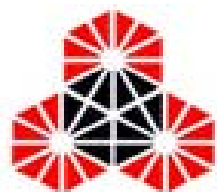




**Side-by-Side Comparison of Key Innovation &  
Competitiveness Bills in Congress and the  
American Competitiveness Initiative (ACI)  
as of June 2007**



**Compiled by the ASTRA Legislative Task Force and the  
American Chemical Society's Office of Legislative and Government Affairs**

*June 20, 2007*

No. 1



**S. 761 - America Creating Opportunities to Meaningfully Promote Excellence in Technology, Education, and Science (COMPETES) Act of 2007**

**H. R. 2272 - 21st Century Competitiveness Act of 2007**

**National Science Foundation**

**Section 4001. Authorization of Appropriations.**

-Authorizes \$33.6 billion for the National Science Foundation (NSF) for four fiscal years at the following levels (in billions of \$):

	FY 2008	FY 2009	FY 2010	FY 2011
<b>NSF Total</b>	<b>\$6.729</b>	<b>\$7.738</b>	<b>\$8.899</b>	<b>\$10.234</b>

**Section 303. Authorization of Appropriations.**

-Authorizes \$21 billion for the National Science Foundation (NSF) for three fiscal years at the following levels (in billions of \$):

	FY 2008	FY 2009	FY 2010
<b>NSF Total</b>	<b>\$6.500</b>	<b>\$6.980</b>	<b>\$7.493</b>

Authorizations include \$16.4 billion for research and related activities (R&RA), \$2.8 billion for education and human resources (EHR), and \$787 million for major research facilities (MREFC).

-Allocates funding for major research instrumentation (MRI) program under the R&RA account, and for certain K-12 and two-year college education and teacher training programs under the EHR account. Sets the ceiling for MRI awards at \$4 million, or \$6 million if the total MRI budget exceeds \$125 million, and requires 30 percent cost-sharing on MRI awards for Ph.D.-granting institutions.

-Requires the Director to include global warming and climate science as part of the Informal Science Education and Discovery Research K-12 activities.

**Section 4002. Strengthening of Education and Human Resources Directorate through Equitable Distribution of New Funds.**

-Provides for annual funding increases for the education and human resources programs of the National Science Foundation to ensure the continued involvement of experts at the National Science Foundation in improving science, technology, engineering and mathematics education at the elementary, secondary and postsecondary level.

-Authorizes that as appropriations for the National Science Foundation increase, funds for the education and human resources programs would increase by a proportional amount.

**Section 303. Authorization of Appropriations.**

-Requires the Director to fund undergraduate education division programs at a growth rate equal to the Foundation's overall growth rate; and the Research Experiences for Undergraduates program at a rate equal to the R&RA growth rate.



**S. 761 - America Creating Opportunities to Meaningfully Promote Excellence in Technology, Education, and Science (COMPETES) Act of 2007**

**H. R. 2272 - 21st Century Competitiveness Act of 2007**

**Section 4003. Graduate Fellowships and Graduate Traineeships.**

-Requires the Director of NSF to expand both the Graduate Research Fellowship Program and the Integrative Graduate Education and Research Traineeship Program for an additional 1,250 students each over the next 4 years. Within the amounts authorized under Section 4001, this section would authorize appropriations at the following levels (in millions of \$) :

	FY 2008	FY 2009	FY 2010	FY 2011
GRF	\$24	\$36	\$48	\$60
IGERT	\$22	\$33	\$44	\$55

**Section 4004. Professional Science Master's Degree Programs.**

-Requires the Director of NSF to establish an NSF clearinghouse to share program elements used in professional science master's degree (PSMD) programs and other advanced degree programs related to science, mathematics, technology, and engineering, to help institutions of higher education establish professional science master's programs.

-Authorizes appropriations at the following levels in Fiscal Years 2008 through 2011 to carry out this section (in millions of \$):

	FY 2008	FY 2009	FY 2010	FY 2011
PSMD	\$15	\$18	\$20	\$20

**Section 4005. Increased Support for Science Education through the National Science Foundation.**

-Authorizes appropriations for the science, mathematics, engineering, and technology talent program at the following levels in Fiscal Years 2008 through 2011 (in millions of \$):

	FY 2008	FY 2009	FY 2010	FY 2011
STEM Talent	\$40	\$45	\$50	\$55

**Section 204. Integrative graduate education and research traineeship program.**

-Directs NSF to allocate at least 1.5% of the amounts appropriated for Research and Related Activities to the Integrative Graduate Education and Research Traineeship (IGERT) program, which provides support for graduate students in fields relevant to national needs. It requires NSF to coordinate with other agencies to expand the interdisciplinary nature of the IGERT program and authorizes NSF to accept funds from other agencies to carry out the program.

**Section 125. STEM Talent Expansion Program.**

-Authorizes appropriations for the STEM Talent Expansion program at NSF at the following levels in FY 2008 through FY2011 (in millions of dollars):

	FY 2008	FY 2009	FY 2010
STEM Talent	\$44	\$55	\$60



**S. 761 - America Creating Opportunities to Meaningfully Promote Excellence in Technology, Education, and Science (COMPETES) Act of 2007**

**H. R. 2272 - 21st Century Competitiveness Act of 2007**

**Section 4007. Reaffirmation of the Merit-Review Process of the National Science Foundation.**

-Clarifies that nothing in this Act shall be interpreted to require or recommend that NSF change its (1) merit-review system or (2) peer review process.

**Section 4008. Experimental Program to Stimulate Competitive Research.**

-Authorizes the NSF's Experimental Program to Stimulate Competitive Research (EPSCoR) at \$125 million for Fiscal Year 2008, of the funds authorized in Section 4001, increasing each year from FY 2009 to FY 2011 by the same percentage by which NSF's overall funding increases.

**Section 4009. Encouraging Participation.**

-Requires the Director of NSF to establish a program to provide mentors for women who are interested in careers in science, technology, engineering, and mathematics by pairing such women with mentors who are working in industry.

**Section 4010. Cyberinfrastructure.**

-Requires the Director of NSF to develop and publish a plan that describes the current status of broadband access for scientific research purposes in EPSCoR-eligible jurisdictions and outlines actions that could be taken to ensure that broadband connections are available to enable participation in NSF programs that rely heavily on high-speed networking and collaborations across institutions and regions.

