

A NEW GENERATION OF AMERICAN INNOVATION

APRIL 2004



Executive Summary

America's economy leads the world because our system of private enterprise rewards innovation. Entrepreneurs, scientists, and skilled workers create and apply the technologies that are changing our world. President Bush believes that government must work to help create a new generation of American innovation and an atmosphere where innovation thrives.

On April 26, 2004, President Bush announced a series of specific measures to inspire a new generation of American innovation – policies to encourage clean and reliable energy, assure better delivery of health care, and expand access to high-speed Internet in every part of America. By giving our workers the best technology and the best training, we will make sure that the American economy remains the most flexible, advanced, and productive in the world.

1) Providing a Cleaner and More Secure Energy Future through Hydrogen Fuel Technology: The President announced that the Department of Energy has selected partners through a competitive process to fund new hydrogen research projects totaling \$350 million (\$575 million with private cost share) to overcome obstacles to a hydrogen economy. This represents nearly one-third of the President's \$1.2 billion commitment in research funding to bring hydrogen and fuel cell technology from the laboratory to the showroom. The projects will include 28 awards to academia, industry, and national laboratories. The new hydrogen projects address four key areas:

- **Creating effective hydrogen storage:** Current hydrogen storage systems are inadequate for use in the wide range of vehicles that consumers demand. Exploratory research and development is needed to overcome the grand challenge for hydrogen storage.
- **Conducting hydrogen vehicle and infrastructure “learning demonstrations”:** To complement laboratory research, automakers and energy companies need to work together to develop integrated technology solutions for a national infrastructure. These demonstrations will provide important performance, cost, and durability data on fuel cell vehicle and hydrogen refueling infrastructure. This new data will allow us to refocus research priorities as progress is made.
- **Developing affordable and durable hydrogen fuel cells:** Currently, fuel cells are as much as ten times more expensive than internal combustion engines. New cost-shared projects will be formed with five businesses to develop fuel cells for consumer electronic devices, and auxiliary power and off-road applications.
- **Developing a Hydrogen Education Campaign:** A new effort will aim to build the next generation workforce, engage students in science and technology, and overcome the public education and acceptance barriers to achieving the hydrogen economy.

2) Transforming Health Care through Health Information Technology: President Bush believes that innovations in electronic medical records and the secure exchange of medical information will help transform health care in America - improving health care quality, reducing health care costs, preventing medical errors, improving administrative efficiencies, reducing paperwork, and increasing access to affordable health care. The President has set an ambitious goal of assuring that most Americans have electronic health records within the next 10 years. To achieve his 10-year goal, the President is taking the following steps to urge coordinated public and private sector efforts that will accelerate broader adoption of health information technologies:

- **Adopting Health Information Standards.** The President called for the completion and adoption of standards, collaboratively developed with the private sector, that will allow medical information to be stored and shared electronically while assuring privacy and security.
- **Doubling Funding to \$100 Million for Demonstration Projects on Health Information Technology.** To build upon the progress we have already made in the area of health care standardization, the President's

proposed FY 2005 budget includes \$100 million for demonstration projects by hospitals and health care providers that will help us test the effectiveness of health information technology and establish best practices for more widespread adoption in the health care industry.

- **Fostering the Adoption of Health Information Technology.** As one of the largest buyers of health care, the Federal Government can create incentives and opportunities for health care providers to use electronic records.
- **Creating a New, Sub-Cabinet Level Position of National Health Information Technology Coordinator.** The President will charge the National Coordinator with working with government, industry, and experts in the field to help fulfill his vision of a health care system that is patient-centered and that gives patients information they need to make clinical and economic decisions – in consultation with dedicated health care professionals.

3) Promoting Innovation and Economic Security through Broadband Technology: The President has called for universal, affordable access for broadband technology by the year 2007 and wants to make sure we give Americans plenty of technology choices when it comes to purchasing broadband. Broadband technology will enhance our Nation's economic competitiveness and will help improve education and health care for all Americans. Broadband provides Americans with high-speed Internet access connections that improve the Nation's economic productivity and offer life-enhancing applications, such as distance learning, remote medical diagnostics, and the ability to work from home more effectively. The Bush Administration has implemented a wide range of policy directives to create economic incentives, remove regulatory barriers, and promote new technologies to help make broadband affordable. The President believes that lowering the cost of broadband will increase its use and availability.

- **Making broadband access tax-free will lower the cost to consumers.** The President is calling on Congress to pass legislation making access to broadband permanently tax-free.
- **Working to enable the rollout of new broadband technologies.** The Administration is acting aggressively to make additional spectrum available for wireless broadband and to create the technical standards needed to enable the widespread and responsible deployment of broadband over power lines.
- **The Federal Government must do its part to remove hurdles that slow the deployment of broadband.** Broadband providers often have to cross or use Federal lands to reach consumers. To ensure that broadband providers can get timely responses from the Federal Government, the President has directed agencies to reform their practices to simplify and standardize their rights-of-way processes.

