

# The **INVESTMENT DEFICIT** in America

*Yesterday's Achievements, Today's Problems, Tomorrow's Solutions*



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The Campaign for America's Future (CAF) is a center of progressive strategy, organizing and issue campaigns. CAF anchors a progressive leadership network, enlisting leaders at the national, state and local levels to build a more just and democratic society. The Campaign is leading the fight about America's priorities - against privatization of Social Security, for investment in energy independence, good jobs and a sustainable economy, for affordable health care and more.

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## America is falling apart. Falling apart, and falling behind.

Previous generations of Americans built interstate highways and transcontinental railroads.



Now we sit in traffic.

Americans from an earlier era pioneered universal primary education and chartered great universities on public land. They enacted the G.I. bill to give the greatest generation the access to college that helped build our modern middle class. Nowadays American students toil in overcrowded classrooms with leaky roofs, while the cost of college

soars out of reach.

America grew up investing in its land and its people. Historically, we directed roughly 8 percent of our gross domestic product to long-range investments, and the investment paid off.<sup>1</sup> Now we are down below 4 percent.<sup>2</sup> Our post World War II infrastructure is starting to decay, and we aren't replacing it. We are lamenting the loss of jobs rather than hiring people to renew and rebuild.

Other countries are racing past. China spends 9 percent of its GDP on infrastructure investment and opens a new subway system every year.<sup>3</sup>

From physical infrastructure like roads and bridges to human capital from kindergarten to college, this report comprehensively examines our investment deficit. It documents yesterday's achievements, today's problems and tomorrow's solutions.



As this report is released, America's economy is in a deep downturn, which is now spreading across the globe. A major recovery program is essential to lift this economy from what is likely to be the worst recession since the Great Depression. Direct public investment—in new energy and conservation, in modernizing our infrastructure, in education and training, and research and development—should be the centerpiece of any recovery plan. That is not only necessary to lift the economy in the short run; it is a vital down payment on the sustained public investment that we need to sustain a competitive and decent society in a global economy. The needs listed in this report provide a guidepost for both recovery and for long-term, sustainable growth.

# Physical Infrastructure

## Transportation

America is a country that moves. We operate ports on two major oceans and we're 27 times the size of Germany. We log 250 billion vehicle-miles every month.

Historically, America's transportation infrastructure gave us a competitive advantage. Interconnected systems of airports, highways, railroads and ports enabled the rapid movement of goods and people across our continent-sized nation. From cross-country freight to our daily commute, our transportation infrastructure helped it to happen. But this transport was the product of hard work; it didn't happen automatically and it cannot be taken for granted.

## Roads and Highways

### *Yesterday*

Road construction has long been a public function in America. There are private roads that are exceptions, of course, but roads are the quintessential public good, exceeding the capacity of any single individual to build and maintain, and creating a benefit that's shared by all. The modern era of road building started in 1933 with construction of Route 66, a "super-highway" from Chicago to Los Angeles that connected small towns across the Western half of the country for the first time. In the thick of the Great Depression, Route 66 construction put hundreds of unemployed people to work. John Steinbeck called Route 66 the "Mother Road" in his novel *The Grapes of Wrath*, and the nickname stuck. The Mother Road increased trade across the country, encouraged migration to the West, transported troops in World War II, and symbolized a hopeful new American future.

The Interstate Highway System came after World War II, when President Eisenhower recognized the strategic importance of connecting different regions of the country to move military equipment and personnel.<sup>5</sup> Now with 43,000 miles in all 50 states, fully financed by federal investment, the Interstate Highway System dwarfs any single component of FDR's New Deal. It is the largest single public works project in American history.

“The federal budget in 1954 was \$78 billion and [President Eisenhower] proposed a half-a-trillion dollar national highway system, and I think that's the kind of conservative initiative that we need in these times that we need infrastructure”

— Representative John Mica (R-Fla.),  
June 2008<sup>4</sup>

### *Today*

Today our outdated and overused road system is crumbling. Vehicle travel on America's roads increased 41 percent between 1990 and 2006 while miles of available road only increased 4 percent.<sup>6</sup> Not surprisingly, congestion increased. According to the 2007 Texas Urban Mobility Report, drivers in metropolitan areas spent 4.2 billion hours delayed in traffic in 2005, time equal to

105 million weeks of vacation. Sitting in traffic also wasted 2.9 billion gallons of gas, enough to fill 58 supertankers. The combined annual “congestion cost” reached a staggering \$78 billion.<sup>7</sup>

The problem goes beyond congestion in big cities. Potholes are accumulating on rural highways and in small towns. The people of Maine spend \$250 million a year fixing cars that get beaten up on their roads.<sup>8</sup> Poor road conditions cost American motorists \$54 billion every year in repairs and operating expenses—\$275 per motorist.<sup>9</sup>

Our decaying roads are dangerous as well as inconvenient. The AAA estimated that in 2006, traffic crashes killed 42,642 people in the United States—roughly one death every twelve minutes. An additional 2.6 million people were injured—nearly one per second.<sup>10</sup>

We can expect it to get worse. With a tight economy, state and local governments are cutting back on services and deferring even more maintenance. With gas prices high, politicians are not very inclined to raise gasoline taxes, a major source of revenue for roads. Indeed, drivers are even starting to cut back their mileage and seek more fuel-efficient vehicles. That’s helpful in a lot of ways, but it will reduce revenues from gas taxes. Other solutions need to be found.