**Section 4011. Federal Information and Communications Technology Research.**

-Requires the Director of NSF to establish a grant program for basic research in advanced information and communications technologies focused on enhancing or facilitating the availability and affordability of advanced communications services to all Americans.



**S. 761 - America Creating Opportunities to Meaningfully Promote Excellence in Technology, Education, and Science (COMPETES) Act of 2007**

**H. R. 2272 - 21st Century Competitiveness Act of 2007**

**Section 4012. Robert Noyce Teacher Scholarship Program.**

-Authorizes appropriations to carry out the Robert Noyce Scholarship Program at the following levels in FY 2008 through 2011 (in millions of \$):

	FY 2008	FY 2009	FY 2010	FY 2011
<b>Noyce Program</b>	<b>\$117</b>	<b>\$130</b>	<b>\$148</b>	<b>\$200</b>

-Increases support for the Robert Noyce Scholarship Program from \$7,500 to \$10,000 per year for a maximum of two years (in exchange for teaching service) and add a summer internship component for freshmen and sophomores.

**Section 114. Robert Noyce Teacher Scholarship Program.**

-Authorizes appropriations to carry out the Robert Noyce Scholarship Program at the following levels in FY 2008 through FY 2010 (in millions of \$):

	FY 2008	FY 2009	FY 2010
<b>Noyce Program</b>	<b>\$70</b>	<b>\$101</b>	<b>\$133</b>

-Provides competitive awards to institutions of higher education (or consortia of such institutions) that (1) establish cross-department faculty teams (STEM faculty along with education faculty) to develop courses of instruction leading to baccalaureate degrees in STEM fields and also preparing graduates to become certified or licensed to teach in a K-12 classroom, and (2) administer scholarships for students during their sophomore through senior years and summer internships during their freshman years.

-Sets scholarship amounts at the cost of attendance at particular institutions, not to exceed \$10,000 per year, and provides up to 3 years of scholarship support for any individual in exchange for up to 6 years of teaching service.



**S. 761 - America Creating Opportunities to Meaningfully Promote Excellence in Technology, Education, and Science (COMPETES) Act of 2007**

**H. R. 2272 - 21st Century Competitiveness Act of 2007**

**Section 4014. National Science Foundation Teacher Institutes for the 21st Century.**

-Authorizes and increases support for the Teacher Institutes for the 21st Century summer institute program at the National Science Foundation to provide cutting-edge professional development for elementary and secondary school math and science teachers who teach in high need schools.

-Authorizes appropriations to carry out this section at the following levels (in millions of \$):

	FY 2008	FY 2009	FY 2010	FY 2011
Teacher Institutes	\$84	\$94	\$106	\$140

**Section 122. Teacher institutes.**

-Directs NSF to establish a grant program to support summer or academic year teacher institutes and authorizes summer teacher institutes as a component of the NSF 21<sup>st</sup> Century program. Such summer institutes are required to include teacher training activities to prepare teachers to teach challenging courses in mathematics and science, including Advanced Placement and International Baccalaureate courses.

-Authorizes appropriations to carry out this section at the following levels (in millions of \$):

	FY 2008	FY 2009	FY 2010
Teacher Institutes	\$32	\$35.2	\$38.7

-Authorizes for the existing Laboratory Science Teacher Professional Development program at DOE: \$3 million for FY 2008, \$8 million for FY 2009, and \$10 million for each year FY 2010 through FY 2012.

**Section 4015. Partnerships for Access to Laboratory Science.**

-Establishes a pilot program designated as Partnerships for Access to Laboratory Science to award grants to partnerships to pay the Federal share of the costs of improving laboratories and providing instrumentation as part of a comprehensive program to enhance the quality of mathematics, science, engineering, and technology instruction at the secondary school level.

**Section 128. Laboratory science pilot program.**

-Establishes a laboratory science pilot program at NSF. This program funds partnerships, comprised of a university, a high-need school district, and a business, that will improve secondary school laboratory science via

- teacher training and professional development of teachers;
- the development of instructional programs; and
- the acquisition or maintenance of instrumentation and equipment.

-Authorizes appropriations of \$5 million for FY 2008 and such sums as may be necessary for FY 2009, 2010, and 2011.



<b>S. 761 - America Creating Opportunities to Meaningfully Promote Excellence in Technology, Education, and Science (COMPETES) Act of 2007</b>	<b>H. R. 2272 - 21st Century Competitiveness Act of 2007</b>
	<p><b>Section 121. Mathematics and science education partnerships amendments.</b></p> <p>-Authorizes the development of master's degree programs for in-service mathematics and science teachers.</p> <p>-Authorizes teacher training activities to prepare teachers to teach challenging courses in mathematics and science, including Advanced Placement and International Baccalaureate courses, and provides for mentoring by professional scientists, mathematicians, and engineers.</p>
	<p><b>Section 124. Curricula.</b></p> <p>-Affirms that nothing in this Act shall limit the authority of state and local governments to determine curricula.</p>
	<p><b>Section 126. High-need local educational agency definition.</b></p> <p>-Amends the term "high-need local educational agency" in the NSF Authorization Act of 2002 to mean schools with a concentration of children from low-income families and a shortage of highly qualified teachers.</p>
	<p><b>Section 127. Teacher leaders.</b></p> <p>-Replaces the term "master teacher" in the NSF Authorization Act of 2002 with the term "teacher leader".</p>
	<p><b>Section 129. Study on laboratory equipment donations for schools.</b></p> <p>-Requires NSF, in consultation with the Department of Education, to conduct a study and submit a report to Congress within two years of the date of enactment that documents the extent to which institutions of higher education donate used laboratory equipment to K-12 schools.</p>