These initiatives outlined above complement the Bush Administration's other efforts to promote innovation and technology in America. President Bush has a proven track record of supporting America's innovation economy, including:

- **Helping Community Colleges Train 100,000 Additional Workers:** The President's Jobs for the 21st Century Initiative, announced in the State of the Union Address, includes a \$250 million proposal to help America's community colleges train 100,000 additional workers for the industries that are creating the most new jobs.
- **Doubling the Number of Workers Receiving Federal Job Training Assistance:** The President has proposed to give governors more flexibility to get Federal training funds into the hands of workers in the form of Innovation Training Accounts (ITAs). These accounts give workers access to a range of training options that will help them compete for high-skill, high-demand jobs.
- **Increasing Federal R&D Funding:** With President Bush's FY 2005 budget proposal, total Federal R&D investment during the first term will be increased 44 percent, to a record \$132 billion in FY 2005, compared to \$91 billion in FY 2001. Federal R&D spending in the FY 2005 budget represents the greatest share of GDP in over ten years.

- **Supporting Nanotechnology Research:** Since 2001, funding for nanotechnology R&D has more than doubled to \$1 billion and funding for information technology R&D is up to \$2 billion.
- **Ensuring Better Health Care for All Americans:** President Bush fulfilled a commitment by completing the historic doubling of the National Institutes of Health (NIH) budget by 2003, dramatically increasing medical research funded by NIH to speed cures and treatments for the diseases that plague our Nation and the world. The President's FY 2005 budget provides \$28.6 billion for NIH, a \$729 million increase, which will allow NIH to support a record total of nearly 40,000 research project grants.

Hydrogen Fuel Technology: a Cleaner and More Secure Energy Future

“With a new national commitment, our scientists and engineers will overcome obstacles to taking these (hydrogen fuel cell) cars from laboratory to showroom, so that the first car driven by a child born today could be powered by hydrogen, and pollution-free.”

-- President George W. Bush, State of the Union Address, January 28, 2003

- For too long, environmental policy in America has been dominated by a sterile debate between those who believe that pollution is the price of progress, and those who believe that we must limit and scale back our progress. The President believes that progress, innovation, and technology can help America leapfrog beyond these false choices – and meet the energy needs of a growing economy in environmentally responsible ways.
- On April 26, 2004, President Bush announced that the Department of Energy (DOE) has selected partners through a competitive process to fund new hydrogen research projects totaling **\$350 million (\$575 million when private sector cost-sharing is included)** to overcome obstacles to the development of hydrogen fuel technology. This represents nearly one-third of the President’s \$1.2 billion commitment in research funding to bring hydrogen and fuel cell technology from the laboratory to the showroom. The projects will include 28 awards to academia, industry, and national laboratories. The new hydrogen projects address four key areas:
 - **Creating effective hydrogen storage:** Current hydrogen storage systems are inadequate for use in the wide range of vehicles that consumers demand. Exploratory research and development is needed to overcome the grand challenge for hydrogen storage: to store the amount of hydrogen required for a conventional driving range (more than 300 miles), within the vehicular constraints of weight, volume, efficiency, safety, and cost. The Department of Energy is working to develop three primary options (chemical hydrides, metal hydrides, and carbon materials) in addition to 15 individual projects to explore new materials for hydrogen storage. Over 45 organizations will be involved, including DOE national laboratories, universities, research institutes, and industry.
 - **Conducting limited hydrogen vehicle and infrastructure “learning demonstrations”:** To complement laboratory research, automakers and energy companies need to work together to develop integrated technology solutions for a national infrastructure. Eight automakers and six energy companies (under five major awards) will work together with their teams under this project to demonstrate integrated and complete system solutions operating in real world environments. Government and industry are providing matching funds. Teams also include utilities, universities, and small businesses. These demonstrations will provide important data on fuel cell vehicle and hydrogen-refueling infrastructure performance, cost, and durability and allow refocusing of research priorities as progress is made. These demonstrations are critical so that all stakeholders (including Congress) can track progress towards a commercialization decision in 2015.
 - **Developing affordable and durable hydrogen fuel cells:** Currently, fuel cells and associated systems are as much as ten times more expensive than internal combustion engines. New cost-shared projects will be formed with five businesses to develop fuel cells for consumer electronic devices, and auxiliary power and off-road applications.
 - **Developing a hydrogen education campaign:** In direct response to the National Energy Policy, a hydrogen education effort will aim to build the next generation workforce, engage students in science and technology, and overcome the public education and acceptance barriers to achieving the hydrogen economy. Middle school and high school curricula and teacher training will be developed. These projects will complement current education efforts for public and safety officials at all levels.

Background – President Bush’s Hydrogen Fuel Initiative

- **In his 2003 State of the Union address, the President committed \$1.2 billion over five years to accelerate research and development of hydrogen fuel cell and infrastructure technologies, including \$720 million in new funding.** The Hydrogen Fuel Initiative aims to help reverse America’s growing dependence on foreign oil by developing the technology for commercially viable hydrogen-powered fuel cells that power cars, trucks, homes, and businesses that emit no pollution or greenhouse gases.
- **Through partnerships with the private sector, the Hydrogen Fuel Initiative will make it practical and cost-effective for large numbers of Americans to choose to use clean, hydrogen fuel cell vehicles by 2020 – so the first car driven by a child born today could be powered by fuel cells.** This will dramatically improve America’s energy security by significantly reducing the need for imported oil, and help clean our air and reduce greenhouse gas emissions. The President's proposal has received broad, bipartisan support in Congress.
- **The Hydrogen Fuel Initiative complements the President's existing FreedomCAR partnership,** which is developing technologies needed for mass production of safe and affordable hydrogen-powered fuel cell vehicles, along with other advanced vehicle technologies. In total, President Bush has proposed \$1.7 billion over five years for the Hydrogen Fuel and FreedomCAR initiatives.

