southern corner of the pile.

**Information Technology:** As part of the administration's IT modernization effort, DOE's National Nuclear Security Administration (NNSA) has successfully built, tested, and installed a new enterprise-wide network connecting its Washington, D.C., headquarters, Albuquerque Site Office, and eight NNSA labs/sites to one another. This new network, aptly named the ONE NNSA Network, will enable improved communication, collaboration, and information sharing among the geographically dispersed Nuclear Security Enterprise. The new network lays the foundation and infrastructure necessary to implement more sophisticated application hosting capabilities, information sharing opportunities, and shared services.



# Analysis of Financial Statements

The Department's financial statements, as presented in the *FY 2014 DOE Agency Financial Report*, report the financial position and results of operations of the entity, pursuant to the requirements of 31 U.S.C. 3515(b) (United States Code). The Department's management is responsible for the integrity and objectivity of the financial information presented in these financial statements.

The statements have been prepared from the Department's books and records in accordance with

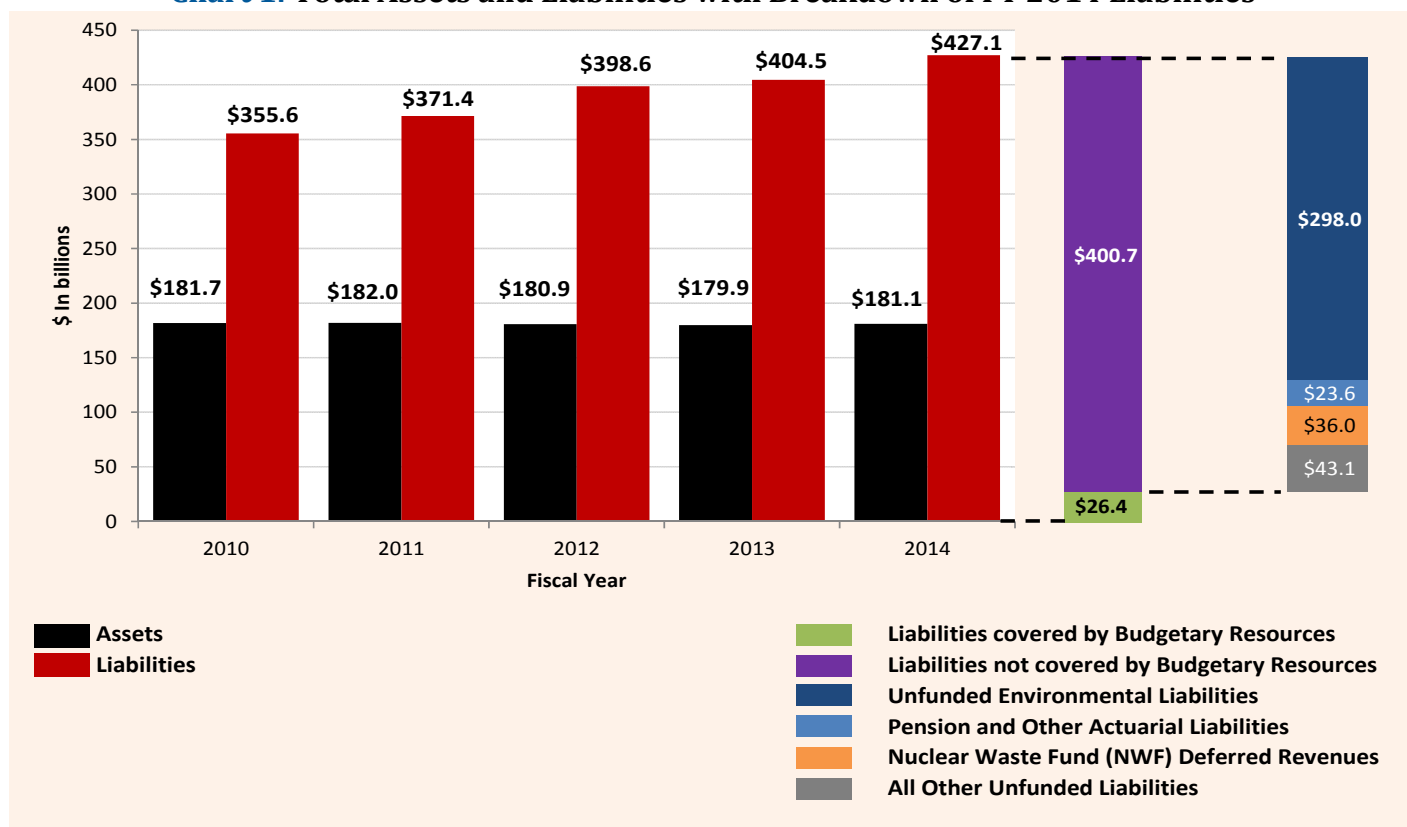
generally accepted accounting principles prescribed by the Federal Accounting Standards Advisory Board and the formats prescribed by the Office of Management and Budget (OMB). The financial statements are prepared in addition to the financial reports used to monitor and control budgetary resources which are prepared from the same books and records. The statements should be read with the realization that they are for a component of the U.S. Government, a sovereign entity.

