CONGRESSIONAL BUDGET OFFICE
COST ESTIMATE

May 6, 2010

H.R. 5116
America COMPETES Reauthorization Act of 2010

As ordered reported by the House Committee on Science and Technology on April 28, 2010

SUMMARY

H.R. 5116 would authorize appropriations totaling about $86 billion over the 2011-2015 period for several agencies to support scientific research, industrial innovation, and certain educational activities. Assuming appropriation of the necessary amounts, CBO estimates that implementing the legislation would cost about $65 billion over the 2011-2015 period, and about $20 billion after 2015. Enacting the legislation could increase revenues (from certain fees) and associated direct spending; therefore, pay-as-you-go procedures would apply. However, CBO estimates that the net effects would be negligible for each year.

H.R.. 5116 contains no intergovernmental or private-sector mandates as defined in the Unfunded Mandates Reform Act (UMRA) and would impose no costs on state, local, or tribal governments.

ESTIMATED COST TO THE FEDERAL GOVERNMENT

The estimated budgetary impact of H.R. 5116 is shown in the following table. The costs of this legislation fall within budget functions 250 (general science, space, and technology), 270 (energy), 370 (commerce and housing credit), 450 (community and regional development), and 800 (general government).

	By Fiscal Year, in Millions of Dollars					
	2011	2012	2013	2014	2015	2011-2015
CHANGES IN SPENDING SUBJECT TO APPROPRIATION						
National Science Foundation						
Research and Related Activities						
Authorization Level	6,020	6,496	7,009	7,562	8,160	35,247
Estimated Outlays	1,084	3,758	5,379	6,346	7,148	23,715
Education and Human Resources						
Authorization Level	945	1,020	1,100	1,187	1,281	5,533
Estimated Outlays	113	500	786	989	1,115	3,504
Other National Science Foundation Activities						
Authorization Level	520	615	659	687	720	3,200
Estimated Outlays	327	466	581	657	709	2,740
Subtotal, National Science Foundation						
Authorization Level	7,485	8,131	8,768	9,436	10,161	43,980
Estimated Outlays	1,524	4,724	6,746	7,993	8,972	29,958
Department of Energy						
Office of Science						
Authorization Level	5,247	5,614	6,007	6,428	6,878	30,174
Estimated Outlays	2,886	4,662	5,775	6,180	6,612	26,115
Other Department of Energy Activities						
Estimated Authorization Level	530	718	943	1,171	1,384	4,746
Estimated Outlays	292	554	814	1,035	1,254	3,948
Subtotal, Department of Energy						
Estimated Authorization Level	5,777	6,332	6,950	7,599	8,262	34,920
Estimated Outlays	3,177	5,216	6,589	7,214	7,866	30,062
National Institute of Standards and Technology						
Scientific and Technical Research						
Authorization Level	620	657	697	739	783	3,495
Estimated Outlays	477	636	687	728	772	3,300
Industrial Technology Services						
Authorization Level	246	250	261	264	276	1,297
Estimated Outlays	39	149	220	251	265	924

Continued

	By Fiscal Year, in Millions of Dollars					
	2011	2012	2013	2014	2015	2011-2015
CHANGES IN SPENDING SUBJECT TO APPROPRIATION (Continued)						
Facility Construction and Maintenance						
Authorization Level	125	85	122	124	133	589
Estimated Outlays	15	28	47	86	100	275
Subtotal, National Institute of Standards and Technology						
Authorization Level	991	992	1,080	1,126	1,192	5,382
Estimated Outlays	532	813	953	1,064	1,137	4,499
Economic Development Administration						
Regional Innovation Cluster Program						
Estimated Authorization Level	200	200	200	200	200	1,000
Estimated Outlays	10	54	98	154	194	510
Loan Guarantee Program						
Authorization Level	50	50	50	50	50	250
Estimated Outlays	10	40	47	50	50	197
Subtotal, Economic Development Agency						
Estimated Authorization Level	250	250	250	250	250	1,250
Estimated Outlays	20	94	145	204	244	707
Office of Science and Technology Policy						
Estimated Authorization Level	10	10	10	10	10	50
Estimated Outlays	9	10	10	10	10	49
Total Changes						
Estimated Authorization Level	14,513	15,716	17,058	18,412	19,875	85,582
Estimated Outlays	5,262	10,857	14,442	16,485	18,229	65,275

Note: Components may not sum to totals because of rounding.

BASIS OF ESTIMATE

For this estimate, CBO assumes H.R. 5116 will be enacted in 2010 and that the necessary amounts will be appropriated for each fiscal year. Estimated outlays are based on historical spending patterns for existing and similar programs.