Budget

- The President’s FY 2005 budget proposes \$228 million for the Hydrogen Fuel Initiative, a \$69 million increase (43%) over the FY 2004 budget.
 - The FY 05 request includes \$29 million for basic science within the DOE’s Office of Science and \$18 million for safety, codes, and standards activities – consistent with the program’s needs and the recently released peer review report by the National Research Council.
 - The FY 05 budget request also includes an increasing emphasis on exploratory research for hydrogen production, storage, and fuel cell technologies and continued technology validation.
 - A mix of diverse energy feedstocks to produce hydrogen is needed to gradually make the transition to a secure, affordable, and environmentally safe hydrogen energy system; these include renewables, nuclear, and natural gas and coal with carbon management strategies.

Fuel Cell Technology

- **Fuel cells are a proven technology:** America's astronauts have used fuel cells to generate electricity since the 1960s, but more work is needed to make them cost-effective for use in cars, trucks, homes, or businesses. Additional research and development is needed to spur rapid commercialization of these technologies so they can provide clean, domestically produced energy for transportation and other uses.
- **The President's initiatives seek to help the private sector overcome key technical and cost barriers for fuel cells:**
 - **Lowering the cost of hydrogen:** Hydrogen is four times as expensive to produce as gasoline (when produced from its most affordable source, natural gas). The hydrogen fuel initiative seeks to lower that cost enough to make fuel cell cars cost-competitive with conventional gasoline-powered vehicles by 2015; and to advance the methods of producing hydrogen from renewable resources, nuclear energy, and even coal.
 - **Creating effective hydrogen storage:** Current hydrogen storage systems are inadequate for use in the wide range of vehicles that consumers demand. New technology is needed.

- **Creating affordable hydrogen fuel cells:** Fuel cell-based propulsion is now as much as ten times more expensive than internal combustion engines. The FreedomCAR initiative is working to reduce that cost to affordable levels.
- **America's dependence on foreign oil is increasing:**
 - America imports more than 55 percent of the oil it consumes; that is expected to grow to 70 percent by 2025.
 - Nearly all of our cars and trucks run on gasoline, and they are the main reason America imports so much oil. Two-thirds of the 20 million barrels of oil Americans use each day is used for transportation. Fuel cell vehicles offer the best hope of dramatically reducing our dependence on foreign oil.
- **Hydrogen fuel will help reduce America's dependence on energy imports:**
 - Through the Hydrogen Fuel and FreedomCAR initiatives, the Federal Government, automakers and energy companies will work together to overcome the technological and financial barriers to the successful development of commercially viable, emissions-free fuel cell vehicles that require no foreign oil.
 - Hydrogen is domestically available in abundant quantities as a component of natural gas, coal, biomass, and even water.
 - The Department of Energy estimates that the Hydrogen Fuel and FreedomCAR initiatives may help reduce our demand for petroleum by over 11 million barrels per day by 2040 – approximately the amount of oil America imports today.
- **Fuel cells will improve air quality and dramatically reduce greenhouse gas emissions:**
 - Vehicles are a significant source of air pollution in America. Hydrogen fuel cells create electricity to power cars without any tailpipe pollution.
 - The hydrogen fuel and FreedomCAR initiatives may reduce America's greenhouse gas emissions from transportation alone by more than 500 million metric tons of carbon equivalent each year by 2040. Additional emissions reductions could be achieved by using fuel cells in applications such as generating electricity for residential or commercial uses.
- **Hydrogen is the key to a cleaner energy future:**
 - It has the highest energy content per unit of weight of any known fuel.
 - When burned in an engine, hydrogen can produce effectively zero emissions; when powering a fuel cell, its only waste is water.
 - Hydrogen can be produced from abundant domestic resources including natural gas, coal, biomass, and even water.
 - Combined with other technologies such as carbon capture and storage, renewable energy, and fusion energy, fuel cells could help make an emissions-free energy future possible.

Transforming Health Care: The President's Health Information Technology Plan

"By computerizing health records, we can avoid dangerous medical mistakes, reduce costs, and improve care."