## Balance Sheet

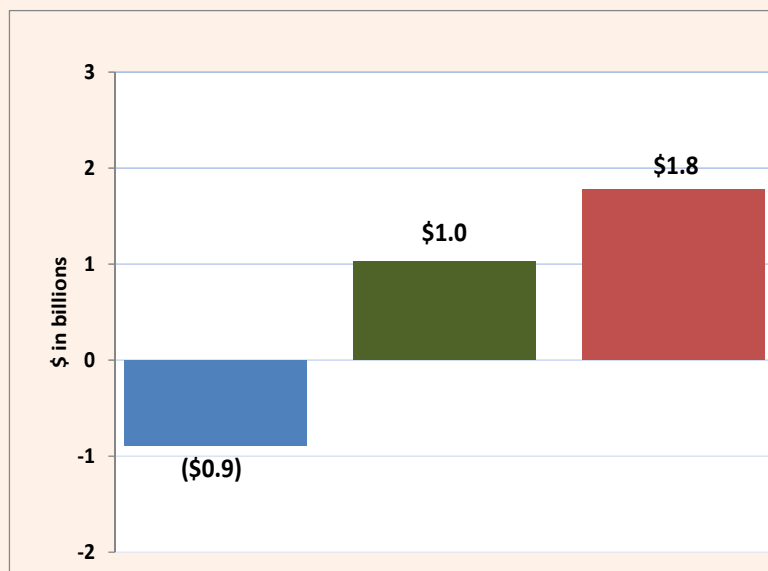
As shown in Chart 1, the Department's total liabilities exceed total assets. Significant balance changes are detailed in Charts 2 and 3. Chart 4 provides a detailed trend analysis of the changes in the Department's environmental liability balances over the past 5 years. The largest component of the Department's environmental liability is managed by the Environmental Management (EM) program which addresses the legacy of contamination from the nuclear weapons complex and includes managing thousands of contaminated facilities formerly used in the nuclear weapons program, overseeing the safe management of large quantities of radioactive waste and nuclear materials, and cleanup of large volumes of contaminated soil and water. The active facilities

liability includes anticipated remediation costs for active and surplus facilities managed by the Department's ongoing program operations and which will ultimately require stabilization, deactivation, and decommissioning. Other legacy liabilities are divided between environmental liabilities for active sites, including estimated cleanup; and the Office of Legacy Management (LM) for post-closure responsibilities, including surveillance and monitoring activities; soil and groundwater remediation; and disposition of excess material from sites after the EM program activities have been completed. The other legacy liabilities also include the Department's share of the estimated future costs of dispositioning its inventory of high-level waste and spent nuclear fuel (SNF).

**Chart 1: Total Assets and Liabilities with Breakdown of FY 2014 Liabilities**



**Chart 2: FY 2014 Significant Changes in Assets**



**Fund Balance with Treasury**

The decrease is primarily due to an FY 2014 rescission of proceeds from an FY 2012 oil sale. This decrease is offset by an increase in FBWT due to the September 30, 2014 MOU that transferred the financial reporting for two receipt accounts in the Reclamation Fund from the Department of Interior (DOI) to DOE.