National Science Foundation (NSF) Programs

H.R. 5116 would authorize appropriations totaling nearly $44 billion over the 2011-2015 period for the National Science Foundation to carry out various activities to support basic scientific research and education.

Research and Related Activities. The bill would authorize the appropriation of $35.2 billion over the 2011-2015 period for programs under NSF's research and related activities account. In 2010, those programs received an appropriation of $5.6 billion to support most of NSF's basic science, technology, engineering, and mathematics (STEM) research. Based on historical spending patterns, CBO estimates that this provision would cost $23.7 billion over the 2011-2015 period and $11.5 billion after 2015.

Education and Human Resources. The legislation would authorize the appropriation of $5.5 billion over the 2011-2015 period for NSF's education and human resources programs. In 2010, those programs received an appropriation of $873 million to support and expand information regarding STEM and in the workforce in those fields. Based on historical spending patterns, CBO estimates that implementing this provision would cost $3.5 billion over the 2011-2015 period and about $2 billion after 2015.

Other NSF Activities. H.R. 5116 would authorize the appropriation of $3.2 billion over the 2011-2015 period for other NSF activities, including agency operations and award management ($1.9 billion), major research equipment and facilities construction ($1.2 billion), the Office of the Inspector General ($80 million), the Office of the National Science Board ($26 million), and a pilot program ($12 million) to award cash incentives for private entities to develop certain innovative technologies. In 2010, NSF received appropriations totaling $436 million for those activities. Based on historical spending patterns, CBO estimates that implementing those provisions would cost $2.7 billion over the 2011-2015 period and about $500 million after 2015, assuming appropriation of the specified amounts.

Department of Energy (DOE) Programs

CBO estimates that H.R. 5116 would authorize the appropriation of about $35 billion over the 2011-2015 period for the Department of Energy to carry out various activities to support scientific research and education.

Office of Science. The bill would authorize the appropriation of $30.2 billion over the 2011-2015 period for DOE research programs in basic energy sciences, biological and environmental sciences, and computational science. In addition, those funds would be used by DOE to manage 10 national laboratories and to support certain education initiatives. In 2010, DOE received appropriations totaling $4.9 billion to carry out those activities.

Assuming appropriation of the specified amounts, CBO estimates that implementing this provision would cost $26.1 billion over the 2011-2015 period and $4.1 billion after 2015.

Other DOE Activities. The legislation would authorize appropriations totaling $4.3 billion over the 2011-2015 period for the Advanced Research Project Agency-Energy ($3.2 billion), which funds the research and development of projects with potential energy and environmental applications; the energy innovation hub program ($860 million), which would fund research teams working to develop innovative technologies with practical industry applications; and the energy applied science talent expansion program ($176 million), which would provide grants to higher education institutions to enhance STEM education. Assuming appropriation of the specified amounts, CBO estimate that implementing those provisions would cost almost $3.6 billion over the 2011-2015 period and about $750 million after 2015.

H.R. 5116 also would authorize the appropriation of such sums as are necessary to reauthorize and expand certain STEM educational programs, which would support students, teachers, and researchers at secondary and post-secondary institutions and to establish the cooperative research and development fund, which would cover the federal share of research and development agreements between the federal government and nonfederal entities. Based on information from DOE and assuming appropriation of the necessary amounts, CBO estimates that implementing those programs would cost $481 million over the 2011-2015 period and $80 million after 2015.

National Institute of Standards and Technology (NIST) Programs

H.R. 5116 would authorize the appropriation of almost $5.4 billion over the 2011-2015 period for programs administered by the National Institute of Standards and Technology.

Scientific and Technical Research. The bill would authorize the appropriation of about $3.5 billion over the 2011-2015 period for NIST's Scientific and Technical Research Services program. The program supports NIST's laboratories and technical programs as well as national research facilities, including the Center for Nanoscale Science and Technology. Assuming appropriation of the specified amounts, CBO estimates that implementing this provision would cost $3.3 billion over the 2011-2015 period and about $200 million after 2015.

Industrial Technology Services. The legislation would authorize the appropriation of $1.3 billion over the 2011-2015 period to operate programs under the industrial technology services account. Those amounts would be used primarily to fund two programs, the manufacturing extension partnership ($800 million), which provides technical assistance and training to small manufacturers, and the Technology Innovation Program ($400 million), which provides grants to small- and medium-sized businesses to support research and development on emerging technologies. Additional amounts would be authorized for

the Malcolm Baldrige National Quality Awards Program ($50 million). Assuming appropriation of the specified amounts, CBO estimates that implementing this provision would cost $924 million over the 2011-2015 period and $373 million after 2015.