<b>S. 761 - America Creating Opportunities to Meaningfully Promote Excellence in Technology, Education, and Science (COMPETES) Act of 2007</b>	<b>H. R. 2272 - 21st Century Competitiveness Act of 2007</b>
	<p><b>Section 202. National Science Foundation early career awards for science and engineering researchers.</b></p> <p>-Authorizes NSF to carry out a grant program for awards to scientists and engineers at the early stage of their careers in academia or in nonprofit research organizations. The NSF's existing Faculty Early Career Development (CAREER) program may be designated as the mechanism for awarding these grants. The awards will go to outstanding researchers at the beginning of their careers and are intended for individuals from a variety of types of institutions, including minority serving institutions.</p> <p>-Provides 5 years of research funding support at a minimum of \$80,000 per year per award.</p> <p>-Requires the NSF to designate at least 3.5% of funds appropriated for Research and Related Activities to the grant program for each of FY 2008 through FY 2012, provided that a sufficient number of meritorious applications for the program are received.</p>
	<p><b>Section 207. Research on innovation and inventiveness.</b></p> <p>-Authorizes NSF, in carrying out its research programs on science policy and the science of learning, to support research on the process of innovation and the teaching of inventiveness.</p>
	<p><b>Section 210. Undergraduate scholarships for science, technology, engineering, and mathematics.</b></p> <p>-Establishes at NSF a program, to be known as the Undergraduate Scholarships for Science, Technology, Engineering, and Mathematics (US-STEM) program, for awarding scholarships to undergraduate scholars:</p> <ul style="list-style-type: none"><li>• who excel in their studies in a STEM field;</li><li>• who are in their final two years at a public college or university; and whose family income is less than \$75,000 per year.</li></ul>





<b>S. 761 - America Creating Opportunities to Meaningfully Promote Excellence in Technology, Education, and Science (COMPETES) Act of 2007</b>	<b>H. R. 2272 - 21st Century Competitiveness Act of 2007</b>
	<p><b>Section 304. Centers for Research on Learning and Education Improvement.</b></p> <p>-Requires the Director to continue funding these Centers, which were established by the 2002 NSF Reauthorization, and adds eligibility for awards for certain nonprofit organizations, as defined in the 2002 Act.</p>
	<p><b>Section 305. Interdisciplinary Research.</b></p> <p>-Requires the National Science Board to evaluate the current and potential role of the Foundation in supporting interdisciplinary research, in providing adequate information to the scientific community about opportunities for funding of interdisciplinary research proposals, and in engaging undergraduate students in interdisciplinary research.</p>
	<p><b>Section 306. New Investigators.</b></p> <p>-Establishes a pilot program of one-year seed grants for new investigators to improve their likelihood of being awarded standard competitive research grants. Uses an existing funding mechanism, the Small Grants for Exploratory Research program, to carry out the pilot program.</p> <p>-Requires the Board to evaluate the effectiveness of the pilot program after three years.</p>
	<p><b>Section 307. Broader Impacts Merit Review Criterion.</b></p> <p>-Requires the Director, in reviewing proposals under criterion 2 of the merit review process, to give special consideration to proposals that include partnerships between academic researchers and industrial scientists and engineers and that address research areas that have been identified as having high importance for future national economic competitiveness.</p> <p>-Requires the Director to encourage industry/university partnerships that include cost-sharing.</p> <p>-Requires report to Congress on the impact of the broader impacts grant criterion used by the Foundation.</p>



<b>S. 761 - America Creating Opportunities to Meaningfully Promote Excellence in Technology, Education, and Science (COMPETES) Act of 2007</b>	<b>H. R. 2272 - 21st Century Competitiveness Act of 2007</b>
	<p><b>Section 308. Postdoctoral Research Fellows.</b></p> <p>-Requires funded investigators to report on activities to mentor postdoctoral research fellows funded under their grants.</p>
	<p><b>Section 309. Responsible Conduct of Research.</b></p> <p>-Requires each institution funded by NSF research grants to provide a plan for appropriate training in the responsible and ethical conduct of research to supported individuals.</p>
	<p><b>Section 310. Reporting on Research Results.</b></p> <p>-Requires the Director to make available to the public, through the Foundation website, final project reports and all citations of published work resulting from NSF-funded research.</p>
	<p><b>Section 311. Sharing Research Results.</b></p> <p>-Makes investigators who fail to comply with existing NSF policy on sharing of research results (Section 734 of the NSF Grant Policy Manual) ineligible for future NSF awards until they comply with the policy.</p>
	<p><b>Section 312. Funding for Successful STEM Education Programs.</b></p> <p>-Permits the Director to exempt from the recompetete requirement certain STEM education programs, including minority-serving programs and teacher training programs, that continue to demonstrate positive performance.</p>
	<p><b>Section 313. Cost Sharing.</b></p> <p>-Requires the Board to evaluate the impact of the ruling to eliminate cost-sharing at the Foundation on programs that already do involve or may involve industry partnership.</p>



<b>S. 761 - America Creating Opportunities to Meaningfully Promote Excellence in Technology, Education, and Science (COMPETES) Act of 2007</b>	<b>H. R. 2272 - 21st Century Competitiveness Act of 2007</b>
	<p><b>Section 314. Donations.</b></p> <p>-Allows NSF to accept private funds for certain prize competitions.</p>
	<p><b>Section 315. Additional Reports.</b></p> <p>-Requires the Board to evaluate the Foundation policies on funding for pre-construction and maintenance and operation costs for major research equipment and facilities.</p> <p>-Requires plans for upgrades of Antarctic facilities to be included in the annual national research facilities construction, repair and upgrades plan required under SEC 201(a)(1) of the NSF Authorization Act of 1998, as amended.</p> <p>-Requires the Director to catalog all educational activities supported by R&amp;RA programs and report to Congress.</p> <p>-Requires the Director to report on funding success rates and distribution of awards for the Research in Undergraduate Institutions program.</p> <p>-Requires the Director to report on how funds are allocated for education and human resources activities supported by the Foundation.</p>
	<p><b>Section 316. Administrative Amendments.</b></p> <p>-Changes audit requirement from every year to every three years for assessment of the compliance of the Board with the requirements of the Government in Sunshine Act.</p> <p>-Gives the Board authority to take on IPA assignees (“rotators”) to supplement permanent staff.</p> <p>-Increases the number of Waterman Awards up to three.</p>



