

National Institute of Standards and Technology

The mission of the National Institute of Standards and Technology (NIST) is to promote U.S. innovation and industrial competitiveness by advancing measurement science, standards and technology in ways that improve economic security and our quality of life. NIST develops and disseminates measurement techniques, reference data, test methods, standards, and other technologies and services needed by U.S. industry to compete in the 21st century.

The President's request supports these NIST programs:

- The **NIST Laboratories** provide the measurement science and physical standards that are essential components of the technology infrastructure underpinning U.S. innovation. NIST Laboratories are part of the President's Plan for Science and Innovation, which, consistent with the America COMPETES Act of 2007, doubles funding for basic research at key federal science agencies. NIST's **Construction of Research Facilities** support the projects for new buildings and renovation and maintenance of current buildings and laboratories.
- The **Technology Innovation Program (TIP)** supports innovative, high-risk, high-reward research in areas of critical national need (CNN) where the government has a clear interest due to the magnitude of the problems and their importance to society. The merit-based competitive program funds cost-shared R&D projects by single small- or medium-sized businesses, as well as joint ventures that may include higher education institutions, non-profit research organizations, and national laboratories.
- Through Federal-state-local and private sector partnerships, NIST's **Hollings Manufacturing Extension Partnership (MEP)** provides technical and business assistance to smaller manufacturers through a nationwide network of centers in all 50 states and Puerto Rico.
- The **Baldrige National Quality Program** promotes proven quality and performance management practices to strengthen U.S. companies, educational organizations, and health care providers. Recognized worldwide, the program furthers organizational excellence through education, outreach, and annual awards.

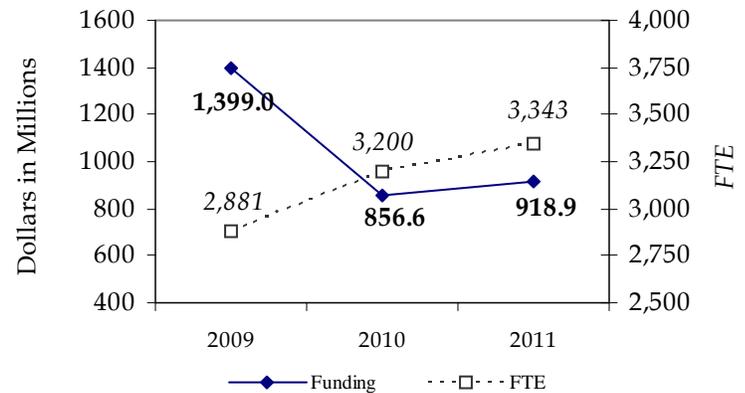
The President's FY 2011 Budget request for NIST totals \$918.9 million. The request contains \$709.3 million for NIST's core laboratory research and facilities (excluding a \$3.3 million transfer from the Election Assistance Commission), which includes \$69.4 million in program increases for NIST Laboratories and \$66.1 million in program increases for Construction of Research Facilities. The request keeps NIST Laboratories on the path to doubling, as called for under the President's Plan for Science and Innovation. The request also includes \$129.7 million in FY 2011 for MEP, an increase of \$5.0 million above FY 2010. Additionally, the request includes \$79.9 million for TIP, an increase of \$10 million above FY 2010. NIST's FY 2011 budget will continue to help address the Nation's immediate and long-term priorities by enabling:

- Creation of a national health IT infrastructure
- Development of Smart Grid standards
- Promotion of Green Manufacturing and Construction
- Efficient manufacture of next generation photovoltaics
- Advances in U.S. manufacturing
- Advances in biomanufacturing processes
- Security for America's computer networks
- Improved infrastructure resiliency against earthquakes
- Safe and efficient commercialization of nanotechnology

The request also includes funding \$3.4 million for Science, Technology, Engineering, and Mathematics (STEM) education, and \$2 million Strategic and Emerging Research Initiatives (SERI).

The initiatives in the *Highlights of Program Changes* under STRS, CRF, and ITS outline the Administration's FY 2011 investment priorities for NIST.