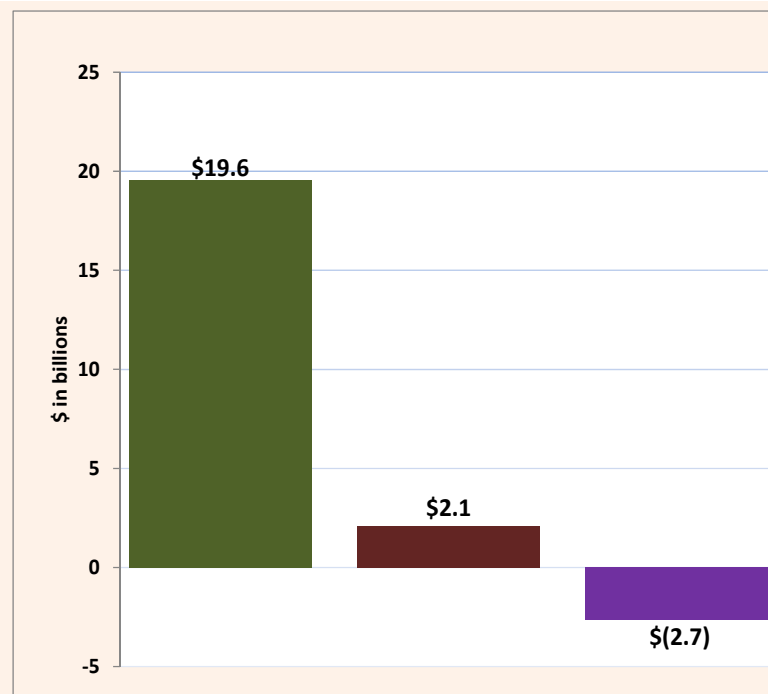
**Loans and Loan Guarantees**

Changes are primarily due to loan activity which includes disbursements, principal repayments, capitalized interest and change in present value.

**Investments**

The increase is primarily from NWF fees collected and investment income received by the NWF in excess of current expenses, which are invested in U.S. Treasury securities.

**Chart 3: FY 2014 Significant Changes in Liabilities**



**Environmental Cleanup**

The increase is primarily due to modifications of liability estimates driven by changes in technical approach, scope of activities, regulatory changes, and inflation adjustments.

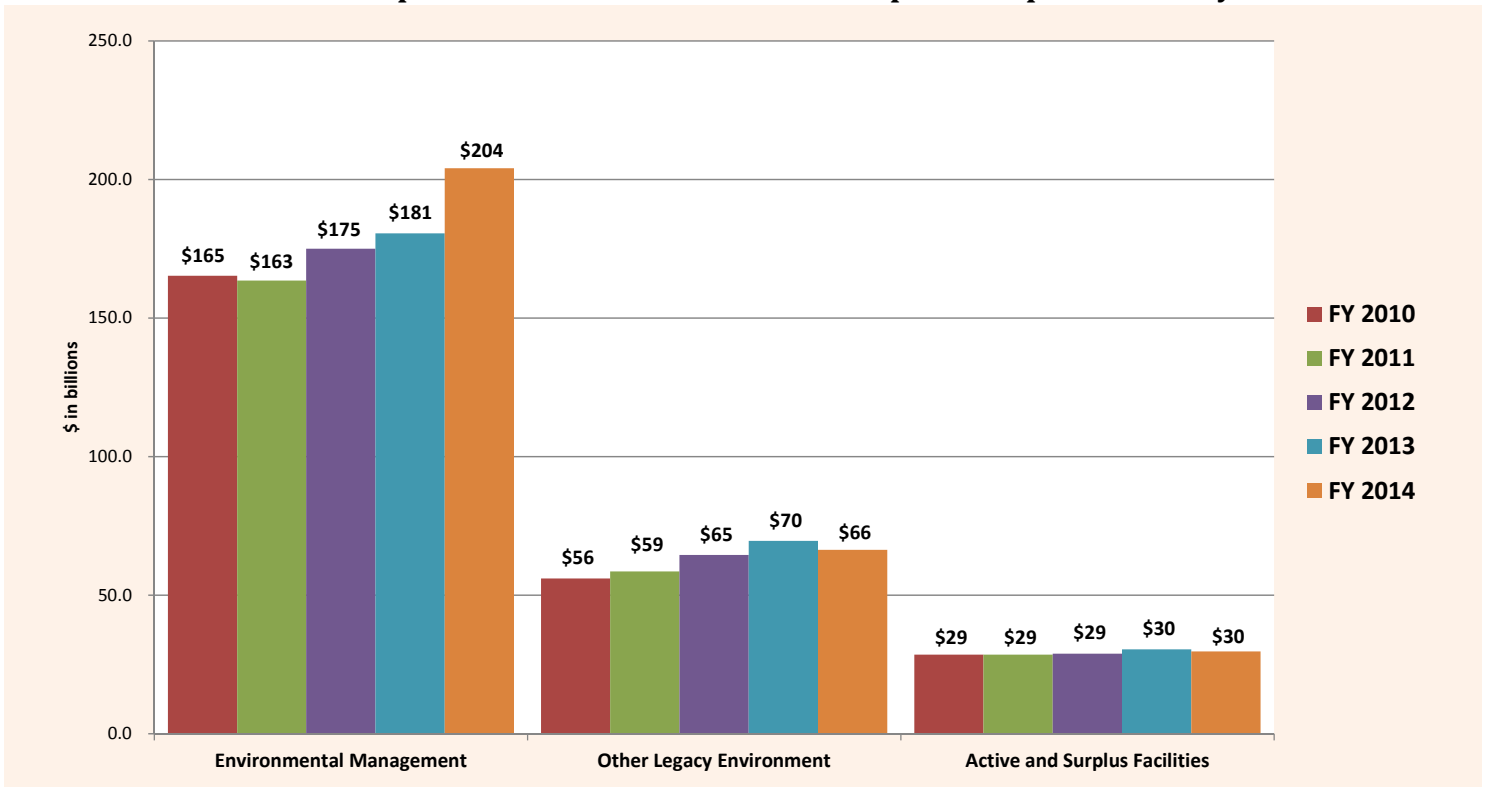
**Pension and Other Actuarial Liabilities**