--President George W. Bush, State of the Union Address, January 20, 2004

- **President Bush has outlined a plan to ensure that most Americans have electronic health records within the next 10 years.** The President believes that better health information technology is essential to his vision of a health care system that puts the needs and the values of the patient first and gives patients information they need to make clinical and economic decisions – in consultation with dedicated health care professionals.
- **The President's Health Information Technology Plan will address longstanding problems of preventable errors, uneven quality, and rising costs in the Nation's health care system.**

The Problem: Challenges to the U.S. Health Care System

- The U.S. health care system has a long and distinguished history of innovation. Discoveries move from the laboratory bench to the bedside, as basic research results are translated into new understanding of diseases, better diagnostic tools, and innovative treatments.
- At the same time, our health care system faces major challenges. Health care spending and health insurance premiums continue to rise at rates much higher than the rate of inflation. Despite spending over \$1.6 trillion on health care as a Nation, there are still serious concerns about preventable errors, uneven health care quality, and poor communication among doctors, hospitals, and many other health care providers involved in the care of any one person.
 - The Institute of Medicine estimates that between 44,000 and 98,000 Americans die each year from medical errors. Many more die or have permanent disability because of inappropriate treatments, mistreatments, or missed treatments in ambulatory settings. Studies have found that as much as \$300 billion is spent each year on health care that does not improve patient outcomes – treatment that is unnecessary, inappropriate, inefficient, or ineffective.
- All these problems – high costs, uncertain value, medical errors, variable quality, administrative inefficiencies, and poor coordination – are closely connected to our failure to use health information technology as an integral part of medical care. The innovation that has made our medical care the world's best has not been applied to our health information systems. Other American industries have harnessed advanced information technologies, to the benefit of American consumers. Our air travel is safer than ever, and consumers now have ready and safe access to their financial information. Unlike these other industries, medicine still operates primarily with paper-based records. Our doctors and nurses have to manage 21st century medical technology and complex medical information with 19th century tools. America's medical professionals are the best and brightest in the world, and set the standard for the world. It is a testament to their skill that they are able to achieve high-quality care in this antiquated system. In this outdated, paper-based system:
 - A patient's vital medical information is scattered across medical records kept by many different caregivers in many different locations – and all of the patient's medical information is often unavailable at the time of care. For example, patients with medical emergencies too often are seen by doctors with no access to their critical medical information, such as allergies, current treatments or medications, and prior diagnoses.

- Physicians keep information about drugs, drug interactions, managed care formularies, clinical guidelines, and recent research in memory – a difficult task given the high volume of information.
- Medical orders and prescriptions are handwritten and are too often misunderstood or not followed in accordance with the physician's instructions.
- Consumers lack access to useful, credible health information about treatment alternatives, which hospitals and physicians are best for their needs, or their own health status.
- Physicians do not always have the best information to select the best treatments for their patients, resulting in an unacceptable lag time before new scientific advances are used in patient care. They also do not have ready access to complete information about their patients, do not know how other doctors are treating their same patients, or how other health care providers around the country treat patients with the same condition. These conditions set the stage for preventable medical errors.

The Solution – Health Information Technology

- **Today, the President announced an ambitious goal of assuring that most Americans have electronic health records within the next 10 years.**
 - Within the next 10 years, electronic health records will ensure that complete health care information is available for most Americans at the time and place of care, no matter where it originates. Participation by patients will be voluntary.
 - These electronic health records will be designed to share information privately and securely among and between health care providers when authorized by the patient.
- President Bush believes that innovations in electronic health records and the secure exchange of medical information will help transform health care in America - improving health care quality, preventing medical errors, reducing health care costs, improving administrative efficiencies, reducing paperwork, and increasing access to affordable health care.
- The steps we need to take across the Nation are already underway in some places. Health information technologies – electronic medical records, computerized ordering of prescriptions and other medical tests, clinical decision support tools, and secure exchange of authorized information – improve quality, reduce medical errors, and prevent deaths. In the past three years, some communities, hospitals, clinicians, patient groups, and information technology companies have acted to improve their health information systems. These pioneering communities are taking the initiative and showing that health care can and must be modernized.
- The President envisions a dramatically changed system:
 - ✓ When arriving at a physician's office, new patients do not have to enter their personal information, allergies, medications, or medical history, since it is already available.
 - ✓ A parent, who previously had to carry the child's medical records and x-rays in a large box when seeing a new physician, can now keep the most important medical history on a keychain, or simply authorize the new physician to retrieve the information electronically from previous health care providers.
 - ✓ Arriving at an emergency room, a senior with a chronic illness and memory difficulties authorizes her physicians to access her medical information from a recent hospitalization at another hospital - thus avoiding a potentially fatal drug interaction between the planned treatment and the patient's current medications.
 - ✓ Three patients with unusual sudden-onset fever and cough that would not individually be reported, show up at separate emergency rooms, and the trend is instantly reported to public health officials, who alert authorities of a possible disease outbreak or bioterror attack.

