NAS Report Summary

Energizing and Employing America for a Brighter Economic Future

October 12, 2005

Committee on Prospering in the Global Economy of the 21st Century- Earlier this year, the National Academy of Sciences convened a 20-member panel of prominent business and educational leaders to identify actions that Federal policy makers can take to strengthen America's science and technology enterprise and improve its ability to compete and prosper in the global economy of the 21st Century

Panel Members – Norman Augustine; Lockheed Martin and Craig Barrett; Intel, Gail Cassell; Eli Lilly, Stephen Chu; Lawrence Berkeley Lab, Robert Gates; Texas A&M, Nancy Grasmick; MD Dept of Education, Charles Holliday; DuPont, Anita Jones, UVA, Joshua Lederberg; Rockefeller University, Richard Levin, Yale, Daniel Mote; UMD, Cherry Murray; Lawrence Livermore Lab, Peter O'Donnell; O'Donnell Foundation, Lee Raymond; Exxon Mobil. Robert Richardson; Cornell, Roy Vagelos; Merck, Charles Vest; MIT, George Whitesides, Harvard and Richard Zare; Stanford.

Independent Reviewers – NAS enlisted 37 other individuals, including Richard Freeman; Harvard, Ron Hira; RIT, and Michael Teitelbaum; Sloan Foundation, to provide additional perspectives and help to ensure that the resulting work product meets accepted standards for objectivity, evidence and responsiveness.

Reviewers offered input, but were not asked to endorse committee conclusions or recommendations, nor were they shown the final report before its release.

Report Title – A final report entitled, "Rising Above the Gathering Storm: Energizing and Employing America for a Brighter Economic Future" was released at a press conference in Washington on October 12, 2005.

Findings - The Committee found that the unmatched vitality of the US economy and its science and technology enterprise has made the United States a world leader for decades and allowed Americans to benefit from high standards of living and unparalleled national security. But in a world where advanced knowledge is widespread and when low-cost labor is readily available, America's economic and technological advantage has begun to erode.

A comprehensive and coordinated Federal effort is urgently needed to bolster US economic and technological competitiveness and ensure that the nation will continue to benefit from opportunities offered by rapid globalization.

Because other nations have the competitive advantage of lower wages, the US can only expect to compete by optimizing its knowledge-based resources, particularly in science and technology, and by sustaining a fertile environment for new and revitalized industries and for the creation of the well-paying jobs.

Recommendations – The committee identified two key challenges that are closely linked to America's scientific and engineering prowess: creating high quality jobs and meeting the nation's need for clean, reliable and affordable sources of energy.

The report identifies 20 specific policy recommendations addressing four separate but interrelated challenges: K-12 education; basic research; higher education; and economic incentives for innovation and investment.

Policy Recommendation 1 - Expand America's talent pool by vastly improving K-12 Math and Science Education:

1.1 Award 10,000 ***competitive four-year scholarships*** (@ $20,000 per year) to enable American students to obtain bachelor's degrees in science, math and engineering disciplines and concurrent certifications as K-12 math and science teachers. Recipients must agree to teach for 5 years in public elementary or secondary schools. Rural and inner-city school teachers will receives an additional $10,000 annual bonus.

1.2 Help pay for the ***continuing education*** of 250,000 practicing math and science teachers at Summer Institutes, Masters Degree Programs and Advanced Placement and International Baccalaureate Degree programs.

1.3 Encourage more middle and high school students to take ***advanced placement courses*** in math and science.

Policy Recommendation 2 – Strengthen America's traditional commitment to long term basic research – with a special emphasis on physical and information sciences, engineering and mathematics – in order to generate new ideas, grow the economy, increase security and improve living standards.

2.1 Increase the Federal ***investment in long-term basic research*** (10% a year for 7 years) by reallocating existing funds or investing new funds.

2.2 Award 200 ***early career research grants*** (@ $500,000 a year for 5 years) to outstanding young researchers at US universities and government laboratories.

2.3: Provide ***research infrastructure grants*** ($500 million a year for 5 years) to help universities and government laboratories create and maintain the facilities and equipment needed for leading-edge research and development.

2.4: Earmark Federal research dollars (at least 8% of agency budgets) for use by technical program managers to catalyze **high-risk, high reward research**.

2.5: Establish an ***Advanced Research Projects Agency*** at the Department of Energy to fund high risk, energy-related research and development programs.

2.6: Establish a ***Presidential Innovation Awards*** Program to recognize and reward individuals and organizations who develop unique scientific and engineering innovations.

Policy Recommendation 3 – Make the United States the most attractive location in which to study and conduct research in order to recruit, develop and retain the best and brightest students, scientists and engineers from the United States and around the world.

3.1: Establish a new USA-STEM ***undergraduate scholarships*** program to enable 25,000 US citizens a year to earn bachelors degrees in science, technology, engineering and mathematics at US colleges and universities.

3.2: Increase the number and proportion of US citizens pursuing advanced degrees in areas of national need by awarding 5,000 new NSF administered portable ***graduate fellowships*** each year.

3.3 Establish a Federal tax credit to encourage employers to provide ***continuing education*** for practicing scientists and engineers.

3.4: Continue to ***improve visa processing*** procedures for international students, scholars and researchers.

3.5: ***Allow international students to remain in the United States*** for one additional year upon completion of doctoral degree programs at US educational institutions. Students who are offered jobs by US-based employers and meet security screening requirements should be granted automatic work authorizations and expedited residency.

3.6: Establish ***a new, skills-based immigrant admissions option*** to facilitate the entry of highly skilled foreign nationals as legal permanent residents.

In the interim, the number of H-1B visas available for foreign students who receive graduate degrees from US schools should be increased from 20,000 to 30,000 per year.

3.7: Amend ***deemed export restrictions*** to grant international students and researchers engaged in fundamental research in the United States the same access to information and equipment at US research institutions as US citizens and legal permanent residents.

In addition, the effects of deemed export restrictions on the education and employment of international students and scholars should be limited by removing technologies that are available for purchase from US or foreign suppliers from the restricted exports list.

Policy Recommendation 4 – Provide Appropriate Economic Incentives for Technological Innovations. Investment and Jobs Creation

4.1 Enhance **intellectual property** protections in ways that incentivize innovation.

4.2 Reauthorize and increase the expiring **research and development tax credit**.

4.3 **Reform Federal tax policies**, including corporate tax rates, incentives for investment in high tech research and manufacturing equipment and the treatment of capital gains, in ways that promote increased, long-term investment in US-based innovation.

4.4 Promote appropriate action – primarily through improved regulations and spectrum management – to ensure **more ubiquitous and affordable broadband access** for homes, schools and businesses

Universal broadband access is expected to do as much to drive innovation, the economy and jobs creation in the 21st Century as improved telephone communications, interstate highways and air transportation did in the 20th Century.

Study Sponsorship – The study was sponsored by the National Academies, which comprise the National Academy of Sciences, the National Academy of Engineering, the Institute of Medicine and the National Research Council. These are private, non-profit organizations that provide advice and guidance on science, technology and health policy matters under a Congressional charter.

Copies of the full report entitled Rising Above the Gathering Storm: Energizing and Employing America for a Brighter Economic Future, an executive summary and an accompanying press release are accessible on-line at

http:/national-academies.org

Q:CPC/2005Mtgs/NAS Report. 101205