Facility Construction and Maintenance. H.R. 5116 would authorize the appropriation of $589 million over the 2011-2015 period for construction and maintenance of NIST buildings and laboratories. Assuming appropriation of the specified amounts, CBO estimates that implementing this provision would cost $275 million over the 2011-2015 period and $314 million after 2015.

Economic Development Administration (EDA) Programs

H.R. 5116 would authorize appropriations totaling about $1.3 billion over the 2011-2015 period for two Economic Development Administration programs to support the development of innovative technologies to aid small- and medium-sized businesses.

Regional Innovation Cluster Program. The bill would authorize the appropriation of whatever amounts are necessary to support regional innovation clusters (geographically related groups of businesses focused on developing technologies for a particular industry sector). Under the bill, EDA would provide technical assistance and competitive grants to support the development of regional innovation clusters. The bill also would require EDA to contract with the National Academy of Sciences (NAS) to evaluate the effectiveness of the program. Based on information from EDA and NAS, CBO estimates that implementing this provision would cost $510 million over the 2011-2015 period and $490 million after 2015.

Loan Guarantee Program. The legislation would establish an EDA program to provide loan guarantees to small- and medium-sized businesses to support the development of innovative manufacturing technologies. Under the Federal Credit Reform Act, the budgetary impact of the program would be measured in terms of the projected subsidy cost to provide such guarantees. (The subsidy cost is the estimated long-term cost—the value of defaults less recoveries—to the government of the loan guarantee calculated on a net-present-value basis, excluding administrative costs.) The bill would authorize $50 million a year over the 2011-2015 period for the subsidy cost of providing loan guarantees under the program. CBO estimates that the program would cost about $200 million over the 2011-2015 period. Based on information from Standard and Poor's regarding the cumulative default and recovery rates for bonds with similar risk profiles, CBO estimates that the subsidy rate for the program would be between 15 percent and 20 percent. Therefore, we estimate that the program would allow EDA to guarantee roughly $300 million in loans each year over the 2011-2015 period.

The legislation also would authorize EDA to convert those loan guarantees into direct loans if borrowers were in risk of imminent default. The Congress would have to

appropriate additional funds to cover the subsidy cost of any such direct loans prior to those loans being disbursed. CBO expects that the Secretary would use this authority infrequently and that any direct loan made under this authority would have a very high subsidy rate. Furthermore, CBO expects that it would be infeasible for the Congress to appropriate the necessary funds to convert a loan guarantee in imminent danger of default to a direct federal loan once the Secretary has chosen to exercise that authority. Therefore, we estimate that this provision would have no significant cost.

Office of Science and Technology Policy

Under H.R. 5116, the Office of Science and Technology Policy would be required to submit additional reports to the Congress and prepare planning documents regarding nanotechnology and networking and research on information technology. Based on information from that office, the coordinating agencies, and the member agencies, as well as the cost of similar provisions, CBO estimates that implementing those provisions would cost about $50 million over the 2011-2015 period, assuming appropriation of the necessary amounts.

PAY-AS-YOU-GO CONSIDERATIONS

The Statutory Pay-As-You-Go Act of 2010 establishes budget reporting and enforcement procedures for legislation affecting direct spending or revenues. H.R. 5116 would allow EDA to collect fees to cover administrative costs related to a loan guarantee program to provide loans to small- and medium-sized businesses to support the development of innovative manufacturing technologies. The collection of those fees would increase revenues and associated direct spending; therefore, pay-as-you-go procedures would apply. However, CBO estimates that any increase in revenues from fees would be offset by similar increases in direct spending for administrative expenses. The net budgetary changes that are subject to pay-as-you-go procedures are shown in the following table.

CBO Estimate of Pay-As-You-Go Effects for H.R. 5116, the America COMPETES Reauthorization Act of 2010, as ordered reported by the House Committee on Science and Technology on April 28, 2010

	By Fiscal Year, in Millions of Dollars												
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2010-2015	2010-2020
NET INCREASE OR DECREASE (-) IN THE DEFICIT													
Statutory Pay-As-You-Go Impact	0	0	0	0	0	0	0	0	0	0	0	0	0

INTERGOVERNMENTAL AND PRIVATE-SECTOR IMPACT

H.R. 5116 contains no intergovernmental or private-sector mandates as defined in UMRA. Public colleges, universities, and research centers could benefit from grants authorized by the bill.

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