### ***Tomorrow***

First, we need to repair and rebuild the roads we have. Potholes don’t fix themselves; but people can be hired to fix them. The U.S. Department of Transportation estimates that every \$1 billion of federal funding invested in transportation infrastructure creates 47,500 jobs.<sup>11</sup> Rebuilding highways puts people to work at home in America and create resources—roads—that can never be shipped overseas.

Substantial capital investment will be necessary. The Federal Highway Administration estimates that \$79 billion is needed annually from all levels of government to maintain current roads, and \$132 billion is needed to improve them.<sup>12</sup> Current spending on roads by all levels of government is approximately \$70 billion.<sup>13</sup> That leaves a spending gap of from \$9 billion to \$52 billion that has to be

### ***You Should Know***

- ❑ Drivers in metropolitan areas spent 4.2 billion hours delayed in traffic in 2005, enough time for 105 million weeks of vacation. (Roughly 38 hours or one week of vacation per person).
- ❑ Sitting in city traffic wasted 2.9 billion gallons of gas in 2005, enough gas to fill 58 supertankers. (Costing roughly \$100 per car, with gas at \$4.00 per gallon).
- ❑ Vehicle travel on America’s roads increased 41 percent between 1990 and 2006 while new road mileage only increased four percent.
- ❑ Clogged highways and vehicle collisions cause:
  - 2.6 million injuries annually.
  - 42,642 deaths annually.
  - \$230 billion in annual economic costs.
- ❑ \$79 billion is needed annually from all levels of government to maintain current roads, and \$132 billion is needed to improve them.
- ❑ Every \$1 billion of federal funding invested in transportation infrastructure creates 47,500 jobs.
- ❑ Every dollar invested in highway construction generates \$2.50 of GDP in the short term.

closed in order to bring American roads to top condition.

The investment will yield benefits, of course. Global Insight Inc. estimates that every dollar invested in highway construction generates \$2.50 of gross domestic product in the short term.<sup>14</sup>

Second, existing roads can be used more effectively. Minneapolis has reserved highways lanes exclusively for buses when traffic is slow. Such coordination between the public transit system and the highway system has increased the efficiency of the bus system, which encourages people to use it more.

Lastly, improved land-use planning can relieve transportation trouble. Building businesses and residences along transit lines rather than distant exurbs inherently means less traffic. Localities can encourage such planning with zoning rules or targeted subsidies. Such investments will lead to safer, more efficient transit in the future.

## **Rail**

### ***Yesterday***

Widespread use of rail emerged with the development of the steam engine at the beginning of the 19<sup>th</sup> century. Initial investment in rail was limited to private companies, which only built lines that would produce short-term profits. Expansion proceeded slowly and in an ad hoc manner, with no rules for safety or interoperability such as standard track-widths. In 1840 there were 2,818 miles of track in the United States. To fuel the expansion, state and federal governments began to give grants of public land to private railroad companies. The railroad companies laid tracks on these lands, used them for raw materials for rail construction, and often sold the land after its value increased. The land grants had a dramatic effect on rail development. By 1860 there were 30,626 miles of track in the United States, and by 1890 there were 129,774 miles of track.<sup>15</sup>

President Abraham Lincoln provided the largest rail land grant in 1862. The Pacific Railway Act authorized the construction of the transcontinental railroad, the first railway to connect the rapidly developing West coast with the already established East. As with previous land grants, the Act gave the rail companies large tracts of U.S. public land that they could use to build, or resell for profit later. In just 20 years (1850-1870) the government passed 129 million acres of land—201,563 square miles, 7 percent of the continental United States—to private rail companies.<sup>16</sup>

Railroad continued to dominate intercity passenger and freight transportation, until the rise of the automobile followed Eisenhower's construction of the Interstate Highway System—also on public land with public money. As public investment shifted from rail to roads, rail transit scaled back to fewer, more profitable lines. Even transcontinental cargo started to shift from train to truck.

### ***Today***

Railroad today is a story of scarcity and congestion. Freight trains sit idle for hours waiting their turn on single-track lines. West-coast cars that stack containers at double height detour around east-coast tunnels too low for them to fit. Chicago has become a major rail choke point where

trains can sit for as long as two days. A single backup there can force delays as far away as Los Angeles or Baltimore.

"It's a ripple effect," explains Scott Haas, a vice president for United Parcel Service, which uses 3,000 freight cars every day. "Everything in my system backs up."<sup>17</sup>

Especially in an era when just-in-time delivery has replaced warehousing of goods and inventory, small delays create trouble throughout the supply chain. "It's not rocket science to see we have a calamity coming down the road," said Paul Bingham, a transportation analyst at research firm Global Insight.<sup>18</sup> The U.S. Chamber of Commerce released a report warning that demand for freight trains is expected to double in the next 25 years.<sup>19</sup> The American Society of Civil Engineers estimates that \$175-\$195 billion is needed over the next 20 years to maintain existing freight rail infrastructure and expand for growth.<sup>20</sup>

Demand for passenger rail is increasing quickly as well, both for short-range commutes and mid-range transit such as the Northeast corridor. But commuter rail often requires a frustrating combination of walking and taxi or driving to reach train lines, and people dislike long wait times for crowded cars. If things don't run smoothly or the costs stack up, many revert back to their cars. The American Society of Civil Engineers estimates that another \$20 billion is needed to improve passenger transit.<sup>21</sup>

Countries all over the world are swiftly bypassing the United States in innovative and efficient rail systems. China has opened one new subway system every year for the past six years, and continues to grow accordingly.<sup>22</sup> This is not just one new station, or one new line, but an entire network of stations and tracks to connect people and expand business. Argentina recently signed a \$1.35 billion contract to build 440 miles of high speed rail between the country's major cities.<sup>23</sup> Europeans can travel from Paris to Frankfurt in a few hours by high-speed rail. People arriving at the Pudong Airport in Shanghai can travel towards downtown on a German-built magnetic levitation train at speeds approaching 300 mph.