Appropriation and FTE



Summary of Appropriations

Funding Levels

Appropriation	2009 <u>Actual</u>	2010 <u>Estimate</u>	2011 <u>Estimate</u>	Increase <u>(Decrease)</u>
Scientific and Technical Research and Services	\$472,000	\$515,000	\$584,500	\$69,500
Recovery Act	220,000	0	0	0
Industrial Technology Services	175,000	194,600	209,600	15,000
Construction of Research Facilities	172,000	147,000	124,800	(22,200)
Recovery Act	360,000	0	0	0
Total Appropriation	1,399,000	856,600	918,900	62,300
Transfers of funds from Election Assistance Commission to STRS	4,000	3,500	3,250	(250)
Transfers of funds from Community Oriented Policing Services Office, DoJ to Office of Law Enforcement Standards, STRS	1,500	1,500	0	(1,500)
Transfer of funds from the Office of the National Coordinator for Health Information Technology to STRS	20,000	0	0	0
Unobligated balance, rescission, ITS	(5,000)	0	0	0
Working Capital Fund, STRS	[2,100]	[2,250]	[3,300]	[(1,050)]
Budget Authority				
Scientific and Technical Research and Services	717,500	520,000	587,750	67,750
Industrial Technology Services	170,000	194,600	209,600	15,000
Construction of Research Facilities	532,000	147,000	124,800	(22,200)
TOTAL, BUDGET AUTHORITY	1,419,500	861,600	922,150	60,550
FTE				
Scientific and Technical Research and Services	1,953	2,182	2,324	142
Industrial Technology Services	142	153	154	1
Construction of Research Facilities	89	89	89	0
Working Capital Fund	697	776	776	0
Total	2,881	3,200	3,343	143

Highlights of Budget Changes

Appropriation: Scientific and Technical Research and Services

Summary of Requirements

	<u>Detailed</u>		<u>Summary</u>	
	<u>FTE</u>	<u>Amount</u>	<u>FTE</u>	<u>Amount</u>
2010 Appropriation			2,182	\$515,000
Adjustments to Base				
<u>Adjustments</u>				
Restoration of FY 2010 deobligation offset		\$1,000		
Dropout of Congressionally Directed Projects		(10,500)		
Reduced FTE funded by ARRA carryover	(31)	0		
Subtotal, Adjustments			(31)	(9,500)
<u>Other Changes</u>				
Annualization of 2010 Pay raise		1,245		
2011 Pay increase and related costs		2,821		
Annualization of positions financed in FY 2010	21	0		
Civil Service Retirement System (CSRS)		(422)		
Federal Employees' Retirement System (FERS)		1,624		
Thrift Savings Plan (TSP)		261		
Federal Insurance Contribution Act (FICA) - OASDI		337		
Health Insurance		912		
Employees' Compensation Fund		42		
Travel - Mileage		(1)		
Travel - Per Diem		184		
Rental Payments to GSA		1		
Postage		2		
Electricity rate increase		214		
Natural Gas rate increase		471		
Other services:				
Commerce Business Systems (CBS)		137		
NARA storage costs		4		
Working Capital Fund (Departmental Management)		1,252		
Supplies and materials:				
Scientific journal subscriptions		114		
Helium rate increase		316		
General pricing level adjustment:				
Transportation of things		10		
Rental payments to others		8		
Communications, utilities, and miscellaneous charges		28		
Printing and reproduction		3		
Other services		502		
Supplies and materials		168		
Equipment		371		
Subtotal, other cost changes			21	10,604
Less Amount absorbed			0	(4)
TOTAL, ADJUSTMENTS TO BASE			(10)	1,100
2011 Base			2,172	516,100
Program Changes			152	69,400
TOTAL REQUIREMENTS			2,324	585,500
Recoveries from Prior Year Obligations				(1,000)
2011 APPROPRIATION			2,324	584,500