The President's Health Information Technology Plan

- To achieve his 10-year goal, the President is taking the following steps to urge coordinated public and private sector efforts that will accelerate broader adoption of health information technology:
 - **Adopting Health Information Standards.** The President called for the completion and adoption of standards that will allow medical information to be stored and shared electronically while assuring privacy and security. The necessary work is already well underway and much of it has already been completed. In the last several years, the Department of Health and Human Services (HHS) has been collaborating with the private sector and other Federal agencies to identify and endorse voluntary standards that are necessary for health information to be shared safely and securely among health care providers. Federal agencies are accelerating their use of these standards. As part of this effort, HHS has recently negotiated and licensed a comprehensive medical vocabulary and made it available to everyone in the Nation at no cost. The results of these projects include standards for:
 - **Transmitting X-Rays Over the Internet:** Today, a patient's chest x-ray can be sent electronically from a hospital or laboratory and read by the patient's doctor in his office.
 - **Electronic Laboratory Results:** Laboratory results can be sent electronically to the physician for immediate analysis, diagnosis and treatment, and could be automatically entered into the patient's electronic health record if one existed. For example, a doctor could retrieve this information for a hospitalized patient from his office, assuring a prompt response and eliminating errors and duplicative testing due to lost laboratory reports.
 - **Electronic Prescriptions:** Patients will save time because prescriptions can be sent electronically to their pharmacists. By eliminating illegible handwritten prescriptions, and because the technology automatically checks for possible allergies and harmful drug interactions with other drugs, standardized electronic prescriptions help to avoid serious medical errors. The technology also can generate automatic approval from a health insurer.
 - **Doubling Funding to \$100 Million for Demonstration Projects on Health Care Information Technology.** To build upon the progress already made in the area of health information technology standards over the last several years, the President's proposed FY 2005 budget includes \$100 million for demonstration projects that will help us test the effectiveness of health information technology and establish best practices for more widespread adoption in the health care industry.
 - This increase builds on the President's FY 2004 budget which included \$50 million, and these new resources will support more local and regional grants so that pioneering communities, physicians, and hospitals can show that health care can be transformed by adopting and implementing health information technology.
 - In April 2004, more than 600 applications for funding were received for these grants, and HHS will be awarding grants this summer, following their peer-reviewed process for selecting grantees.
 - **Using the Federal Government to Foster the Adoption of Health Information Technology.** As one of the largest buyers of health care – in Medicare, Medicaid, the Community Health Centers program, the Federal Health Benefits program, Veterans medical care, and programs in the Department of Defense – the Federal Government can create incentives and opportunities for health care providers to use electronic records, much like the private sector is doing today. The President will direct these agencies to review their

policies and programs and propose modifications and new actions, and to forward the recommendations to him within 90 days.

- **Creating a New, Sub-Cabinet Level Position of National Health Information Technology Coordinator.**
The President announced that he is creating a new sub-Cabinet level post at HHS, to provide national leadership and coordination necessary to achieve his 10-year goal. The individual will report directly to the HHS Secretary, and will be charged by the President with:
 - Guiding ongoing work on health information standards and working to identify and implement the various steps needed to support and encourage health information technology in the public and private health care delivery systems.
 - Coordinating partnerships between government agencies and private sector stakeholders to speed the adoption of health information technology.

Promoting Innovation and Economic Security Through Broadband Technology

“This country needs a national goal for...the spread of broadband technology. We ought to have...universal, affordable access for broadband technology by the year 2007, and then we ought to make sure as soon as possible thereafter, consumers have got plenty of choices when it comes to [their] broadband carrier.”

--- President George W. Bush, March 26, 2004

- **Broadband provides Americans with high-speed Internet access connections that improve the Nation’s economic productivity and offer life-enhancing applications, such as distance learning, remote medical diagnostics, and the ability to work from home more effectively.**
- **Consistent with this vision, the Administration has a record of comprehensive and demonstrably effective broadband initiatives that are creating an economic and regulatory climate in which broadband can flourish.** Developing the most competitive broadband market in the world will provide American consumers with the most affordable and highest quality broadband service in the world.
- **Broadband technology will enhance our Nation’s economic competitiveness and will help improve education and health care for all Americans.** The Bush Administration has implemented a wide range of policy directives to create economic incentives, remove regulatory barriers, and promote new technologies, all of which are essential to making broadband competitively available and affordable.

Creating Economic Incentives

- **In an effort to spur investment, the President signed into law a jobs and growth package that allowed companies to depreciate capital expenditures more quickly, including capital equipment used for broadband deployment.** Companies are more likely to make important investments in broadband technology if they can depreciate the capital costs associated with broadband rollout more quickly.
- **President Bush is committed to making broadband affordable.** The President has signed into law a two-year extension of the Internet Access Tax moratorium and has called on Congress to pass legislation that would explicitly extend the moratorium to broadband and make the moratorium permanent. Taxing broadband access would increase the cost of broadband for consumers.

Removing Regulatory Barriers

- **The Administration supports the Federal Communications Commission’s (FCC) decision to free new fiber-to-the-home investments from legacy regulations.** Deregulating new ultra-fast broadband infrastructure to the home removes a significant barrier to new capital investments.
- **On April 26, 2004, the President signed an Executive Memorandum that implements Federal rights-of-way reforms to streamline the process for broadband providers to get access to Federal lands to build high-speed infrastructure.** The reforms will help to minimize burdens on industry by simplifying and standardizing the rights-of-way process across all relevant agencies, while allowing agencies to use their resources wisely.