Contractor pension plan liabilities increased by \$2.5 billion and other postretirement benefits plan liabilities decreased by \$.4 billion. The most significant component of the pension plan liabilities increase resulted from a decrease in the rate used to discount the liabilities to present value (See Chart 8).

**Intragovernmental Debt**

A Memorandum of Understanding between DOI and DOE transferred the financial reporting for two receipt accounts in the Reclamation Fund from DOI to DOE as of September 30, 2014. As a result, the debt for appropriated capital previously reported as being due to DOI will no longer be reflected in DOE's financial statements and footnotes as it is being eliminated against the corresponding loan receivable that was transferred from DOI.

**Chart 4: Composition of Environmental Cleanup and Disposal Liability**



**Net Cost of Operations**

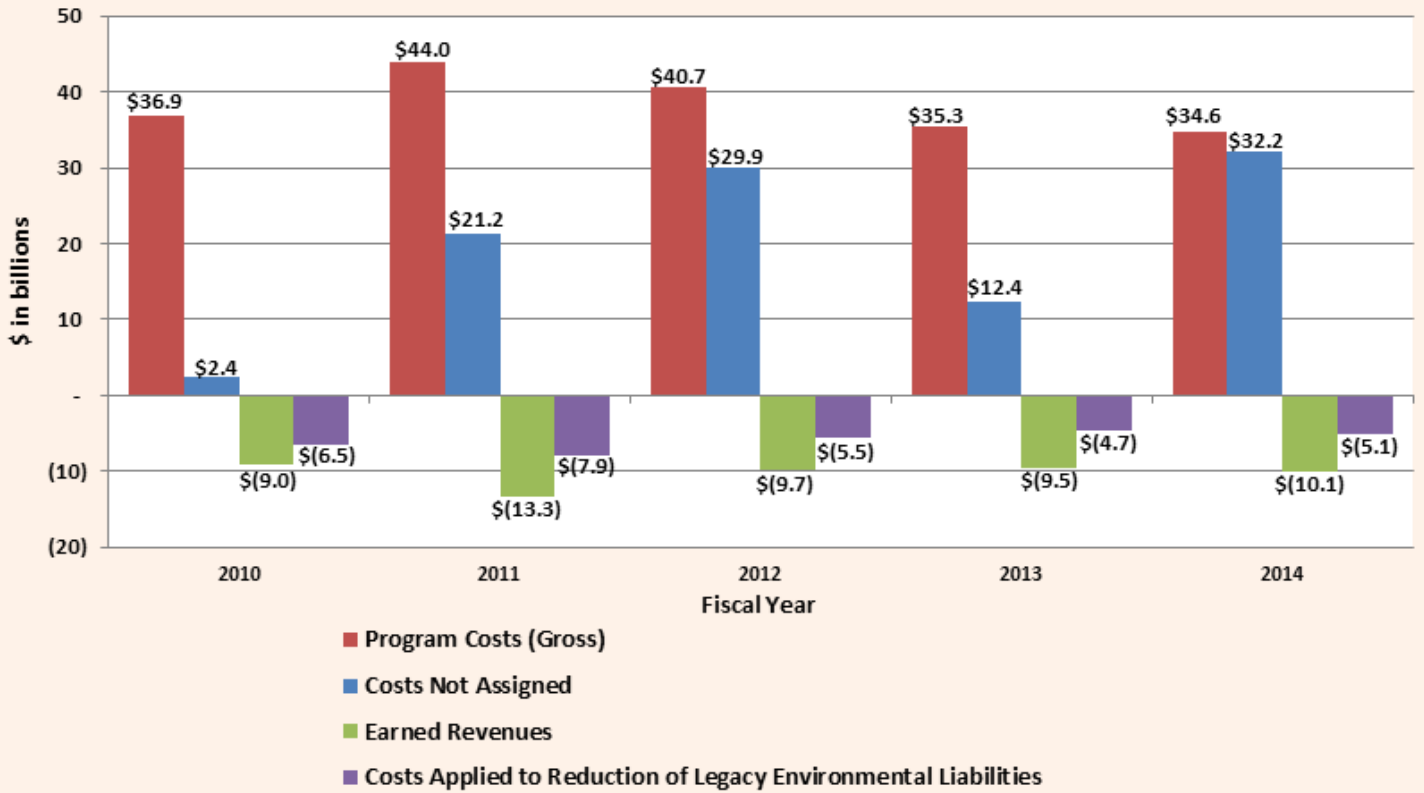
The major elements of net cost are shown in Chart 5. A breakdown of program costs (gross) by the Department’s three programmatic goals, reimbursable work and other programs is provided in Chart 6.