Comparison by Activity

	2010 Currently Avail.		2011 Base		2011 Estimate		Increase / Decrease	
	<u>FTE</u>	<u>Amount</u>	<u>FTE</u>	<u>Amount</u>	<u>FTE</u>	<u>Amount</u>	<u>FTE</u>	<u>Amount</u>
DIRECT OBLIGATIONS								
National measurement and standards laboratories								
Strategic and emerging research initiatives	27	\$ 64,293	27	\$ 9,873	27	\$ 11,673	0	\$ 1,800
Electronics & electrical engineering lab	230	82,464	234	60,095	255	67,595	21	7,500
Manufacturing engineering lab	149	46,198	149	35,983	164	44,983	15	9,000
Chemical science & technology lab	287	69,748	292	61,572	310	69,322	18	7,750
Physics lab	200	72,841	204	57,014	204	57,014	0	0
Materials science & engineering lab	185	46,598	185	40,295	192	44,295	7	4,000
Building & fire research lab	156	44,592	158	37,136	177	48,136	19	11,000
Information technology lab	323	99,707	329	69,123	363	86,523	34	17,400
NIST center for neutron research	167	50,481	167	42,610	167	42,610	0	0
Center for nanoscale science and technology	73	33,359	73	28,212	94	35,712	21	7,500
Technology services	79	17,886	79	14,990	79	14,990	0	0
Innovations in measurement science	82	21,092	82	20,601	82	20,601	0	0
Postdoctoral research associates program	134	22,677	103	11,462	120	14,862	17	3,400
External projects	0	10,500	0	0	0	0	0	0
Subtotal, National measurement & standards laboratories	2,092	682,436	2,082	488,966	2,234	558,316	152	69,350
Baldrige National Quality Program								
Baldrige National Quality Program	52	9,668	52	9,869	52	9,869	0	0
Corporate services								
Computer support	4	7,690	4	6,393	4	6,393	0	0
Business system	34	10,863	34	10,872	34	10,872	0	0
Subtotal, Corporate services	38	18,553	38	17,265	38	17,265	0	0
TOTAL DIRECT OBLIGATIONS	2,182	710,657	2,172	516,100	2,324	585,450	152	69,350
REIMBURSABLE OBLIGATIONS:								
From DoE for superconducting magnet (VHFSMC) project	0	120	0	0	0	0	0	0
From carryover funds for DoE smart grid and NTIA broadband projects	0	9,940	0	0	0	0	0	0
TOTAL OBLIGATIONS	2,182	720,717	2,172	516,100	2,324	585,450	152	69,350
FINANCING								
Unobligated balance, start of year - direct		(91,907)					0	0
Unobligated balance, start of year - reimbursable		(9,940)						
Offsetting collections from:								
Federal sources: fund from superconducting magnet (VHFSMC) project with DOE		(120)		0		0	0	0
Recovery of prior year obligations		(1,000)		(1,000)		(1,000)	0	0
Subtotal, financing	0	(202,967)	0	(1,000)	0	(1,000)	0	0
TOTAL BUDGET AUTHORITY	2,182	517,750	2,172	515,100	2,324	584,450	152	69,350
Transfers from EAC		(3,500)		0		(3,250)		(3,250)
Transfers from COPS, DoJ		(1,500)		0		0		0
Transfers to Working Capital Fund		2,250		0		3,300	0	3,300
TOTAL APPROPRIATION	2,182	515,000	2,172	515,100	2,324	584,500	152	69,400

Highlights of Program Changes

	<u>Base</u>		<u>Increase / Decrease</u>	
	<u>FTE</u>	<u>Amount</u>	<u>FTE</u>	<u>Amount</u>
<u>National Measurement and Standards Laboratories</u>	2,082	\$488,075	+152	+\$69,400

Standards and Conformity Assessment for Interoperability in Emerging Technologies +29 +\$10,000

NIST's request will continue to support NIST standards development efforts in Smart Grid and Healthcare IT, and to set up the infrastructure necessary to ensure that NIST can proactively catalyze and accelerate the private sector development of standards in other areas of national priority.

Scalable Cybersecurity for Emerging Technologies and Threats (includes an \$850 transfer to the Working Capital Fund) +21 +\$10,000

NIST's request will support the development of tools and standards necessary to enable a robust, useable, and accessible cybersecurity framework, addressing a number of factors including cryptographic key management, security automation technologies, and improved modeling and attack detection capabilities.

Green Manufacturing and Construction +18 +\$10,000

NIST's request will help develop the measurements, standards, and common framework that are required to promote sustainable operations and improve energy efficiency in both the construction and manufacturing sectors.

Innovations in Healthcare - Measurement Science and Standards to Support Manufacturing and Regulatory Approval of Biologic Drugs (includes a \$2,250 transfer to the Working Capital Fund) +18 +\$10,000

NIST will work with industry stakeholders to develop a program that provides reference methods for characterization of protein biopharmaceuticals' structure, function, immunogenicity and tools to test and optimize manufacturing processes. This initiative will include funds for grants to stimulate advances in biomanufacturing processes.