### ***Tomorrow***

Trains relieve congestion on the roads and are a much cleaner option for travel than cars or trucks. One freight train can take 280 trucks off the road, and railroads are three times more energy efficient than trucks.<sup>24</sup> "Greater use of rail transportation offers a simple, cost-effective and immediate way to meaningfully reduce greenhouse gas emissions without potentially harming the economy," President of the Association of American Railroads Edward R. Hamberger told members of the Senate Committee on Commerce, Science and Transportation during a hearing on climate change and transportation.<sup>25</sup>

### ***You Should Know***

- ❑ Roughly \$200 billion is needed over the next 20 years to maintain existing freight and passenger rail and to expand for growth.
- ❑ Every \$1 billion invested in mass transit creates 19,795 new jobs.
- ❑ Every \$1 invested in public transport generates an average of \$6 in economic returns.
- ❑ Residents of places with high quality transit systems pay about \$100 per year in taxes to finance the system, but they save \$500 per year by using it.
- ❑ One freight train can take 280 trucks off the road and railroads are 3 times as energy efficient and 3 times cleaner than trucks.
- ❑ Railroads move a ton of freight an average of 436 miles on one gallon of diesel fuel.
- ❑ The average intercity passenger train produces 60 percent lower carbon dioxide emissions per passenger mile than the average automobile and half as much as an airplane.

Passenger rail is usually a more efficient, cleaner choice than cars in commuting to work. As local transit systems reach more places with better service, more people will likely use them. American Public Transit Association estimates that residents of places with high quality transit systems pay about \$100 per year in taxes to finance the system, but they save \$500 per year by using it.<sup>26</sup>

For longer trips, high speed rail is the obvious alternative. America needs more trains running on faster tracks, especially in busy places like the Northeast corridor. Amtrak needs reliable funding and perhaps relief from mandates for long routes that are better served by other means.

Modernizing the transportation infrastructure is a good source of good jobs. The Cambridge Systematics and Economic Development Research Group estimates that every \$1 invested in public transport, generates an average of \$6 in economic returns.<sup>27</sup> Economist Robert Pollin estimates that every billion invested in mass transit creates 19,795 new jobs.<sup>28</sup> These jobs are inherently domestic, cannot be exported, and create infrastructure that will always stay American in a global economy.

## **Aviation**

### ***Yesterday***

Ever since the Wright brothers first took to the air in 1903, aviation has been destined for great things. As with other technologies, aviation received a large, bittersweet boost from the military, where it was developed and deployed as a weapon in both World Wars. The wars provoked major government investment in aviation, and began decades of rapid advances in aviation technology.

The birth of commercial aviation followed not the transport of people, but mail. Early commercial passenger services failed, but the U.S. Air Mail Service operated successfully from 1918 until it was privatized in 1927.<sup>29</sup> The U.S. Air Mail Service thus succeeded in demonstrating the potential of commercial aviation in the United States. In the spring of 1926, Congress shifted jurisdiction over the nation's airports from the Post Office to the Department of Commerce, and charged the Secretary of Commerce with "fostering air commerce, issuing and enforcing air traffic rules, licensing pilots, certificating aircraft, establishing airways, and operating

and maintaining aids to air navigation.”<sup>30</sup> This represented the beginning of federal regulation of aviation.

In 1938, Congress transferred responsibility for commercial aviation from the Commerce Department to a new independent agency, the Civil Aeronautics Authority. The original 1938 act gave the new agency authority to regulate airline routes and fares. Amendments in the 1940s added air traffic control and financial assistance for civil airports. Just months before the Boeing 707 ushered in the age of commercial passenger jets, Congress passed the Federal Aviation Act of 1958, which expanded federal regulatory authority and created a common civil-military system of air traffic control throughout the United States.

The commercial aviation industry achieved rapid growth in the Jet Age, and it soon became clear that demand would outstrip the capacity of the nation’s airport and airway system. To deal with this, Congress in 1970 enacted the Airport and Airway Development and Revenue Acts which “authorized federal funds, at least \$250 million a year for 5 years, for the acquisition, establishment and improvement of air navigational facilities and another \$280 million a year for 5 years for airport development.”<sup>31</sup> The act also established the Airport and Airway Trust Fund, modeled after the successful Highway Trust Fund, which would fund these projects through aviation excise taxes.

### ***Today***

While government investment did much to boost the development and maintenance of our national aviation infrastructure, it now struggles to keep pace with growth in demand. The year 2000 saw a record high in airline use, and also a record number of flight delays and cancellations.<sup>32</sup> In 2000 the Government Accountability Office (GAO) found that commercial aviation delays cost commercial airlines over \$3 billion and resulted in over \$9 billion in negative economic effects on the entire U.S. economy.<sup>33</sup>

An economic downturn in 2001, along with the terrorist attacks of September 11, reduced air travel, which didn’t recover to pre-9/11 levels until 2005. September 11 moved the focus from capacity to safety, but the capacity issues did not go away. To the contrary, increases in security only exacerbated existing capacity issues. The year 2007 was the second worst on record, only after 2000, for flight cancellations, and the worst on record for flight delays.<sup>34</sup> Lost luggage is also at record levels.<sup>35</sup>

These breakdowns in our aviation infrastructure also result in huge economic losses. A recent report from the Joint Economic Committee from the House and Senate estimated that in 2007 domestic flight delays cost the commercial airline industry and passengers \$40.7 billion.<sup>36</sup> Our aviation infrastructure has reached a critical point.