Promoting Innovation

- **The Administration has made unprecedented strides in balancing the commercial spectrum needs of critical government agencies** (including Department of Defense, Department of Transportation, and Department of Homeland Security) and commercial interests. The Administration has identified 90 MHz of spectrum to be auctioned for next generation wireless services.
 - Currently only one wireless carrier is offering wireless broadband. Once the 90 MHz is auctioned, multiple wireless carriers will have the opportunity to become broadband carriers – stimulating vigorous competition and bringing lower prices and improved services to consumers.
 - The Administration has nearly doubled the amount of spectrum available for innovative wireless broadband applications such as Wi-Fi and Wi-Max. These technologies can provide a range of new services from granting consumers broadband access in restaurants, airports and other public places, to providing an economically viable solution for providing broadband services in rural areas.
 - To ensure these technologies continue to develop, the Department of Commerce's National Institute of Standards and Technology is chairing the Wi-Max standard setting body.
 - To build on this record of success, the President has launched an initiative to create a Spectrum Policy for the 21st Century. The Department of Commerce is scheduled to deliver a report to the President this summer on how to improve spectrum management.

- **The Administration is working to enable the rollout of broadband technology.** The Department of Commerce is developing the technical specifications necessary to enable the widespread and responsible deployment of broadband over powerlines (BPL). Having conducted 10 million measurements of BPL systems, the Department of Commerce will be able to chart the clear technical path forward for BPL to coexist with other critical uses of spectrum. Once deployed, BPL has the potential to turn every electrical outlet into a broadband pipeline.

- **The President supports investment in research and development and has proposed the largest Federal R&D budget in history, \$132 billion in Fiscal Year 2005.** Federal research and development help lay the foundation for advances in broadband technologies. In FY 2005, the National Information Technology Research and Development (NITRD) program is budgeted for \$2.0 billion and includes research directly related to broadband technology. The President proposed making permanent the Research and Experimentation Tax Credit, which promotes private sector investment in new technologies such as broadband.

- **Important Facts about Broadband:**
 - ✓ Broadband is high-speed Internet access.
 - ✓ Broadband in the United States is "always-on," allowing a computer to remain connected to the Internet 24 hours a day.
 - ✓ Distance learning, remote medical procedures, interactive web teleconferencing, and real-time video and audio all require Internet speeds beyond what traditional dial-up service can offer.
 - ✓ Broadband has grown from just over 7 million subscriber lines in December 2000 to almost 24 million in June 2003, a 230 percent increase.
 - ✓ Consumers are adopting broadband faster than they have adopted other technologies such as color televisions, wireless phones, VCRs, and personal computers.
 - ✓ Approximately 90 percent of all U.S. zip codes have access to at least one form of wireline broadband connection (cable modem or DSL), up from just over 70 percent at the end of 2000.
 - ✓ 75 percent of zip codes in the United States have access to broadband through both cable modem and DSL.

Better Education for Better Jobs

- **America's growing economy is a changing economy, and we must respond to these changes by helping more Americans gain the skills to find good jobs in our 21st Century economy.**
- **President Bush has announced a plan to better prepare students for success in higher education and the job market** – including \$33 million for expanded Pell Grants for low-income students who complete rigorous coursework in high school and scholarships for low-income students who pursue degrees in math and science.
- **The President's plan will improve the quality of education at our Nation's high schools – including \$100 million to help striving readers and \$120 million to improve math education.** The President's plan also strengthens and modernizes vocational and technical education, expands math and science education for all students, encourages students to take a rigorous high school curriculum, and enables educators to determine whether high schools are graduating students with the skills they need to succeed.

No Child Left Behind

- To help the youngest Americans receive a quality education and learn the basic skills they will need to succeed in the future, President Bush proposed and signed into law the No Child Left Behind Act. All skills begin with the basics of reading and math, which should be learned in the early grades. Yet for too long, for too many children, those skills were never mastered. With the bipartisan No Child Left Behind Act, we are making progress toward educational excellence for every child.
 - Requiring states to set clear standards for what every child should learn – and taking steps to help each child learn.
 - Holding schools accountable for student progress by regularly testing in the fundamental subjects of reading and math.
 - Reporting results to parents and ensuring they have better options when schools are not performing.
 - Providing more funding – a 49% increase in Federal support for elementary and secondary education since 2001.

The Next Steps in Helping Young Americans Get the Skills They Need to Succeed in the 21st Century

- The No Child Left Behind Act is providing accountability and resources to improve the achievement of America's elementary and secondary students. These reforms are already beginning to show results in elementary reading and math scores, but President Bush also wants to ensure that all high school students will be better prepared to pursue higher education or enter the workforce. Unfortunately, recent results from the National Assessment of Educational Progress (NAEP) demonstrate that, while achievement for our Nation's 4th and 8th graders is on the rise, scores for twelfth graders have declined in both reading and mathematics.
 - Only 24 states require at least three years of math, and only 21 states require at least three years of science.
 - Because their math and science education is lacking, young Americans stand to miss out on job opportunities, will lack the necessary skills for post-secondary study, or will not complete post-secondary study in a timely manner.
 - Students who fall behind in reading have a greater chance of dropping out of high school altogether. Nationally, of one-hundred ninth-graders, only 67 will graduate from high school on time, only 38 will directly enter college, only 26 are still enrolled their sophomore year, and only 18 will end up graduating from college.
 - U.S. 12th graders performed among the lowest of the 21 countries assessed in both math and science on the Third International Mathematics and Science Study.