The Department’s overall net costs are primarily affected by changes in environmental and other unfunded liability estimates. Since these estimates mostly relate to past years of operations, they are not included as current year program costs, but rather reported as “Costs Not Assigned” on the *Consolidated Statements of Net Cost*. Components of the FY 2014 unfunded liability estimate changes are shown in Chart 7.

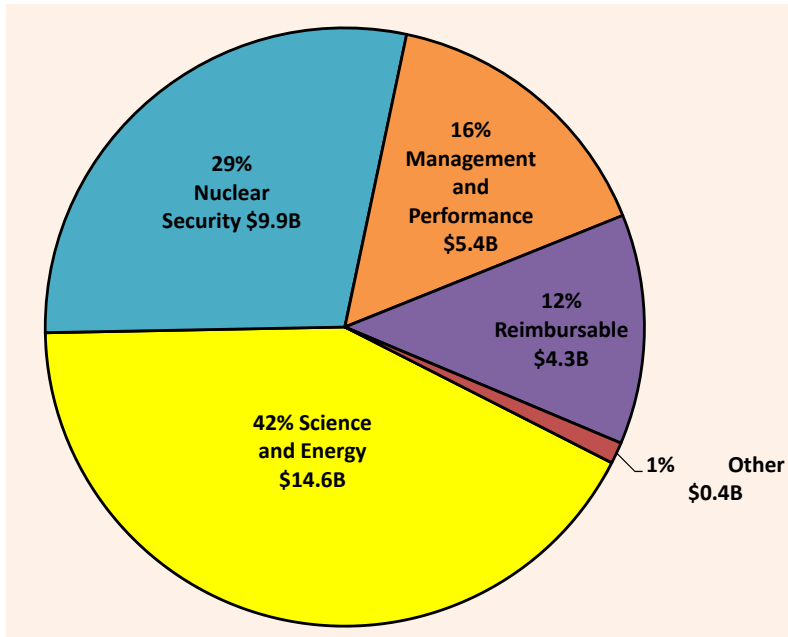
A net increase to the Department’s environmental liability estimates during FY 2014 resulted from inflation adjustments to reflect constant dollars for the current year; improved and updated estimates for the same scope of work, including changes resulting from deferral or acceleration of work; revisions in technical approach or scope; and regulatory changes. The most significant increases were in the Department’s estimates associated with disposition of high-level waste and SNF given the delayed availability of a disposal path (see Chart 4).

The Department’s FY 2014 unfunded liability estimates increased by \$2.5 billion for contractor pension plans and decreased by \$0.4 billion for contractor postretirement benefits other than pensions (PRB) plans. The major components of these estimate changes are shown in Chart 8. The most significant component of the change in the contractor pension plan liabilities resulted from a decrease in the rate used to discount the liabilities to present value. The discount rate is based on the yields of high-quality fixed income securities as of September 30, 2014 and 2013. The most significant component of the change in contractor PRB liabilities resulted from changes made by contractors during the year in an effort to control the future cost growth associated with these benefits; this change more than offset the increase to the liability due to the change in the discount rate. There were also changes in both pension and PRB liabilities because of differences in actual plan experience for the year compared to the actuarial assumptions for rates of retirement, termination of employment, compensation increases, health care inflation, and other demographic factors, including changes made to those assumptions to better reflect anticipated future experience.