<b>S. 761 - America Creating Opportunities to Meaningfully Promote Excellence in Technology, Education, and Science (COMPETES) Act of 2007</b>	<b>H. R. 2272 - 21st Century Competitiveness Act of 2007</b>
	<p><b>Section 317. National Science Board Reports.</b></p> <p>-Amends the National Science Foundation Act of 1950 so that National Science Board reports are submitted directly to Congress from the Board, rather than through the President.</p>
	<p><b>Section 318. National Academy of Science Report on Diversity in STEM Fields.</b></p> <p>-Requires the Foundation to enter into a contract with the National Academies of Sciences for a report on barriers to and strategies for increasing participation of underrepresented minorities in STEM fields.</p>
	<p><b>Section 319. Sense of the Congress Regarding the Mathematics and Science Partnership Programs of the Department of Education and the National Science Foundation.</b></p> <p>-Emphasizes that these programs are complementary, not duplicative, and mandates cooperation between the agencies.</p>
	<p><b>Section 320. Hispanic-serving Institutions Undergraduate Program.</b></p> <p>-Creates a program of competitive grants to enhance the quality of undergraduate STEM education at Hispanic-Serving Institutions through activities to improve courses and curriculum, faculty development and stipends for undergraduates participating in research.</p>
<p><b>Section 3114. Programs for Master's Degrees in Mathematics, Science, or Critical Foreign Languages Education.</b></p> <p>-Authorizes competitive grants for partnerships to develop and implement 2- or 3-year part-time master's degree programs in mathematics, science, or critical foreign language education for current teachers to improve their content knowledge and pedagogical skills.</p> <p>-Authorizes appropriations for both programs of \$210,000,000 for fiscal year 2008, and such sums as may be necessary for each of the three succeeding fiscal years.</p>	<p><b>Section 321. Communications Training For Scientists.</b></p> <p>-Authorizes supplemental, competitive grants to train STEM graduate students how to communicate the substance and importance of their research work to non-scientist audiences, including policymakers, as part of the Integrative Graduate Education and Research Training (IGERT) program.</p>



**S. 761 - America Creating Opportunities to Meaningfully Promote Excellence in Technology, Education, and Science (COMPETES) Act of 2007**

**H. R. 2272 - 21st Century Competitiveness Act of 2007**

## Department of Education

**Section 3123. Advanced Placement and International Baccalaureate Programs.**

-Authorizes competitive grants to achieve the purposes of this subtitle and would authorize to be appropriated \$58,000,000 for fiscal year 2008 and such sums as may be necessary for each of the three succeeding fiscal years.

**Section 3201. Math Now for Elementary School and Middle School Students Program.**

-Authorizes a grant program to improve instruction in mathematics for elementary school and middle school students, and to provide targeted help to students struggling with mathematics, to enable all students to reach or exceed grade-level academic achievement standards.

-Authorizes to be appropriated \$146,700,000 for fiscal year 2008, and such sums as may be necessary for each of the 3 succeeding fiscal years.

**Section 3304. FOREIGN LANGUAGE PARTNERSHIP PROGRAM. Authorization of Appropriations.**

-Authorizes to be appropriated \$22,000,000 for fiscal year 2008 and such sums as may be necessary for each of the three succeeding fiscal years.

**Section 3401. Alignment of Secondary School Graduation Requirements with the Demands of 21st Century Postsecondary Endeavors and Support for P-16 Education Data Systems.**

-Provides that this title would authorize competitive grants to States to promote better alignment of elementary and secondary education with the knowledge and skills needed to succeed in academic credit-bearing coursework in institutions of higher education, in the 21st century workforce and in the Armed Forces.



**S. 761 - America Creating Opportunities to Meaningfully Promote Excellence in Technology, Education, and Science (COMPETES) Act of 2007**

**H. R. 2272 - 21st Century Competitiveness Act of 2007**

**Section 3501. Mathematics and Science Partnerships Bonus Grants.**

-Directs the Secretary of Education to award grants, during school years 2007-2008 through 2010-2011, to each of the three elementary and three secondary schools with a high concentration of low-income students in each state whose students demonstrate the most improvement in mathematics and science, respectively.

**National Institute of Standards and Technology**

**Section 1401. Authorization of Appropriations.**

-Authorizes appropriations for the National Institute of Standards and Technology (NIST) at the following levels from FY 2008 through FY 2011 (in millions of dollars):

	FY 2008	FY 2009	FY 2010	FY 2011
<b>NIST Total</b>	<b>\$703.611</b>	<b>\$773.972</b>	<b>\$851.369</b>	<b>\$936.506</b>

**Section 411. Scientific and Technical Research and Services.**

-Authorizes appropriations for the National Institute of Standards and Technology (NIST) at the following levels from FY 2008 through FY 2010 (in millions of dollars):

	FY 2008	FY 2009	FY 2010
<b>NIST Total</b>	<b>\$795.572</b>	<b>\$855.722</b>	<b>\$877.893</b>

-Authorizations include \$470.9 million in FY08, \$497.8 million in FY09, and \$537.6 million in FY10 for the NIST lab activities.

-Authorizations include \$7.9 million in FY08, \$8.1 million in FY09, and \$8.3 million in FY10 for the Baldrige National Quality Award Program.

-Authorizations include \$93.9 million in FY08, \$86.4 million in FY09, and \$49.7 million for construction and maintenance of facilities.



**S. 761 - America Creating Opportunities to Meaningfully Promote Excellence in Technology, Education, and Science (COMPETES) Act of 2007**

**H. R. 2272 - 21st Century Competitiveness Act of 2007**

**Section 1401. Authorization of Appropriations.**

-Authorizes appropriations for the Hollings Manufacturing Extension Partnership Program (MEP) at the following levels from FY 2008 through FY 2011. (Not included in NIST Total)

-Authorizes as follows (in millions of \$):

	FY 2008	FY 2009	FY 2010	FY 2011
MEP	\$115	\$122.005	\$131.766	\$142.300

**Section 412. Industrial technology services** (see Section 411).

-Authorizations include \$110 million in FY08, \$141.5 million in FY09, and \$150.5 million in FY10 for the Technology Innovation Program (TIP), which replaces the existing Advanced Technology Program (ATP) (see Section 204).

-Requires that at least \$45 million in each year be for new TIP awards.

-Authorizations include \$113.0 million in FY08, \$122.0 million in FY09, and \$131.8 million in FY10 for the Manufacturing Extension Partnership (MEP).

-Sets aside up to \$1 million in FY08 and \$4 million in FY09 and FY10 from the MEP funds for a competitive grant program established in Section 203(c).