High gas prices and environmental considerations present new challenges. Airplanes produce far more greenhouse gases than rail, buses or even cars. The Intergovernmental Panel on Climate Change (IPCC) estimates “a 487% increase in carbon dioxide emissions from global aviation between 1992 and 2050, with nitrogen oxides increasing by 312%.”<sup>37</sup> In response, member states of the European Union enacted new rules to make airlines cut carbon emissions in future years

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- ❑ In 2000, commercial aviation delays cost airlines over \$3 billion and resulted in over \$9 billion in negative economic effects on the entire U.S. economy.
- ❑ In 2007 domestic flight delays cost the commercial airline industry and passengers \$40.7 billion.
- ❑ 2007 was the second worst year on record, only after 2000, for flight cancellations, and the worst on record for flight delays.
- ❑ The FAA has estimated that \$9 billion is needed annually to meet growing demand, while the Airport Council International estimates the need at \$15 billion per year.

and participate in an emissions trading system that requires polluters to buy allowances.<sup>38</sup> Tomorrow

The solution is three-fold. First, annual investment in aviation infrastructure must be increased to keep up with increased demand. The FAA has estimated that \$9 billion is needed annually to meet growing demand, while the Airport Council International estimates the need at \$15 billion per year.<sup>39</sup> Funding would doubtless emerge from public-private partnerships, but the government is needed to convene and organize the investment.

The second part of the solution is to develop viable alternatives. High-speed intercity rail is the most obvious alternative to air travel, as it is cheaper, more environmentally sustainable, and often more convenient than air travel. Parts of Europe have already seen the potential of high-speed intercity rail to drastically decrease demand of air travel.<sup>40</sup> Americans need better options for travel along the Washington-Boston corridor, or between Los Angeles and San Francisco.

The final component of solving problems for our aviation infrastructure is technology. The federal government must continue to invest in the research and development of better

air traffic control systems to ease congestion, as well as new technologies that will mitigate the negative environmental impacts of air travel as much as possible. New aircraft can be developed with lower emissions. Indeed, the European Union is already requiring such aircraft; the only question is whether America's Boeing or France's Airbus will take the lead.

## **Energy**

Energy is of paramount importance. It is a linchpin issue, with consequences ranging from home heating to clean air to national security. It is also a matter of investment: invest now, reap dividends later.

### ***Yesterday***

From the discovery of coal deposits by Huguenot settlers in Virginia in 1701 to the inadvertent creation of the first oil well in Pennsylvania in 1859, the history of energy in the United States has mostly been driven by the private sector. However, while private business is in center stage, public regulation and investment played a crucial role. Most importantly, the federal government managed the energy market to ensure safe, fair and efficient operation, stepping in to prevent monopolies, rate inflation and dangerous work practices.

In the late 1800s, John D. Rockefeller and his Standard Oil Company began to dominate the petroleum market. A market that had once been the bread and butter of small-time entrepreneurs quickly became a big-business monopoly. In fact, by 1878 Rockefeller had attained control of nearly 90 percent of the oil refined in the U.S.<sup>41</sup> Before long, Rockefeller was driving his competitors out of business with his monopolistic market power. When public outrage intensified, President Theodore Roosevelt oversaw the enforcement of the first antitrust laws and the Standard Oil monopoly dissolved in 1911.

Government also played a major role in the regulation of the natural gas industry. Initially, the use of natural gas was local; neighbors would buy, sell, and trade natural gas to each other. Soon however, communities began to recognize natural gas as a business that affected the public interest to a sufficient extent to merit regulation.<sup>42</sup> As advancing technologies enabled the interstate movement of natural gas, local governments seeking to regulate gas rates ran into jurisdictional conflicts. Consequently, states began to organize public utility commissions to oversee natural gas distribution. As technological advances made way for long distance gas transportation, regulatory oversight was again compromised. In 1935, Congress passed the Public Utility Holding Company Act which prevented utility companies from gaining too much market power. Three years later, Congress established the Federal Power Commission (which eventually became the Federal Energy Regulatory Commission) to oversee natural gas companies.

The government has also played a role in developing and supporting emerging technologies. Solar power is a case in point. Solar photovoltaic cells were invented in the private Bell Labs, but their first real use was in government satellites.<sup>43</sup> In the 1950s the federal government used solar cells to power the radios on early satellites; in 1964, NASA launched the first Nimbus spacecraft — a satellite powered by a 470-watt photovoltaic array. In 1970s, NASA brought solar power to the ground, installing photovoltaic power systems for diverse purposes all around the world. These purchases, uses and procurements supported innovation and improvement of this nascent technology, and helped prepare it for the broader market. In 1977, the U.S. Department of Energy launched the National Renewable Energy Laboratory, the nation's primary laboratory for renewable energy and energy efficiency research and development, free to explore new ideas without the pressure of immediate or short-term profit.<sup>44</sup>

### ***Today***

The government nowadays has stepped back from its historic role in the energy market. That is evident first and foremost in enforcement of the rules that safeguard the rights of individuals and small businesses. The government now appears to represent the interests of a select few industries and corporations, especially oil and coal. At a time when fuel prices are high and oil companies enjoy extraordinary profits, oil companies continue to receive generous federal subsidies. ExxonMobil posted the highest annual profit ever for a U.S company, \$40.61 billion in 2007.<sup>45</sup> Yet the government continues to provide the industry with tax-free construction bonds, below-cost loans with lenient repayment conditions, income tax breaks, sales tax breaks, and relaxed royalties.<sup>46</sup> We remain dependent on foreign oil—to the tune of \$400 billion annually. The