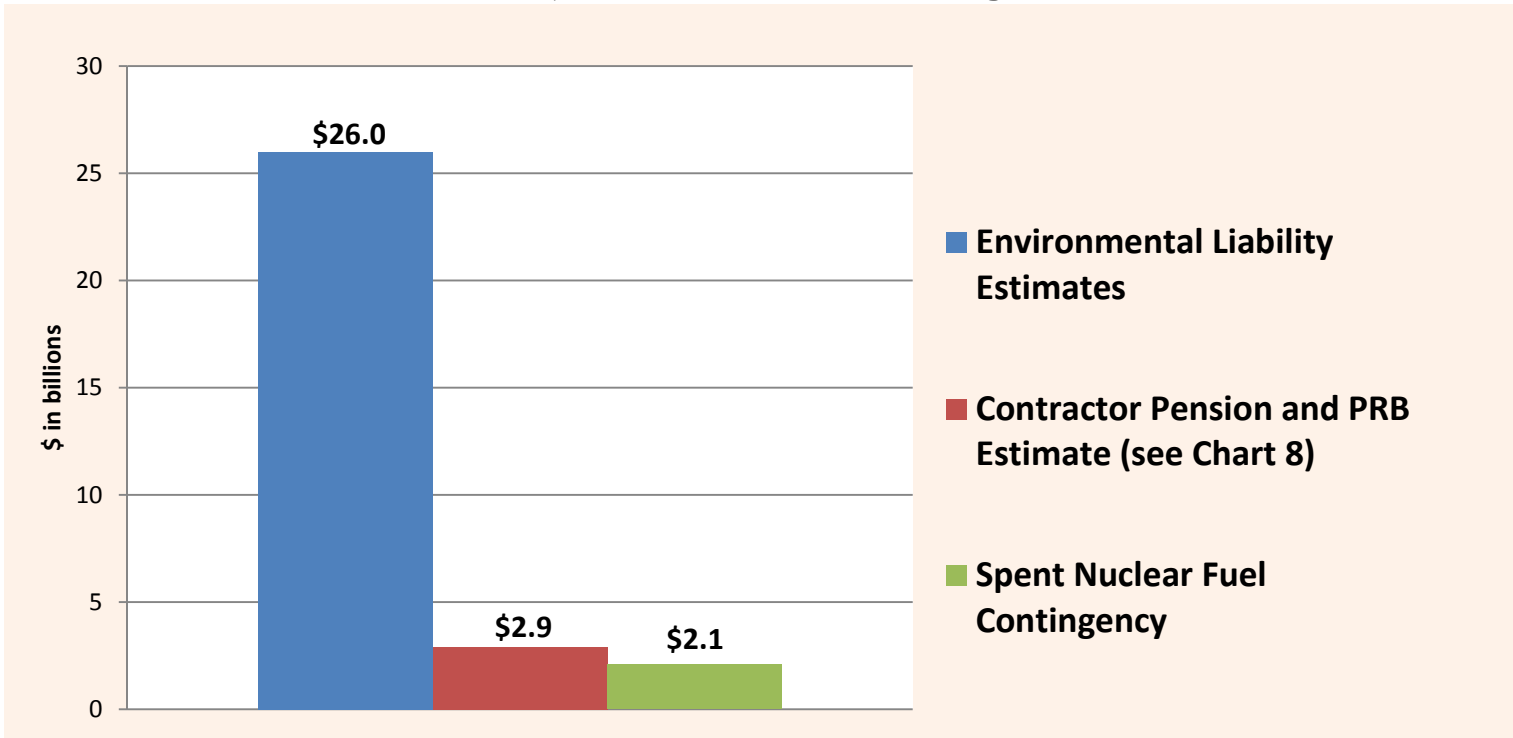
**Chart 5: Elements of Net Cost**



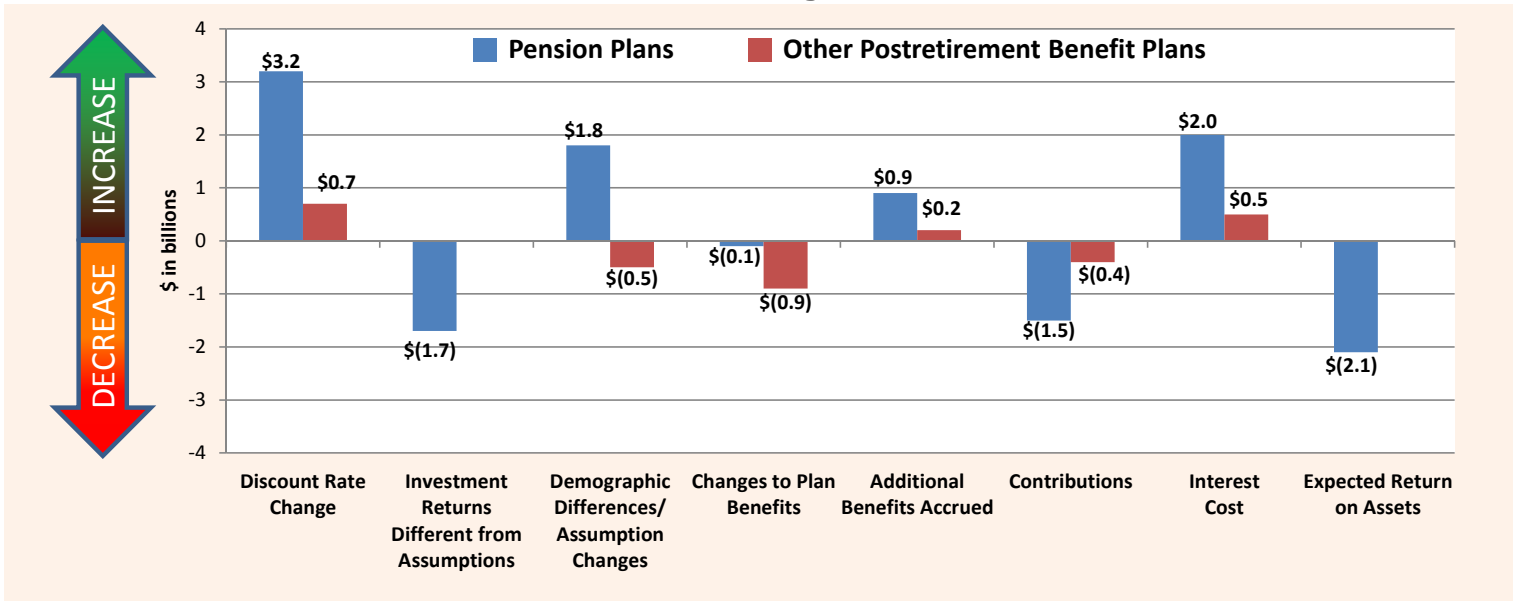
**Chart 6: FY 2014 Program Costs (Gross)**