**Section 1402. Amendments to the Stevenson-Wydler Technology Innovation Act of 1980.**

-Eliminates the Under Secretary of Commerce for Technology at the Department of Commerce and the related Technology Administration at the Department of Commerce.

**Section 1403. Innovation Acceleration.**

-Establishes the Innovation Acceleration Research Program of Section 1202 at NIST, to be known as the "Standards and Technology Acceleration Research Program" to support and promote innovation in the United States through high-risk, high-reward research and set aside no less than 8 percent of the funds made available to the measurement laboratories at NIST each year for the program.

**Section 1404. Manufacturing Extension.**

-Amends Section 25(c)(5) of the National Institute of Standards and Technology Act (15 U.S.C. 278k(c)(5)) by inserting a probationary program for MEP centers that have not received a satisfactory rating. If the issues of a center are not addressed in one year, the Director would be required to conduct a competition to select a new operator for the center.

**Section 423. Manufacturing Extension Partnership.**

-Establishes the MEP Advisory Board, which consists of 10 members appointed by the NIST Director, serving 3-year terms.

-Allows MEP to accept funds from other Federal agencies and from the private sector.

-Establishes the MEP competitive grants program for MEP Centers or consortia of Centers.



<b>S. 761 - America Creating Opportunities to Meaningfully Promote Excellence in Technology, Education, and Science (COMPETES) Act of 2007</b>	<b>H. R. 2272 - 21st Century Competitiveness Act of 2007</b>
<p><b>Section 1405. Experimental Program to Stimulate Competitive Technology.</b></p> <p>-Re-establishes the Experimental Program to Stimulate Competitive Technology (EPSCoT).</p>	
<p><b>Section 1406. Technical Amendments to the NIST Act and Other Technical Amendments.</b></p> <p>-Makes several technical amendments to the NIST Act.</p>	
	<p><b>Section 208. Report on National Institute of Standards and Technology efforts to recruit and retain early CAREER science and engineering researchers.</b></p> <p>-Directs NIST to transmit to the House Committee on Science and Technology and the Senate Committee on Commerce, Science, and Transportation, not later than 3 months following enactment of the bill, a report on efforts to recruit and retain early-career scientists and engineers at NIST.</p>
	<p><b>Section 412. Industrial technology services</b></p> <p>-Authorizes \$110 million in FY08, \$141.5 million in FY09, and \$150.5 million in FY10 for the Technology Innovation Program (TIP), which replaces the existing Advanced Technology Program (ATP) (see Section 204).</p> <p>-Requires that at least \$45 million in each year be for new TIP awards.</p> <p>-Authorizes \$113.0 million in FY08, \$122.0 million in FY09, and \$131.8 million in FY10 for the Manufacturing Extension Partnership (MEP).</p> <p>-Sets aside up to \$1 million in FY08 and \$4 million in FY09 and FY10 from the MEP funds for a competitive grant program established in Section 203(c).</p>





**S. 761 - America Creating Opportunities to Meaningfully Promote Excellence in Technology, Education, and Science (COMPETES) Act of 2007**

**H. R. 2272 - 21st Century Competitiveness Act of 2007**

**Section 421. Institute-wide planning report.**

-Requires the Director of NIST to submit a 3-year programmatic planning document for NIST to the Congress concurrent with the budget submission the first year after enactment, and then to submit yearly updates with each new budget submission.

**Section 422. Report by Visiting Committee.**

-Changes the reporting requirement for the Visiting Committee on Advanced Technology (VCAT) to be due 30 days after the submission of the President's budget to Congress, and requires the VCAT to comment on the NIST Director's 3-year planning document.



**S. 761 - America Creating Opportunities to Meaningfully Promote Excellence in Technology, Education, and Science (COMPETES) Act of 2007**

**H. R. 2272 - 21st Century Competitiveness Act of 2007**

**Section 424. Technology Innovation Program.**

-Repeals the existing Advanced Technology Program (ATP) statute and creates the Technology Innovation Program (TIP).

Establishment – Creates the “Technology Innovation Program” with the purpose of assisting businesses and universities to accelerate the development of high-risk, high-reward technologies in areas of critical national need.

Continuation of ATP Grants – Requires the TIP to continue funding for awards made under the prior Advanced Technology Program.  
Coordination with Other State and Federal Technology Programs

-Requires the Director to coordinate with other state and federal agencies to ensure there is no duplication of effort.

Acceptance of Funds From Other Federal Agencies – Allows NIST to accept funds from other Federal agencies to fund TIP awards. Any awards so funded must be selected and carried out as all other TIP awards.

TIP Advisory Board – Establishes the TIP Advisory Board, which consists of 10 members appointed by the NIST Director, serving three-year terms. Seven members must be from US industry, and none can be Federal employees. The board meets no less than twice a year, and provides the NIST Director with advice on and assessments of TIP. It also comments on the relevant sections of the NIST Director’s three-year planning document at the same time as the VCAT. The Board is governed by the Federal Advisory Committee Act (FACA).

**Section 425. Research Fellowships.**

-Raises the amount NIST can spend on research fellowships from 1 percent to 1.5 percent of the total appropriations. This will also allow for additional manufacturing research fellowships as established in Section 207.



<b>S. 761 - America Creating Opportunities to Meaningfully Promote Excellence in Technology, Education, and Science (COMPETES) Act of 2007</b>	<b>H. R. 2272 - 21st Century Competitiveness Act of 2007</b>
	<p><b>Section 426. Collaborative Manufacturing Research Pilot Grants.</b></p> <p>-Establishes a collaborative manufacturing research pilot grant program for partnerships between at least one industry and one non-industry partner, with the purpose of fostering collaboration and conducting applied research on manufacturing.</p>
	<p><b>Section 427. Manufacturing Fellowship Program.</b></p> <p>-Establishes a program of postdoctoral and senior research fellowships at NIST in manufacturing sciences.</p>
	<p><b>Section 428. Meetings of Visiting Committee on Advanced Technology.</b></p> <p>-Reduces the frequency of meetings for the Visiting Committee on Advanced Technology (VCAT) from quarterly to twice annually.</p>
	<p><b>Section 429. Manufacturing Research Database.</b></p> <p>-Authorizes \$2 million for NIST to establish a database of manufacturing research projects funded in whole or in part by the federal government. The database will be easily accessible but may charge a nominal fee for use.</p>
	<p><b>Section 441. Post-Doctoral Fellows.</b></p> <p>-Raises the cap on the number of post-doctoral fellows that NIST can accept each year from 60 to 120.</p>
	<p><b>Section 442. Financial Agreements Clarification.</b></p> <p>-Authorizes NIST to enter into grants and cooperative agreements, in addition to its current authority to enter into contracts and cooperative research and development agreements (CRADAs).</p>