U.S. holds 3 percent of the world's oil reserves but use 25 percent of the oil. We cannot drill our way to self-sufficiency.<sup>47</sup>

On electricity, the rise and fall of Enron Corporation reveals another contrast between rhetoric and reality. The deregulation of electricity in California began in 1996 under Republican Governor Pete Wilson, who promised that the freed market would deliver lower costs to consumers. Instead, energy wholesale corporations manipulated the market.<sup>48</sup> They deliberately caused shortages by shutting down power plants, limiting supply, and using many other illegal tactics to drive up energy prices and inflate profits.<sup>49</sup> Consumers experienced higher prices, rolling blackouts and brownouts, and a longstanding state of emergency.<sup>50</sup>

Modern conservatives have also reduced the government's role in primary research. The budgets of such agencies as the National Renewable Energy Laboratory have been cut or eroded by inflation through the years—though trends at the NREL, at least, were reversed after the 2006 congressional elections.<sup>51</sup>

The U.S. is also experiencing energy transmission problems. The electrical power grid uses century-old technology to move electricity over lines that were installed in the 1950s and 1960s. The old and fragile system is struggling to keep pace with the times. Every few years there is another spectacular failure—in the Northeast in 2003, for example—that costs business millions of dollars in lost goods and productivity, and raise concerns of safety and reliability.

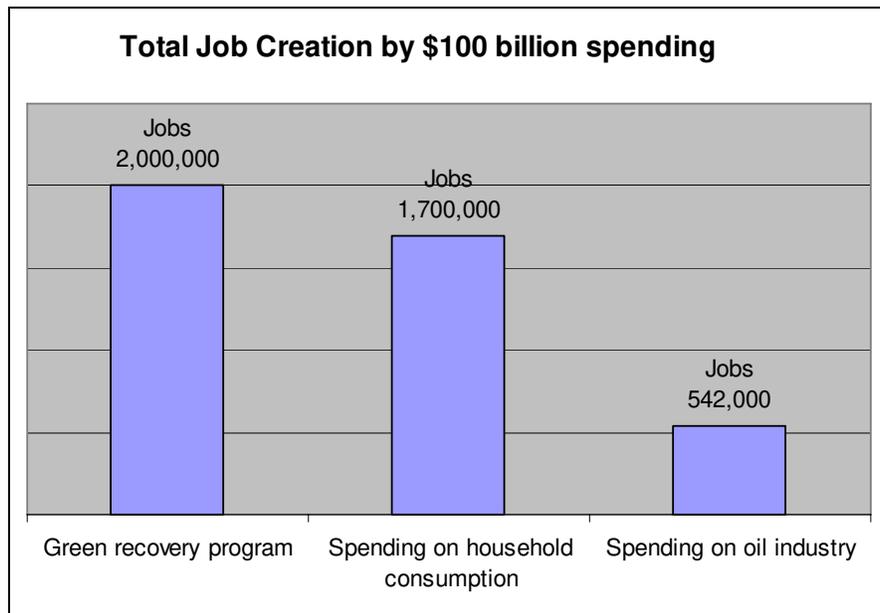
### ***Tomorrow***

America's future growth and prosperity depend on a secure supply of affordable and sustainable energy. With the price of oil likely to rise over time, instability overseas, and a few entrenched interests dominating the market, this is a crucial time for government intervention. Emerging new energy

technologies promise new possibility: scientific innovation, new jobs, and a rejuvenated industrial base. Public support can help tip these fledgling industries from ideas to success stories of green

### ***You Should Know***

- The Apollo plan calls for an investment of \$500 billion over ten years in a green economy.
- The plan is projected to add over 5 million high-wage jobs.



Source: Center for American Progress, Political Economy Research Institute

enterprise. Government needs to invest in research and development, create sound tax policy, and enforce the rules.

Many state-backed renewable energy initiatives are already in place. These include renewable portfolio standards (requiring utilities to generate or purchase minimum levels of renewable energy), public benefit funds, (a small surcharge on electricity sales that are used to fund electricity-related public benefit programs such as R&D, energy efficiency, and low-income customer assistance), net metering policies (allowing for a two-way power exchange between a utility and individual homes and businesses with their own renewable power sources), and voluntary “green power” purchases (in which utility companies offer customers the option of buying power from renewable sources).<sup>52</sup>

Recently, the federal government has begun to invest in renewable energy development. This trend has included offering a production tax credit for wind and other renewable resources, investment tax credits for solar and geothermal energies, and a national renewable fuels standard.

Thinking bigger, the Apollo Alliance—a coalition of business, labor and environmental leaders—has developed a plan to invest \$500 billion over 10 years in a newer, greener economy.<sup>53</sup> Elements include promoting hybrid cars, high-performance energy-saving buildings, energy efficient appliances, renewable energy development, improved transportation options and smarter urban growth. Such a plan would add over 5 million high-wage, green-collar jobs. It would stimulate the economy by adding \$953 billion in personal income, \$324 billion in retail sales and \$1.4 trillion in new gross domestic product.<sup>54</sup>

Additional growth will come from updating the power grid. When wind and solar farms are developed off the nation’s coasts or in the heartland, the electricity will need to be transmitted to more densely populated urban areas. This is another area for growth and innovation, and a source for future jobs. Research by the Center for American Progress reveals that government spending on green energy creates more jobs than either household consumption or the oil industry.<sup>55</sup>

## Fixtures

Transportation is about movement but some important infrastructure never moves. Levees, dams and power transmission lines are fixed in place, adding value where they are or supporting work in other places. These fixtures too, are the product of generations past and they need support for generations in the future.