Innovations for 21st Century U.S. Manufacturing +21 +\$10,000

This initiative will enable NIST to strengthen capabilities in multiple areas that impact manufacturing - from cutting edge research in the technologies that will transform manufacturing capabilities in industries like communications, computing, and energy production - to the development of measurement technologies and standards that will enable U.S. manufacturers to adopt technology advances that lower cost, reduce processing times, and improve overall quality.

Disaster Resilient Buildings and Infrastructure +8 +\$5,000

This initiative will focus resources on expanding NIST's activities under the National Earthquake Hazards Reduction Program (NEHRP) to address the measurement science, standards, and data resources necessary to improve resiliency against earthquakes. The initiative also funds activities related to fire performance of structures.

Advanced Solar Technologies - Third Generation Photovoltaics +13 +\$5,000

NIST will focus on developing new and novel measurement instrumentation and methods for critical photovoltaic materials and devices. The request will help bridge the current gap in measurement technology needed to enable third generation photovoltaics development.

	<u>Increase / Decrease</u>	
	<u>FTE</u>	<u>Amount</u>
Nanomaterial Environmental Health and Safety	+7	+\$4,000

NIST will identify measurement needs and define solutions for the key nanomaterials of greatest importance to U.S. industry, begin developing or expanding measurement laboratories for nanomaterial characterizations, and begin developing reference nanomaterials with fully characterized physical and chemical properties. NIST will coordinate efforts with other agencies participating in the National Nanotechnology Initiative.

Strategic and Emerging Research Initiatives (SERI) (includes a \$200 transfer to the Working Capital Fund)	+0	+\$2,000
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The SERI Fund provides the NIST Director the annual flexibility necessary to create research teams from across NIST to address emerging and increasingly multidisciplinary research problems, as well as the programmatic flexibility to develop new competencies in high-risk, high-payoff research. Areas under consideration for the \$2 million increase include work related to food safety and forensics.

NIST National Research Council (NRC) Postdoctoral Research Associateships Program	+17	+\$3,400
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Advancing Science, Technology, Engineering, and Mathematics (STEM) education is a primary goal of the President's *Educate to Innovate* agenda. The NIST NRC postdoctoral associateships program provides opportunities for outstanding young scientists to gain training in measurement science, and is a critical part of ensuring that NIST has access to the top technical talent necessary to maintain leading research programs that address critical national priorities.

STRS Initiative Name	Strategic and Emerging Research Initiatives	Electronics & Electrical Engineering Lab	Manufacturing Engineering Lab	Chemical Science & Technology Lab	Materials Science & Engineering Lab	Building & Fire Research Lab	Information Technology Lab	Center for Nanoscale Science & Technology	Post Doctoral Program	Working Capital Fund
Standards and Conformity Assessment for Interoperability in Emerging Technologies		\$5,000					\$5,000			
Scalable Cybersecurity for Emerging Technologies and Threats							\$9,150			\$850
Green Manufacturing and Construction			\$4,000			\$6,000				
Innovation in Healthcare - Measurement Science and Standards to Support Manufacturing and Regulatory Approval of Biologic Drugs				\$7,750						\$2,250
Innovations for 21st Century U.S. Manufacturing			\$5,000					\$5,000		
Disaster Resilient Buildings and Infrastructure						\$5,000				
Advanced Solar Technologies - Third Generation Photovoltaics		\$2,500						\$2,500		
Nanomaterial Environmental Health and Safety					\$4,000					
Strategic and Emerging Research Initiatives (SERI)	\$1,800									\$200
NIST NRC Postdoctoral Research Associateship Program									\$3,400	
STRS TOTAL	\$1,800	\$7,500	\$9,000	\$7,750	\$4,000	\$11,000	\$14,150	\$7,500	\$3,400	\$3,300