The President's Solution

High School

- **Striving Readers:** The Administration is proposing a new \$100 million Striving Readers Initiative that would make competitive grants to develop, implement, and evaluate effective reading interventions for middle or high school students reading significantly below grade level. This program would complement the Reading First State Grants program, which provides comprehensive reading instruction for children in kindergarten through third grade that is grounded in scientifically-based reading research. The proposal would provide funds to approximately 50 to 100 school districts for reading intervention programs to help middle and high school students catch up to their peers in reading.
- **Math:** The Administration is proposing a \$120 million increase for the Mathematics and Science Partnership program authorized in the No Child Left Behind Act. The increase would support direct Federal competitive grants to partnerships to increase achievement in mathematics for secondary students. The new 3-year competitive grants would support projects that have significant potential to accelerate the mathematics achievement of all secondary students, but especially low-achieving students. The initiative would focus on ensuring that States and school districts implement professional development projects for mathematics teachers that are strongly grounded in research and that help mathematics teachers strengthen their skills.
- **Advanced Placement:** Advanced Placement programs not only encourage the growth of Advanced Placement (AP) and International Baccalaureate (IB) courses, but also serve as a mechanism for upgrading the entire high school curriculum for all students. The Administration is proposing a \$28 million increase for the Advanced Placement program authorized in the No Child Left Behind Act bringing spending on it to nearly \$52 million a year. The increase in funds will ensure that teachers in low-income schools are well-trained to teach AP and IB courses.
- **Adjunct Teacher Corps:** Many school districts need opportunities and the personnel to strengthen instruction in middle and high schools in the core academic subjects, especially mathematics and science. The Adjunct Teacher Corps would help alleviate this critical situation by bringing professionals with subject-matter knowledge and experience into the classroom. The Administration is proposing a new \$40 million initiative to provide competitive grants to partnerships of school districts and public or private institutions to create opportunities for professionals to teach middle and high school courses in the core academic subjects, particularly in mathematics and science.
- **State Scholars:** The Administration proposes \$12 million in funding for the State Scholars program to make grants available nationwide. In August 2002, President Bush announced the State Scholars Initiative, modeled on the successful Texas Scholars program, to encourage high school students to take more rigorous high school courses. Under the State Scholars Initiative, 12 States have already received assistance in developing and promoting strong courses of study, as well as providing special incentives for students enrolled in these programs.
- **Strengthening and Modernizing Support for Vocational Education:** The major federal program for vocational education, the Perkins Vocational Education program, has remained fundamentally unchanged since its founding in 1917; President Bush proposes to modernize this pre-World War I program to better serve the needs of the 21st century worker. The President's proposal redirects \$1 billion in annual funding from the Perkins Vocational Education program into a new Secondary and Technical Education program (Sec Tech) and requires

that schools participating in the program offer 4 years of English, 3 years of math and science, and 3½ years of social studies as part of their vocational education curriculum.

- **Assessing Whether High Schools Are Producing Educated Graduates:** To ensure that students graduating from high school have the skills they need to succeed in post-secondary education or careers, the President's plan would include 12th graders in the National Assessment of Educational Progress (NAEP). Currently, states are required to participate in the NAEP in 4th and 8th grades in reading and math every two years. Extending this requirement to 12th grade will enable educators to assess whether high schools are meeting the needs of students so they can learn the skills they will need to succeed. It will also help to identify areas where they are not meeting the needs of students and to strengthen curricula to ensure improvement in those areas.

Higher Education

- **Enhanced Pell Grants:** The Bush Administration proposes to establish a \$33 million program to enhance Pell Grants to reward low-income students who participate in the State Scholars Program by taking a rigorous high school curriculum. This program would provide up to an additional \$1,000 per year to students in the first two years of college who complete the rigorous State Scholars curriculum in high school, enroll in college full time, and are Pell Grant recipients. Next year, approximately 36,000 low-income graduating high school seniors would be eligible to receive an enhanced Pell Grant under this proposal.
- **Presidential Math and Science Scholars Fund:** To ensure that America remains the world leader in the innovation economy – and to ensure that America's graduates have the training they need to compete for the best jobs of the 21st century – President Bush wants to expand opportunities for math and science education in colleges and universities. The President proposes establishing a new public-private partnership to provide \$100 million in grants to low-income students who study math or science. Under this plan, approximately 20,000 low-income students would receive up to \$5,000 each to study math or science. Students would have to be eligible for Pell Grants to receive this additional \$5,000, although this new fund would be run separately from the Pell Grant program.
 - The cost of this new initiative would be offset by an important reform to the Pell Grant program. Currently, there is no limit on the number of years an individual can receive a Pell Grant to help pay for an undergraduate degree. The Administration proposes an 8-year equivalent time limit for a 4-year equivalent degree and a 4-year equivalent time limit for a 2-year equivalent degree. This reform would encourage students to finish sooner and eliminate abuse of the program where students extend their studies excessively.