## Water

### *Yesterday*

In the early days of America, water was retrieved and disposed of in the same manner it had been for centuries past: haphazardly. The results were toxic. Diseases like cholera, dysentery, hepatitis and typhoid fever circulated freely through the population.<sup>57</sup>

In the 19<sup>th</sup> century, as cities grew and populations started to concentrate, cities and municipalities started to manage their local water infrastructure, laying pipes and separating clean water from wastewater. The federal government got involved after World War II with the 1948 Water Pollution Control Act, designed to regulate conditions, reduce pollution and maintain the sanitary condition of public water supplies.<sup>58</sup> Since then the law has been improved upon many times, most notably by the Clean Water Act of 1977, which created the bulk of the safe water protections we have today.<sup>59</sup> Many of these laws over the years also contained grants and loan programs for state and local water infrastructure investment projects, like the public works program created in 1972 to finance municipal sewage treatment projects to support compliance with federal regulations.

The vast majority of our nation's water infrastructure was built in this post-World War II era, and the oldest of these additions are now at, or past, their useful life-spans,<sup>60</sup> which are generally estimated to be about 50 years. Residents and businesses in many places rely on pipes that are over 100 years old.<sup>61</sup> Our water infrastructure is now showing its age, and the EPA estimates that if critical investments aren't made in our water infrastructure our water quality will reach pre-Clean Water Act levels of contamination around the year 2016.<sup>62</sup>

“[W]astewater treatment plants prevent billions of tons of pollutants each year from reaching America's rivers, lakes, and coastlines. In so doing, they help prevent water-borne disease; make our waters safe for fishing and swimming; and preserve our natural treasures...

Clean water supports a \$50 billion a year water-based recreation industry, at least \$300 billion a year in coastal tourism, a \$45 billion annual commercial fishing and shell fishing industry, and hundreds of billions of dollars a year in basic manufacturing that relies on clean water. Clean rivers, lakes, and coastlines attract investment in local communities and increase land values on or near the water, which in turn, creates jobs, add incremental tax base, and increase income and property tax revenue to local, state, and the federal government.”

— Water Investment Network<sup>56</sup>

## Today

In April 2008, a mile-long stream and a large marsh mysteriously formed next to a country road two hours north of New York City. The water turned out to be leaking from a cracked 70-year-old water tunnel hundreds of feet below the surface, at an astonishing 36 million gallons per day, equal to the water needs of a small city.<sup>63</sup> The leak was so profound it changed the ecology of the area and residents struggled constantly to keep the water out of their basements.

In July 2007, a steam exploded under the streets of midtown Manhattan. The blast launched a tow truck 12 feet in the air and flipped it over before landing. One person died and dozens were injured, including the tow truck driver who was scalded over 80 percent of his body by the steam.<sup>64</sup> The explosion blew a 40 foot diameter crater in the street and created fears of asbestos contamination because old pipes were commonly insulated with the toxic material. Forty square blocks were shut down for five days after the blast, costing hundreds of millions of dollars in lost business.<sup>65</sup> This was not an isolated occurrence. In the last two decades more than a dozen steam pipes have exploded in New York City, the biggest occurring in 1989 in an explosion that killed three people.<sup>66</sup>

2006 was the worst year ever in US history for sinkholes. Almost every state, from California, Hawaii, and New York to Alaska and North Carolina, reported record breakdowns in water infrastructure. Thomas Rooney, chief executive of a large sewer, water and oil pipe repair company, observes, “an epidemic of breaking pipes is causing unprecedented havoc.”<sup>67</sup>

- A 100-year-old water main burst in southeast Denver in June of 2008, opening an 18-foot sinkhole in the Monaco Parkway and limiting traffic to one lane for days.<sup>68</sup>
- A water main break in June of 2008 caused a sinkhole to open up directly in front of a woman’s car while she was driving near Miami. The sinkhole swallowed her car, and she had to be rescued by passersby.<sup>69</sup>
- A nearly 100-year-old water main burst in Seattle in May of 2007, creating a sinkhole that collapsed under two cars. One of the cars landed on a gas pipeline, further complicating recovery and repairs.<sup>70</sup>
- In Hershey, Pa., in June of 2008, local residents noticed

## You Should Know

- ❑ The vast majority of our nation’s water infrastructure was built in the post-World War II era—residents and businesses in many places are using water infrastructure that is over 100 years old.
- ❑ The EPA estimates that if critical investments aren’t made in our water infrastructure our water quality will reach pre-Clean Water Act levels of contamination around the year 2016.
- ❑ In New York a cracked 70-year-old water tunnel leaks 36 million gallons of water every day.
- ❑ The EPA estimates that at least 40,000 discharges of raw sewage into our drinking water, streams and homes occur each year from sanitary sewer systems.
- ❑ Center for Disease Control estimates that nearly 1,000 people die each year in the United States from waterborne microbial infection.
- ❑ Raw sewage outflows cause between 1.8 and 3.5 million cases of swimming-related illnesses per year.

a street dipping, and hours later the street collapsed to form a 9-foot-deep, 25-foot-wide sinkhole.<sup>71</sup>

- An 18-foot-deep sinkhole formed at Central Station in Memphis in June of 2008 after a 110-year-old culver broke. The infrastructure was so old that city officials couldn't identify its original builder.<sup>72</sup>