* Information Technology Lab does not include EAC transfer of \$3,250K

Appropriation: Construction of Research Facilities**Summary of Requirements**

	<u>Detailed</u>		<u>Summary</u>	
	<u>FTE</u>	<u>Amount</u>	<u>FTE</u>	<u>Amount</u>
2010 Appropriation			89	\$147,000
Adjustments to Base				
<u>Adjustments</u>				
Less Gaithersburg/Boulder construction projects		(\$22,000)		
Less unrequested projects		(67,000)		
Subtotal, adjustments			0	(89,000)
<u>Other Changes</u>				
Annualization of 2010 Pay raise		31		
2011 Pay increase and related costs		94		
Annualization of positions financed in FY 2010		0		
Civil Service Retirement System (CSRS)		(14)		
Federal Employees' Retirement System (FERS)		56		
Thrift Savings Plan (TSP)		9		
Federal Insurance Contribution Act (FICA) - OASDI		12		
Health Insurance		33		
Employees' Compensation Fund		(14)		
Travel - Per Diem		1		
General pricing level adjustment:				
Communications, utilities, and miscellaneous charges		1		
Other services		445		
Supplies and materials		13		
Equipment		1		
Subtotal, other cost changes			0	668
Less Amount absorbed			0	0
TOTAL, ADJUSTMENTS TO BASE			0	(88,332)
2011 Base			89	58,668
Program Changes			0	66,132
2011 APPROPRIATION			89	124,800

Comparison by Activity

	2010 Currently Avail.		2011 Base		2011 Estimate		Increase / Decrease	
	<u>FTE</u>	<u>Amount</u>	<u>FTE</u>	<u>Amount</u>	<u>FTE</u>	<u>Amount</u>	<u>FTE</u>	<u>Amount</u>
DIRECT OBLIGATIONS								
Construction & Major Renovations	89	\$489,546	89	\$58,668	89	\$124,800	0	\$66,132
TOTAL DIRECT OBLIGATIONS	89	489,546	89	58,668	89	124,800	0	66,132
REIMBURSABLE OBLIGATIONS		880	0	0	0	0	0	0
TOTAL OBLIGATIONS	89	490,426	89	58,668	89	124,800	0	66,132
FINANCING								
Unobligated balance, start of year (Direct)		(342,546)				0		
Offsetting collections from:								
Non-Federal sources		(880)				0		
Subtotal, financing		(343,426)				0		
TOTAL BUDGET AUTHORITY/ APPROPRIATION	89	147,000			89	124,800		

Highlights of Program Changes

	<u>Base</u>		<u>Increase / Decrease</u>	
	<u>FTE</u>	<u>Amount</u>	<u>FTE</u>	<u>Amount</u>
<u>Construction and major renovations</u>	89	\$58,668	0	+\$66,132
Renovation of Building 1 at NIST in Boulder, Colorado			+0	+\$37,900
Planning and Design for the Renovation of General Purpose Laboratories (GPLs) at NIST Gaithersburg			+0	+\$14,400
NIST Safety, Capacity, Maintenance, and Major Repairs Increase			+0	+\$13,832

NIST requests an increase to continue with the long-term plan to renovate Building 1 of the NIST Boulder, Colorado laboratories, which houses the majority of NIST Boulder research and measurement. This funding will complete the exterior renovations for Building 1, Wings 3, 5, and 6 and the Center Spine, as well as the interior renovations of Wing 3 and a portion of Wing 5.

Appropriation: Industrial Technology Services**Summary of Requirements**

	<u>Detailed</u>		<u>Summary</u>	
	<u>FTE</u>	<u>Amount</u>	<u>FTE</u>	<u>Amount</u>
2010 Appropriation			153	\$194,600
Adjustments to Base				
<u>Adjustments</u>				
Restoration of FY 2010 Deobligation Offset		\$3,800		
Subtotal, adjustments			0	3,800
<u>Other Changes</u>				
Annualization of 2010 Pay raise		85		
2011 Pay increase and related costs		194		
Annualization of positions financed in FY 2010	1	0		
Personnel benefits:				
Civil Service Retirement System (CSRS)		(30)		
Federal Employees' Retirement System (FERS)		114		
Thrift Savings Plan (TSP)		18		
Federal Insurance Contribution Act (FICA) - OASDI		24		
Health Insurance		64		
Employees' Compensation Fund		4		
Travel - Per Diem		16		
Communications, utilities, and miscellaneous charges:				
Electricity rate increase		16		
Natural Gas rate increase		64		
General pricing level adjustment:				
Rental payments to others		1		
Communications, utilities, and miscellaneous charges		2		
Printing and reproduction		1		
Other services		112		
Supplies and materials		5		
Equipment		11		
Subtotal, other cost changes			1	701
Less Amount absorbed			0	(338)
TOTAL, ADJUSTMENTS TO BASE			1	4,163
2011 Base			154	198,763
Program Changes			0	14,637
TOTAL REQUIREMENTS			154	213,400
Recoveries from Prior Year Obligations				(3,800)
2011 APPROPRIATION			154	209,600