<b>S. 761 - America Creating Opportunities to Meaningfully Promote Excellence in Technology, Education, and Science (COMPETES) Act of 2007</b>	<b>H. R. 2272 - 21st Century Competitiveness Act of 2007</b>
	<p><b>Section 443. Working Capital Fund Transfers.</b></p> <p>-Authorizes NIST to transfer up to 0.25 percent of its total appropriations, and any funds from other agencies given to NIST to produce Standard Reference Materials, into the Working Capital Fund.</p>
	<p><b>Section 444. Retention of Depreciation Surcharge.</b></p> <p>-Allows NIST to retain the building use and depreciation surcharge fees that are charged by the General Services Administration.</p>
	<p><b>Section 445. Non-Energy Inventions Program.</b></p> <p>-Repeals an outdated statute requiring the NIST Director to establish a program to evaluate inventions.</p>
	<p><b>Section 446. Redefinition of the Metric System.</b></p> <p>-Clarifies in statute that the metric system used in the US is the modern system of metric measurement units.</p>
	<p><b>Section 447. Repeal of Redundant and Obsolete Authority.</b></p> <p>-Eliminates archaic, special-case language related to the definition of units of electrical and light measurement.</p>
	<p><b>Section 448. Clarification of Standard Time and Time Zones.</b></p> <p>-Specifies that standard time in the US is Coordinated Universal Time, and fixes technical problems in statute with the time zone definitions.</p>



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	<p><b>Section 449. Procurement of Temporary and Intermittent Services.</b></p> <p>-Authorizes NIST to issue up to 200 personal services contracts per year to procure the temporary or intermittent services of scientific and technical experts and consultants. The authority expires in 2010, and the Comptroller General is required to report to the Congress on NIST's use of this authorization.</p>
	<p><b>Section 450. Malcolm Baldrige Awards.</b></p> <p>-Raises to 18 the cap on the number of annual awards under the Malcolm Baldrige National Quality Award Program and removes category restrictions.</p>
	<p><b>Section 501. High-Performance Computing Research and Development Program.</b></p> <p>-Amends the High Performance Computing Act of 1991 to improve planning and coordination for interagency research and development in information technology.</p> <p>-Requires the development of a roadmap to provide for the sustained deployment of high performance computers for use by the research community and a plan to support the research and development efforts needed for the next generation of high-performance computers.</p>
<b>Office of Science and Technology Policy</b>	
<p><b>Section 1101. National Science and Technology Summit.</b></p> <p>-Requires the President to convene a National Science and Technology Summit to identify key research and technology challenges and recommendations for research and development investment over the next five years as a result of the summit.</p>	



<b>S. 761 - America Creating Opportunities to Meaningfully Promote Excellence in Technology, Education, and Science (COMPETES) Act of 2007</b>	<b>H. R. 2272 - 21st Century Competitiveness Act of 2007</b>
<p><b>Section 1102. Study on Barriers to Innovation.</b></p> <p>-Requires the Director of the Office of Science and Technology Policy to enter into a contract with the National Academy of Sciences to conduct a study to identify forms of risk that create barriers to innovation one year after enactment and four years after enactment.</p>	
<p><b>Section 1103. National Innovation Medal.</b></p> <p>-Renames the “National Technology Medal” as the “National Technology and Innovation Medal.”</p>	
<p><b>Section 1104. Release of Scientific Research Results.</b></p> <p>-Requires the Director of the Office of Science and Technology Policy (OSTP) to develop and issue a set of principles for the communication of scientific information by government scientists, policy makers, and managers to the public within 90 days after the date of enactment of this Act.</p>	
<p><b>Section 1105. Semiannual Science, Technology, Engineering, and Mathematics Days.</b></p> <p>-Expresses the Sense of Congress that OSTP should encourage all elementary and middle schools to observe a Science, Technology, Engineering, and Mathematics Day twice in every school year for the purpose of bringing in science, technology, engineering, and mathematics mentors to provide hands-on lessons to excite and inspire students to pursue the science, technology, engineering, and mathematics.</p>	
<p><b>Section 1106. Study on Service Science.</b></p> <p>-Requires the Director of OSTP, through the National Academy of Sciences, to conduct a study on how the Federal Government should best support service science through research, education, and training, the emerging management and learning discipline known as service science.</p>	



<b>S. 761 - America Creating Opportunities to Meaningfully Promote Excellence in Technology, Education, and Science (COMPETES) Act of 2007</b>	<b>H. R. 2272 - 21st Century Competitiveness Act of 2007</b>
<p><b>Section 1201. President's Council on Innovation and Competitiveness.</b></p> <p>-Requires the President to establish a President's Council on Innovation and Competitiveness.</p>	
<p><b>Section 1202. Innovation Acceleration Research.</b></p> <p>-Requires the President to establish the "Innovation Acceleration Research Program" to support and promote innovation in the United States through research projects that can yield results with far-ranging or wide-ranging implications but are considered too novel or span too diverse a range of disciplines to fare well in the traditional peer review process.</p>	
	<p><b>Section 205. Presidential innovation award.</b></p> <p>-Establishes the Presidential Innovation Award presented periodically, on the basis of recommendations from the Director of the Office of Science and Technology Policy, to citizens or permanent residents of the U.S. who develop unique scientific or engineering ideas judged to stimulate scientific and engineering advances in the national interest, to illustrate the linkage between science and engineering and national needs, and to provide an example to excite the interest of students in science or engineering professions.</p>
	<p><b>Section 206. National Coordination Office for Research Infrastructure.</b></p> <p>-Establishes a National Coordination Office for Research Infrastructure under the Office of Science and Technology Policy to identify and prioritize deficiencies in research facilities and instrumentation in academic institutions and national laboratories and to make recommendations for use of funding authorized. The Office is directed to report to Congress annually at the time of the administration's budget proposal.</p>



**S. 761 - America Creating Opportunities to Meaningfully Promote Excellence in Technology, Education, and Science (COMPETES) Act of 2007**

**H. R. 2272 - 21st Century Competitiveness Act of 2007**

**Department of Energy**

**Section 2003. Mathematics, Science and Engineering Education at the Department of Energy.**

-Creates a, "Director of Mathematics, Science and Engineering Education Programs" at the Department of Energy to coordinate all Mathematics, Science, and Engineering Education Department-wide.