Our crumbling water infrastructure affects both drinking water and sewerage. Drinking water lost from leaking pipes ranges from 5 percent to 40 percent in some cities.<sup>73</sup> The Environmental Protection Agency estimates that at least 40,000 discharges of raw sewage into our drinking water, streams and homes occur each year.<sup>74</sup> In total, 850 billion gallons of combined sewer overflows into our streams and rivers every year, and another 10 billion gallons of sanitary sewer overflows as well.<sup>75</sup>

Sewer problems affect public health, of course. The Center for Disease Control estimates that nearly 1,000 people die each year in the United States from waterborne microbial infection. Raw sewage outflows also cause between 1.8 and 3.5 million cases of swimming-related illnesses per year.<sup>76</sup> Experts believe that billions of dollars in health care are spent on more than 7 million mild-to-moderate and over half a million moderate-to-severe cases of infectious waterborne disease in the United States every year.<sup>77</sup> The costs of cleaning up sewage spills and leaks also run into the hundreds of millions of dollars. Every year sewage contaminated beaches must be closed, resulting in additional economic losses of as much as \$2 billion per year, in addition to effects on local fish and wildlife.

### ***You Should Know***

- ❑ Between \$20 and \$40 billion investment in water infrastructure is needed over the next twenty years.
- ❑ Every \$1 billion spent on improving our water infrastructure creates 57,400 jobs in related construction projects.
- ❑ Clean water supports a \$50 billion a year water-based recreation industry, at least \$300 billion a year in coastal tourism, a \$45 billion annual commercial fishing and shell fishing industry, and hundreds of billions of dollars a year in basic manufacturing that relies on clean water.

### ***Tomorrow***

The simple solution to our growing water infrastructure problem is to increase investment proportional to the need. Local governments and ratepayers cover 90 percent of the costs of public water systems,<sup>78</sup> but the need for capital improvement now exceeds the capacity of operating budgets and individual ratepayers to meet the needs.

Estimates of the cost vary. The EPA estimates that over the next 20 years we face an investment shortfall of over \$270 billion for wastewater infrastructure and around \$265 billion for drinking water.<sup>79</sup> The Congressional Budget Office (CBO) describes the need as between \$20 and \$40 billion annual investment for both waste and drinking water over 20 years.<sup>80</sup>

These costs, usually viewed as an economic problem, can be also viewed as an economic opportunity. The Massachusetts Infrastructure Investment Coalition estimates that 57,400 jobs are created directly and indirectly from related construction projects for every \$1

billion spent on improving our water infrastructure.<sup>81</sup> Clean water is also essential to industries such as coastal tourism, recreational boating and commercial fishing, paying substantial dividends to public health, the environment and the economy.

## **Bridges and Levees**

Bridges and levees are so vital and so inconspicuous; they don't fit within a single category of infrastructure. They link things together. Bridges support rail and highways. Levees hold back rivers and support roads. But they are also falling apart.

### ***Bridges***

Old age, insufficient maintenance and increased traffic are putting serious strains on bridges all over the country. The U.S. Department of Transportation reports that nearly one out of four bridges in the United States—over 152,000 bridges—are “structurally deficient or functionally obsolete.”<sup>82</sup> The collapse of the I-35 bridge in Minneapolis that killed thirteen people last summer served as a wake-up call.

The American Society of Civil Engineers estimates that 13 percent of all U.S. bridges are “structurally deficient,” which means they are closed to heavier vehicles or higher speeds because of deteriorated structural components. Another 14 percent are “functionally obsolete,” which means that they don't have lane widths, shoulder widths, or vertical clearances adequate to serve current traffic demands.<sup>83</sup> School buses are not allowed to cross some bridges because of these weight limits, and delivery trucks have to take lengthy detours just to get from one neighborhood to the next.

The deficiency of a single bridge ripples throughout the system, even if it doesn't collapse and kill anybody. The National Surface Transportation Policy and Revenue Study Commission estimates that the federal government invested 40 percent less than the annual optimal investment level of \$17 billion in 2004, the most recent year for which data are available.<sup>84</sup>

### ***Levees***

In the spring of 2008, thousands of homes and millions of acres of crops were destroyed after heavy rains overwhelmed obsolete levees along the Mississippi River. In 2005, the levees failed around New Orleans, creating unprecedented disaster. These failings don't just seem more frequent; they actually are. Many of the nation's levees were built over 100 years ago, and wear and tear has taken a toll. The American Society of Civil Engineers estimates more than 150 levees to be at high risk of failing due to poor maintenance.<sup>85</sup> Over a quarter of the dams overseen by the Corps of Engineers have exceeded the lifespan for which they were designed and need major repairs to ensure their safety.<sup>86</sup>

Not only are the levees inadequate, but development along the waterways is increasing the load. Flood plains and wetlands that used to naturally soak up water have been replaced by homes, offices and shopping malls with concrete parking lots.<sup>87</sup> Iowa, for example, has lost 90 percent of

its wetlands. All these developments add pressure to poorly maintained flood walls and levees, bringing disaster to what might otherwise have been simply heavy spring rains.

## Broadband

The United States created the Internet, but it now ranks 15<sup>th</sup> of 30 developed countries in overall broadband penetration.<sup>88</sup> Despite its role in ushering in the information age and its leadership in information technology for decades, the United States has slipped from the industry leader to a lagging follower. The United States is one of the few industrialized countries in the world that has still not implemented a comprehensive policy to expand high-speed Internet access to its population. Instead of viewing broadband as a strategic resource and part of our common good, it is seen as a personal consumption item that people can buy if they choose to and can afford it. Largely as a result of a near-monopoly in the broadband market, the United States is currently 18<sup>th</sup> worldwide in terms of cost per megabyte, putting it out of reach for millions.<sup>89</sup>

### *You Should Know*

- ❑ The U.S. now ranks 15th of 30 developed countries in overall broadband penetration.
- ❑ The United States is currently 18th worldwide in terms of cost per megabyte, putting broadband access out of reach for millions.
- ❑ The average broadband download speed in Japan is between 10 and 32 times faster than in the United States.
- ❑ According to EDUCAUSE, the United States needs to invest \$100 billion over the next four years for a fiber-to-the-home broadband infrastructure in order to regain competitiveness globally.