**Chart 7: Major Elements of Costs Not Assigned**



**Chart 8: FY 2014 Contractor Employee Pension and Other Postretirement Benefit Plans Liability Estimate Changes**



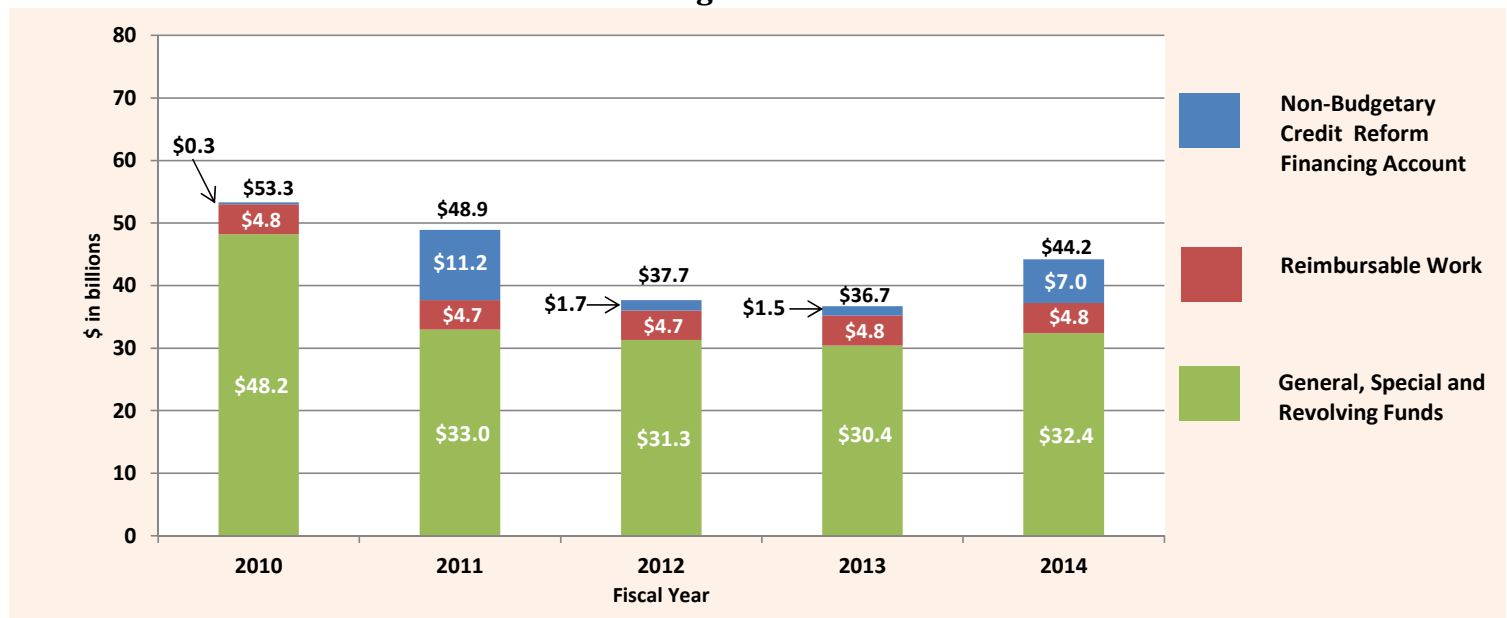
## Budgetary Resources

The Department's financial statements are included in the Financial Results section of the *FY 2014 DOE Agency Financial Report*. The *Combined Statements of Budgetary Resources* provides information on the budgetary resources available to the Department for the year and the status of those resources at the end of the fiscal year. The Department receives most of its funding from general Government funds administered by the Department of the Treasury (Treasury) and appropriated for Energy's use by Congress. Since budgetary accounting rules and financial accounting rules recognize certain transactions at different

points in time, Appropriations Used on the *Consolidated Statements of Changes in Net Position* will not match costs for that period. The primary difference results from recognition of costs related to changes in unfunded liability estimates. Budget authority from appropriations on the *Combined Statements of Budgetary Resources* increased in FY 2014 by \$0.2 billion from FY 2013.

As shown in Chart 9, the Department's Obligations Incurred increased by \$7.5 billion from FY 2013.

**Chart 9: Obligations Incurred**



**Chart 10: Linking Strategic Goals, Objectives, Budget and Cost**

STRATEGIC GOALS	STRATEGIC OBJECTIVE	BUDGETARY EXPENDITURES INCURRED <sup>a c</sup> (\$ IN BILLIONS)		PROGRAM COST <sup>b c</sup> (GROSS IN BILLIONS)	
		FY 2014	FY 2013	FY 2014	FY 2013
Science and Energy	Advance the goals and objectives in the President’s Climate Action Plan by supporting prudent development, deployment, and efficient use of “all of the above” energy resources that also create new jobs and industries	\$ 12.5	\$ 15.3	\$ 8.6	\$ 10.1
	Support a more economically competitive, environmentally responsible, secure and resilient U.S. energy infrastructure	0.8	1.1	0.7	1.1
	Deliver the scientific discoveries and major scientific tools that transform our understanding of nature and strengthen the connection between advances in fundamental science and technology innovation	4.8	4.9	5.2	4.7