-Amends the DOE Science Education Enhancement Act to establish new programs in science, mathematics, and engineering education, including:

- (1) Specialty Schools for Math and Science,
- (2) Experiential-Based Learning Opportunities,
- (3) National Laboratories Centers of Excellence in Mathematics and Science Education,
- (4) Summer Institutes, and
- (5) Nuclear Science Education.

**Section 2004. Department of Energy Early Career Research Grants.**

- Authorizes DOE \$91 million in research grants for early-career scientists and engineers pursuing innovative, independent research at for 4 fiscal years at the following levels (in millions of \$):

	<b>FY 2008</b>	<b>FY 2009</b>	<b>FY 2010</b>	<b>FY 2011</b>
<b>DOE Grants</b>	<b>\$13</b>	<b>\$19.5</b>	<b>\$26</b>	<b>\$32.5</b>

**Section 203. Department of Energy early career awards for science and engineering researchers.**

-Authorizes DOE \$125 million to carry out a grant program for awards to scientists and engineers at the early stage of their careers in academia or in nonprofit research organizations to conduct research in fields relevant to the mission of DOE.

-Authorizes for 5 fiscal years at the following levels (in millions of \$):

	<b>FY 2008</b>	<b>FY 2009</b>	<b>FY 2010</b>	<b>FY 2011</b>	<b>FY 2012</b>
<b>DOE Grants</b>	<b>\$25</b>	<b>\$25</b>	<b>\$25</b>	<b>\$25</b>	<b>\$25</b>





**S. 761 - America Creating Opportunities to Meaningfully Promote Excellence in Technology, Education, and Science (COMPETES) Act of 2007**

**H. R. 2272 - 21st Century Competitiveness Act of 2007**

**Section 2005. Advanced Research Projects Authority–Energy.**

-Establishes the Advanced Research Projects Authority – Energy (ARPA-E) as a new agency within the Department of Energy.

**Section 2006. Authorization of Appropriations for the Department of Energy Office of Science.**

-Authorizes \$19.61 billion for the Department of Energy Office of Science for four fiscal years at the following levels (in billions of \$):

	FY 2008	FY 2009	FY 2010	FY 2011
<b>DOE Office of Science Total</b>	<b>\$4.6</b>	<b>\$4.8</b>	<b>\$4.945</b>	<b>\$5.265</b>

**Section 2007. Discovery Science and Engineering Innovation Institutes.**

-Establishes multi-disciplinary institutes centered at National Laboratories to apply fundamental science and engineering discoveries to technological innovations related to the missions of the Department and the global competitiveness of the United States.

-Authorizes \$10 million in federal funding annually from 2008 through 2011.

**Section 2008. PACE Graduate Fellowship Program.**

-Establishes a competitive graduate fellowship program for up to 700 students pursuing doctoral degrees in mission areas of the Department.

**Section 2009. Title IX Compliance.**

-Requires the Department of Energy to conduct compliance reviews of two grant recipients to determine compliance with the provisions of Title IX of the Education Amendments of 1972.



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<b>Section 2010. High-Risk, High-Reward Research.</b>  -Requires the Secretary of Energy to establish a grant program to encourage the conduct of high-risk, high-reward research at the Department of Energy.	
<b>Section 2011. Distinguished Scientists Program.</b>  -Reestablishes a joint program between universities and national laboratories to support up to 100 distinguished scientists positions.	
<b>NASA</b>	
<b>Section 1301. NASA's Contribution to Innovation.</b>  -Directs that NASA be regarded as a full participant in interagency activities to promote competitiveness and innovation and to enhance science, technology, engineering and mathematics education.	
<b>Section 1302. Aeronautics Institute for Research.</b>  -Consolidates NASA's aeronautics research authorized under the NASA Authorization Act of 2005 (P.L. 109-155) into an Aeronautics Institute for Research within NASA.	
<b>Section 1303. Basic Research Enhancement.</b>  -Establishes, within NASA, a Basic Research Executive Council to oversee the distribution and management of programs and resources engaged in support of basic research activity.	
<b>Section 1304. Aging Workforce Issues Program.</b>  -Expresses a Sense of Congress that the Administrator of NASA should implement a program to address aging workforce issues in aerospace.	



<b>S. 761 - America Creating Opportunities to Meaningfully Promote Excellence in Technology, Education, and Science (COMPETES) Act of 2007</b>	<b>H. R. 2272 - 21st Century Competitiveness Act of 2007</b>
<p><b>Section 1305. Conforming Amendments.</b></p> <p>-Requires NASA to assess how NASA science activities can best be structured to ensure that basic and fundamental research can be effectively maintained and coordinated in response to national goals in competitiveness and innovation.</p>	
<p><b>Section 1306. Fiscal Year 2008 Basic Science and Research Funding.</b></p> <p>-Provides additional authorization, above the levels authorized in the National Aeronautics and Space Administration Act of 2005 (P.L. 109-155), of \$160 million for the funding of basic science and research for fiscal year 2008.</p>	
	<p><b>Section 209. NASA's contribution to innovation.</b></p> <p>-Expresses the sense of Congress that a balanced and robust program in science, aeronautics, exploration, and human space flight at NASA contributes significantly to national innovation and competitiveness.</p> <p>-Directs the NASA administrator to participate fully in interagency efforts to promote innovation and economic competitiveness through scientific research and development.</p>
<b>NOAA</b>	
<p><b>Section 1501. Ocean and Atmospheric Research and Development Program.</b></p> <p>-Requires the Administrator of the National Oceanic and Atmospheric Administration (NOAA), in consultation with the Director of NSF and the Administrator of NASA, to establish a coordinated program of ocean and atmospheric research and development to promote United States leadership in ocean and atmospheric science.</p>	



