



Over the course of his career, Jay has seen research projects grow into great discoveries and new companies. The ability of Americans to perform innovative research -- and then turn the results into commercial products -- is essential for America's success in the global economy.

Policy Perspective: Technology & Innovation

The United States must maintain its position as a global leader in technology and innovation to protect and improve our quality of life. As a nation, we have always been innovators. From clipper ships to railroads, telegraphs, aircraft, microelectronics, biotechnology, space, and the Internet, the United States has often led the way. Technology and innovation have been major strengths for our nation and have allowed us to enjoy high standards of living.¹ But today we are not making the investments we need to remain leaders:

- **The United States is today a net importer of high-technology products.** During 2004, China overtook the United States to become the leading exporter of information-technology products². Of the 25 companies that received the most US patents in 2006, only 7 were from the United States³. Only 3 US companies were in the top 10. The outsourcing of US engineering jobs is leading to high levels of unemployment in certain types of engineering. It also poses a threat for the future of our economy and our national security.⁴
- **Our government is investing fewer dollars into research and development.** Federal research expenditures as a percentage of GDP have been declining steadily since their peak in the mid-1960s.
- **We are educating fewer Americans to be technological leaders.** The number of American students entering advanced study in science and engineering has been declining steadily.⁵ Many new graduates of American universities with advanced degrees in science and engineering are foreign nationals, who take their skills and training back to their home countries.
- **We lack the high-tech infrastructure that other nations now take for granted.** The United States ranks only 13th among Organisation for Economic Co-operation and Development (OECD) countries in the number of broadband connections per 100 inhabitants.⁶

If we continue along our current path, we could lose our position as a leader in the global economy. **We must choose to make changes now and chart a different course.** The National Academy of Sciences presents several clear steps that could be taken to foster technology and innovation and keep our economic future bright. In order to regain our lead in the global economy, we need to:

- **Increase America's talent pool by vastly improving K-12 science and mathematics education.** This includes recruiting teachers through scholarships and strengthening the skills of current teachers through training and education programs at summer institutes. Teacher compensation also should be increased.
- **Strengthen the nation's commitment to long-term basic research.** This includes increasing the federal investment in long-term basic research by 10% each year over the next 7 years.
- **Make the U.S. the most attractive setting to study and perform research.** This includes offering scholarships to increase the number of U.S. citizens pursuing both undergraduate and graduate degrees in science
- **Provide universal access to broadband Internet.** We need to give every American access to the information and communication tools of the 21st century. Currently, other countries such as Japan and South Korea are far ahead of the United States in this respect.⁷

America's ability to innovate will determine how effectively we can respond to the challenges and opportunities facing us --including our energy problem. As Senator, I will make it a priority to re-commit America to its traditional strengths in technology and innovation so that we can rise to the energy challenge, continue to enjoy a high quality of life, and insure our position as a leader in the global economy.

¹ Studies have shown that as much as 85% of the growth in income in the United States in the 20th century has been because of technological change. Some economists estimate that about half of US economic growth since World War II has been the result of technological innovation.

² Organisation for Economic Co-operation and Development (OECD), http://www.oecd.org/document/8/0,2340,en_2649_201185_35833096_1_1_1_1,00.html, accessed 11/07.

³ William Bulkeley, "IBM Leads Field as U.S. Issues Record Number of Patents", Wall Street Journal; 1/10/07.

⁴ IEEE Policy Paper, March, 2004: <http://www.ieeeusa.org/policy/positions/offshoring.html>, Accessed 10/07.

⁵ National Science Foundation, Science and Engineering Indicators, 2006.

⁶ OECD, Communications Outlook 2007: <http://dx.doi.org/10.1787/001432828005>, Accessed 11/07.

⁷ *Rising Above The Gathering Storm*; National Academies Press, Washington, DC.