Nuclear Security	Maintain the safety, security and effectiveness of the nation’s nuclear deterrent without nuclear testing	3.8	3.7	3.9	3.4
	Strengthen key science, technology, and engineering capabilities and modernize the national security infrastructure	3.5	3.3	3.2	3.1
	Reduce global nuclear security threats	2.0	2.5	1.7	1.9
	Provide safe and effective integrated nuclear propulsion systems for the U.S. Navy	1.1	1.1	1.1	1.0
Management and Performance	Continue cleanup of radioactive and chemical waste resulting from the Manhattan Project and Cold War activities	5.5	5.3	4.5	4.6
	Manage assets in a sustainable manner that supports the DOE mission	0.2	0.2	0.1	0.1
	Effectively manage projects, financial assistance agreements, contracts, and contractor performance	0.1	0.1	0.1	0.1
	Operate the DOE enterprise safely, securely, and efficiently	0.6	0.6	0.6	0.6
	Attract, manage, train, and retain the best federal workforce to meet future mission needs	-	-	-	-

- a. Budgetary Expenditures Incurred are amounts accrued or paid for services performed, goods and tangible property received. Budgetary Expenditures are obtained from the Budgetary Standard General Ledger and are reported/recorded based on budgetary accounting rules. Includes capital expenditures but excludes such items as depreciation, changes in unfunded liability estimates, and certain other non-fund costs and activities.
- b. Program Costs (Gross) are taken from the Department’s Consolidated Statements of Net Cost.
- c. Budgetary Expenditures and Program Cost include Recovery Act amounts.

## Management Challenges

DOE MANAGEMENT PRIORITIES	IG CHALLENGE AREAS FY 2015	GAO HIGH RISK LIST (as of Feb. 2013)
Acquisition and Project Management	Contract and Financial Assistance Award Management	Contract Management for the NNSA and EM Management of major (\$750M+) projects and programs
Security	Safeguards and Security	
Environmental Cleanup	Environmental Cleanup	
Used Nuclear Fuel and High-Level Waste Disposal	Nuclear Waste Disposal	
	Stockpile Stewardship	
Cybersecurity	Cybersecurity	
Human Capital Management		
Safety Culture		