<b>S. 761 - America Creating Opportunities to Meaningfully Promote Excellence in Technology, Education, and Science (COMPETES) Act of 2007</b>	<b>H. R. 2272 - 21st Century Competitiveness Act of 2007</b>
<p><b>Section 1502. NOAA Ocean and Atmospheric Science Education Programs.</b></p> <p>-Requires the Administrator of NOAA to conduct, develop, support, promote, and coordinate formal and informal educational activities at all levels to enhance public awareness and understanding of ocean, coastal, and atmospheric science and stewardship by the general public.</p>	
<p><b>Section 1503. NOAA Contribution to Innovation.</b></p> <p>-Requires that NOAA be a full participant in any interagency effort to promote innovation and economic competitiveness through near-term and long-term basic scientific research and development and the promotion of STEM education, consistent with the agency mission.</p>	
<p><b>Section 1504. NOAA Accountability and Transparency.</b></p> <p>-Requires the Inspector General of the Department of Commerce to conduct routine, independent reviews of the activities carried out with grants or other financial assistance made available by the Administrator of NOAA.</p>	



**The Administration's American Competitiveness Initiative (ACI) Summary as of June 2007 — The ACI has been Incorporated into the House Democratic Innovation Agenda and other Key Legislative Proposals Now Pending**

Overall ACI Basic Research Investment	FY 2006	FY 2007	FY 2008	House FY '08 Appropriations	Senate FY '08 Appropriations	ACI Goal by 2016
<b>ACI Target Agency</b>	<b>\$ in billions</b>	<b>\$ in billions</b>	<b>\$ in billions</b>	<b>To be determined</b>		
<b>National Science Foundation</b>	<b>\$5.581</b>	<b>\$5.916</b>	<b>\$6.430</b>			<b>\$11.16</b>
<b>Department of Energy Office of Science</b>	<b>\$3.596</b>	<b>\$3.796</b>	<b>\$4.398</b>			<b>\$7.19</b>
<b>National Institute of Standards &amp; Technology<sup>1</sup></b>	<b>\$0.431<sup>2</sup></b>	<b>\$0.491</b>	<b>\$.598</b>			<b>\$1.14</b>
<b>TOTAL</b>	<b>\$9.608</b>	<b>\$10.203</b>	<b>\$11.426</b>			<b>\$19.49</b>

1. Refers to NIST Core accounts, consisting of lab research and construction. Does not include Advanced Technology Program (ATP) which is "zeroed out" by President's Budget in FY '08.
2. The 2006 enacted level for NIST Core includes \$137 million in Congressional "earmarks" and is not included in this amount.

**STEM Education Highlights of the ACI**

**Teacher Recruitment and Retention**

Proposes an Adjunct Teacher Corps to encourage up to 30,000 math and science professionals to become adjunct high school teachers.

**Improving the Skills of the Existing Teacher Workforce**

Expands the Advanced Placement/International Baccalaureate program to 70,000 additional teachers in math and science courses.

Proposes a \$125 million Math Now for Elementary Students program to enable elementary school teacher to learn proven methods and practices to provide students with a solid foundation for more rigorous coursework in middle and high school.

Proposes a \$125 million Math Now for Middle School Students program to promote research-based systematic instruction aimed at improving proficiency in algebra for middle-school students.

**Encouraging U.S. Students to Study in STEM Fields**

Through increased funding of grants at NSF, DOE-Office of Science, and NIST, the American Competitiveness Initiative is expected to provide support for 10,000 additional scientists, students, post-doctoral fellows and technicians in FY '07.

Proposes a Competitiveness Grants Program to provide supplemental grants for low-income college freshmen and sophomores who completed a rigorous high school curriculum and who maintain at least a 3.0 GPA in college, and juniors and seniors who major in math, science and critical foreign languages (Department of Education).

**NOTE:** This comparison does not address existing programs at NSF which are not included in the new ACI.

ACI contains language suggesting "Leveraging the involvement of the Business/Industry Community in Improving STEM Education."

"Increases our ability to compete for and retain the best and brightest high-skilled workers from around the world by supporting comprehensive immigration reform that meets the needs of a growing economy, allows honest workers to provide for their families while respecting the law, and enhances homeland security by relieving pressure on the borders."

**Tax Provisions of ACI**

\$4.6 B for R&E Tax credits in FY '07 (not made permanent by last Congress)

\$86 B for R&E Tax credits over next ten years

Establishes **Career Advancement Accounts** for individuals for training and other employment services. These would be managed in a manner similar to individual retirement accounts (IRA's) by individual taxpayers.



**Left:** Key U.S. Senate staff from the Committee on Commerce, Science & Transportation; Committee on Energy & Natural Resources, and Health, Education, Labor and Pensions Committee met in early 2007 with representatives of the S&T community to explain scope and timing of new Senate innovation and competitiveness package.

### ASTRA Legislative Task Force Co-Chairs 2007

- Frank Orlandella** (Agilent Technologies)
- Anthony Pitagno** (American Chemical Society)
- Judy Sherman** (American Dental Association)
- Bill Morin** (Applied Materials)
- Jeanette Morgan** (National Semiconductor)
- Christopher Mustain** (IBM)
- Ron Kelley** (Materials Research Society)
- Emily Baker** (National Venture Capital Association)
- Laura Kolton** (Optical Society of America)
- Gordon Day** (Optoelectronic Industries Development Association)
- Ian Steff** (Semiconductor Industry Association)
- Greg Schuckman** (Univ. of Central Florida)



**Above:** Jason Mulvihill (on right) of Sen. John Ensign's (R-NV) staff meets with ASTRA Legislative Task Force Co-Chairs Anthony Pitagno, American Chemical Society (far left) and Christopher Mustain, IBM (center). The Task Force now includes more than 225 companies, universities and organizations. It meets on a regular basis through biweekly conference calls, occasional meetings, and frequent visits to Capitol Hill offices.

**Right:** Members of the ASTRA LTF meet with majority staff of the House Science & Technology Committee to discuss the 2007 Legislative Agenda for ASTRA in January 2007.



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For copies of your own state's **STEM Education Report Card**, co-sponsored by ASTRA, please visit [www.stemedcoalition.org/resources.aspx](http://www.stemedcoalition.org/resources.aspx) and click on the State Profiles you will find there ...