Comparison by Activity

	2010 Currently Avail.		2011 Base		2011 Estimate		Increase / Decrease	
	<u>FTE</u>	<u>Amount</u>	<u>FTE</u>	<u>Amount</u>	<u>FTE</u>	<u>Amount</u>	<u>FTE</u>	<u>Amount</u>
DIRECT OBLIGATIONS								
Technology Innovation Program	80	\$110,645	80	\$73,700	80	\$83,700	0	\$10,000
Hollings Manufacturing Extension Partnership Program	73	125,298	74	125,063	74	129,700	0	4,637
TOTAL DIRECT OBLIGATIONS	153	235,943	154	198,763	154	213,400	0	14,637
FINANCING								
Unobligated balance, start of year		(37,543)						
Recovery of prior obligations		(3,800)		(3,800)		(3,800)		
Subtotal, financing		(41,343)		(3,800)		(3,800)		
TOTAL BUDGET AUTHORITY/ APPROPRIATION	153	194,600	154	194,963	154	209,600		

Highlights of Program Changes

	<u>Base</u>		<u>Increase / Decrease</u>	
	<u>FTE</u>	<u>Amount</u>	<u>FTE</u>	<u>Amount</u>
<u>Industrial Technology Services</u>	154	\$194,963	+0	+\$14,637
Technology Innovation Program (TIP)	80	\$69,900	+0	+\$10,000

The Technology Innovation Program (TIP) supports, promotes, and accelerates innovation in the United States through high-risk, high reward research in areas of critical national need. For FY 2011, NIST requests \$79.9 million, which includes an increase of \$10.0 million. These funds will support new competitions and any remaining mortgage commitments from previous competitions. Areas under consideration for potential future competitions are civil infrastructure, advanced manufacturing, energy, health care, complex systems and green chemistry.

Hollings Manufacturing Extension Partnership (MEP) Program	74	\$125,063	+0	+\$4,637
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NIST requests an increase of \$4,637 for a total MEP program of \$129,700 to expand MEP services to address the continuing national need to support U.S. manufacturing. In FY 2011, MEP will support initiatives for reinventing domestic manufacturing to create jobs and better respond to future challenges and opportunities.

Appropriation: Working Capital Fund**Comparison by Activity**

	2010 Currently Avail.		2011 Base		2011 Estimate		Increase / Decrease	
	<u>FTE</u>	<u>Amount</u>	<u>FTE</u>	<u>Amount</u>	<u>FTE</u>	<u>Amount</u>	<u>FTE</u>	<u>Amount</u>
DIRECT OBLIGATIONS								
Direct Obligations	0	\$2,250	0	\$0	0	\$3,300	0	\$3,300
Reimbursable Obligations	776	171,196	776	147,134	776	147,134	0	0
WCF Investments	0	(814)	0	0	0		0	0
TOTAL OBLIGATIONS	776	172,632	776	147,134	776	150,434	0	3,300
FINANCING								
Unobligated balance, start of year		(120,234)		(120,234)		(120,234)		0
Unobligated balance, end of year		120,234		120,234		120,234		0
Offsetting collections from:								
Federal funds		(121,683)		(98,452)		(98,452)		0
Non-Federal sources		(48,699)		(48,682)		(48,682)		0
Subtotal, financing	0	(170,382)	0	(147,134)	0	(147,134)	0	0
TOTAL BUDGET AUTHORITY	776	2,250	776	0	776	3,300	0	3,300
TRANSFERS								
From other accounts		(2,250)		0		(3,300)		(3,300)
TOTAL, APPROPRIATION	776	0	776	0	776	0	0	0

Performance Outcomes and Measures

(Dollars reflect obligations in Millions)

The activities under the NIST accounts support two of the Department's strategic goals. Outcomes 1 and 3 support "Promote U.S. innovation and industrial competitiveness" and outcome 2 supports "Maximize U.S. competitiveness and enable economic growth for American industries, workers, and consumers." The following table shows the measures that NIST uses to gauge its performance.