Making Federal Job Training Work Better for America's Workers

- **President Bush is committed to providing America's workers with better training for better jobs.** Job training for American workers is more important than ever, and we need a new way of delivering job training in America.
- **America's growing economy is a changing economy, and some workers need new skills to succeed.** Today's economy is an innovation economy. Two-thirds of America's economic growth in the 1990s resulted from the introduction of new technologies – and 60% of the new jobs of the 21st century require skills held by only one-third of America's workforce. We need to close the skills gap in America. Not enough workers are being trained quickly enough to take advantage of many of the new jobs that are being created. The Federal government provides state and local governments \$4 billion through the Workforce Investment Act (WIA), but only 206,000 adults were trained last year.
- **President Bush has proposed significant reforms to Federal worker training programs to double the number of workers receiving job training, to ensure those programs work better for America's workers, and to close the skills gap so we fill every high growth job with a well-trained American worker.** The President has proposed reforming major Federal job training programs to put strict limits on overhead to ensure tax dollars support training for workers who need it. And, he has called for giving workers personal job training accounts called Innovation Training Accounts (ITAs).

Background on the President's Job Training Initiative

- **The Problem:** Currently, the Federal government spends almost \$23 billion for more than 30 programs spread across 10 departments and agencies. The result is a confusing hodgepodge of programs, some of which have remained fundamentally unchanged for decades, and administrative costs that prevent too many dollars from getting to the workers who need training the most.
 - **Bureaucracy:** The programs in place to train workers are out-of-date, overlapping, and ineffective. Too often, red tape and administrative costs eat up job training money before it even gets to workers. For example, the Department of Labor found that one of its One-Stop Career Centers was using less than 10% of its Federal money for training displaced workers. Most of the funds went to administrative costs—not training workers. *President Bush believes that every dollar spent on unnecessary bureaucracy is a dollar taken out of the pocket of a worker who needs job training.*
 - **Complexity:** Job training programs are set up with so many rules that many workers, potential employers, and local community colleges do not participate. For example, 30 states have been granted temporary relief from these requirements so they don't lose their link with community colleges. However, there are limits to what we can do under the current law. *President Bush recognizes that the best training is not filling out forms – it is learning on the job or at a community college.*
 - **Limited Accountability:** Currently, there is no clear standard or benchmark to measure the effectiveness of federal job training programs. Federal grants to states for job training have 17 different measurements of accountability. *President Bush proposes to refocus these programs on the end results that matter most to America's workers – Did you get a job? How long did you keep it? And how much are you being paid?*
 - **Failure to teach skills in demand:** Remarkably, even though the law requires it, many job training programs do not assess what skills are in demand for jobs in the worker's area. Instead, workers are moved through the system with little regard for whether they will have a realistic chance at a job when they complete training. *President Bush believes we should be training workers for jobs in sectors of the economy that are most likely to grow.*

The President's Solution

- **Less Red Tape and More Help for Workers:** The President's plan establishes a clear goal that the vast majority of job training dollars should go to the workers who need them – rather than to bureaucratic overhead. Currently, administrative expenses are capped at 15%, but regulatory loopholes allow too many of our training dollars to be spent on bureaucracy and other non-training services. The President's goal is to double the number of workers receiving job training by maximizing the available Federal dollars going to workers and eliminating unnecessary overhead costs.
- **New Innovation Training Accounts (ITAs):** The President proposes new Innovation Training Accounts to provide workers with more flexible and responsive assistance. Workers would have more job training choices – they would be able to use community colleges, private-sector training providers, local businesses, or community organizations – to get the help they need in the most effective and efficient way possible. These ITAs would give states considerable flexibility to tailor training programs to the unique economic conditions of each state. ITAs would consolidate 4 major training and employment grant programs totaling \$4 billion into a single grant, eliminating unnecessary overhead costs and making Federal support more effective and efficient.
- **More Accountability:** Under the President's plan, states would be given more flexibility to design their own workforce training programs. But they would also be required to set clear goals and outcomes focused on the number of workers placed in jobs, the duration of the job placement, and the earnings of the job. The President proposes consolidating the number of state performance goals of the Federal job training system from 17 to 3. Under the new goals, accountability will be determined by asking these questions: *How many people are finding work? How much are workers earning in their new jobs? How long are they staying in these jobs?*
- **Jobs for the 21st Century Initiative:** The President's Jobs for the 21st Century Initiative, announced in the State of the Union Address, includes a \$250 million proposal to help America's community colleges train 100,000 additional workers for the industries that are creating the most new jobs. This expands the Department of Labor's successful High Growth Job Training Initiative, launched under President Bush in 2001, which has provided \$71 million in 38 partnerships nationwide between community colleges, public workforce agencies, and employers. These initiatives help community colleges produce graduates with the skills most in demand by local employers.
- **Personal Reemployment Accounts:** The President has also proposed \$50 million for a pilot program of accounts of up to \$3,000 for those unemployed workers who have the most difficulty finding jobs to use toward job training, transportation, childcare, or other assistance in obtaining a new job. Workers who found a job quickly would be able to keep the balance of the account as a reemployment bonus.