	2009 Actual	2010 Enacted/ Targets	2011 Estimate/ Targets
Outcome 1: Promote innovation, facilitate trade, and ensure public safety and security by strengthening the Nation's measurement and standards infrastructure.**	\$937.4	\$1,383.4	\$859.8
Qualitative assessment and review of technical quality and merit using peer review	Completed	Complete	Complete
Citation impact of NIST-authored publications	> 1.1*	>1.1	>1.1
Peer-reviewed technical publications	1,463	1,300	1,350
Standard reference materials sold	29,769	31,000	31,000
NIST maintained datasets downloaded ²			
Original methodology	226.0M	NA ²	NA ²
Revised methodology	34.2M	24.5M	24.5M
Number of calibration tests performed	18,609	15,000	18,500
Outcome 2: Increase productivity, profitability and competitiveness of manufacturers.	\$112.6	\$125.7	\$130.5
Number of clients served by MEP centers receiving Federal funding	32,926	29,000	31,175
Increased sales attributed to MEP centers receiving Federal funding	\$2.0B ¹	\$2.5B	\$2.7B
Capital investment attributed to MEP centers receiving Federal funding	\$1.0B ¹	\$1.0B	\$1.1B
Cost savings attributed to MEP centers receiving Federal funding	\$1.2B ¹	\$1.2B	\$1.3B
Outcome 3: Promote U.S. competitiveness by directing Federal investment and R&D into areas of critical national need that support, promote and accelerate high- risk, high-reward research and innovation in the United States.	\$50.2	\$110.6	\$83.7
Cumulative number of TIP Projects funded ³	9	25	49
Cumulative number of publications ⁴	24 in 2012	60 in 2013	78 in 2014
Cumulative number of patent applications ⁵	12 in 2012	30 in 2013	39 in 2014
Cumulative number of projects generating continued R&D ⁶	4 in 2012	10 in 2013	13 in 2014
Cumulative number of projects with technologies under adoption ⁷	2 in 2012	5 in 2013	6 in 2014
Total	\$1,100.2	\$1,619.7	\$1,074.0

*The FY09 actual lags nine months; this estimate is based on the FY 2008 actual.

** Outcome 1 includes ARRA obligations for FY 2009 and 2010. ARRA funds were not included in Outcome 1 as shown in the FY 2009 Performance and Accountability Report.

¹ The FY 2009 actuals will be available in July 2010 due to the lag time associated with collecting and analyzing the Hollings MEP client survey data six months after the services are delivered.

² Beginning in FY 2010, NIST has revised the methodology for this measure by excluding the hundreds of millions of annual downloads associated with web-based time-related services which dominated the total number of downloads in previous years. This adjusted measure will more clearly demonstrate the use of NIST's other online datasets covering scientific and technical databases throughout the NIST laboratories.

³ This number reflects the number of projects funded to support areas of critical national need. Participating organizations include small and medium-sized companies, institutions of higher education, national laboratories, non-profit research institutes, and other organizations.

⁴ The measure reflects scientific knowledge being generated from the funding. Publications include academic journals, conference proceedings, and other publications. The measure also reflects the dissemination of the science benefiting other organizations outside of the project participants. Projections are based on historic data from similar R&D programs. This lagging measure assumes that publications will be generated by the third year of project research.

⁵ The measure reflects an additional metric of valuable knowledge and science generated from the funded research. Projections are based on historic data from similar R&D programs. This is a lagging measure and assumes that patent applications will be generated by the third year of project research.

⁶ This measure reflects the creation of transformative research whose value is demonstrated by continued R&D investment by the original researchers or by others. This is a lagging measure and is assessed after the TIP funding for the cost-shared awards has stopped (generally three years or later).

⁷ This measure reflects the implementation of the R&D efforts to benefit end users. Adoption includes testing of the research results at a beta site, licensing the technologies to others, or commercializing the technology through improved products and processes. This is a lagging measure and is assumed to be realized near the end of the project at the earliest (generally three years or later).