Even the wealthy in America are being left behind. In Japan the average broadband download speed is between 10 and 32 times faster than in the United States.<sup>90</sup> In a new economy where knowledge is power, sluggishness means more than just inconvenience. It puts America at a disadvantage in competition with other countries with superior technology and a greater emphasis on education.

According to a recent report from EDUCAUSE, the United States needs to invest \$100 billion over the next four years for a fiber-to-the-home broadband infrastructure that would connect every household and business in the country, which, according to the report, would “provide adequate broadband connectivity for several decades.” The report predicts that this investment, as part of a national broadband policy, would generate enormous economic activity, while being cheaper to operate than the existing copper-wire network.<sup>91</sup> As with all other types of infrastructure, short-term costs now will reap enormous social and economic returns for decades.

# Human Capital

## Pre-School

### *Yesterday*

Education before kindergarten is not a new idea. Pre-K programs have existed in the United States since 1903.<sup>92</sup> However, the push for universal Pre-K and the appropriated funding of the programs have been gaining ground as family structures have changed and more women have joined the workforce. Children between the ages of zero and three years of age develop three-fourths of their brain capacity and learn vital language and communication skills that last the rest of their lives, and that are missed if not learned well at that time.<sup>93</sup>

More than 45 years ago, the Perry Preschool Project in Ypsilanti, Michigan developed a high-quality educational approach for three and four-year-olds with low socioeconomic status, low IQ scores, and a high risk for school failure. Children attended the preschool 2½ hours per weekday for two years. A staff-to-child ratio of one adult for every 5 or 6 children allowed teachers to visit each child's family every week, and parents participated in monthly small group meetings with other parents and program staff.<sup>96</sup>

High/Scope Perry Preschool Project Outcomes: Age 27 <sup>94</sup>		
Preschool Participants		Non-Preschool Participants
7 %	Arrested 5 or more times	35%
71%	Graduated from high school	54%
15%	Needed public assistance	32%
29%	Monthly earnings of \$2,000+	7%
36%	Home ownership	13%
High/Scope Perry Preschool Project Outcomes: Age 40 <sup>95</sup>		
Preschool Participants		Non-Preschool Participants
36%	Arrested 5 or more times	55%
65%	Graduated from regular high school	45%
71%	Received public assistance	86%
60%	Earned over \$20,000	40%
37%	Home ownership	28%

The program cost on average \$19,271 per participant, a considerable investment on an unproven program. Yet researchers tracked the results and the return on investment was stunning.<sup>97</sup> Comparing program participants to a matched control group, by the age of 27 the preschool participants were half as likely to need public assistance and one fifth as likely to commit crimes; they were nearly three times more likely to be homeowners and four times more likely to have monthly earnings above \$2,000.<sup>98</sup> The cost-benefit estimated by the age of 27 that savings of the initial investment per child came at \$7.16 per dollar invested —a return of more than seven times.

## **Quality Pre-Kindergarten Program Benchmarks**

### **From The National Institute for Early Education Research (NIEER):**

1. Comprehensive early learning standards
2. Teachers to have a Bachelor's Degree
3. Teachers to have specialization in pre-K education
4. Assistant teachers to have at least a child development associate credential
5. Teachers to have at least 15 hours of annual in-service training
6. Class sizes of 20 at most
7. Staff-child ratio of 1:10 at most
8. Provide vision, hearing, and health screenings and referrals and a parent involvement opportunity
9. Provide at least one meal
10. Pre-K program on-site visits and monitoring

The payoff for these toddlers continued through middle age. By age 40, the cost-benefit estimate of the initial investment per child came at \$16.14 per dollar invested—a return of more than 16 times. The landmark Chicago Child-Parent Center Program, started in 1967, showed similar long-term results.<sup>99</sup>

### ***Today***

Early childhood care and education is more crucial now than ever before. The days of mothers staying home to watch the kids while Dad went to work are long gone. More parents are single or divorced, and more women have fulltime jobs. In 1950, fewer than 12 percent of women with children under the age of 6 were in the workforce; by 2007, that proportion had increased to 72 percent.<sup>100</sup>

With both parents in the workforce or only one available, parents turn to in-home or professional child care to help watch their children. Day care facilities, however, are often understaffed, have minimal educational and training requirements of their teachers, and have rapid turn-over rates because teachers are underpaid and lack adequate benefits.<sup>101</sup> Even so, the costs are high. Care for one infant in a daycare center costs in the range of \$10,000 per year, claiming roughly 15 percent of the income of a two-parent family and 25 percent of the income of a single-parent family. Parents with a single child—let alone two or three—are

stretched to the limit.<sup>102</sup> The situation invites the participation of the wider community, all of whom benefit from children raised to succeed.

Thirty-eight states currently fund pre-K programs, collectively serving more than a million children. The total investment in 2007 was \$3.7 billion, making states the single biggest source of pre-K funding.<sup>103</sup>

Oklahoma and North Carolina stand out for their efforts to make pre-kindergarten education available to more children regardless of income. The Oklahoma pre-K program meets nine of the 10 benchmarks set by the National Institute for Early Education Research. Eighty-five percent of Oklahoma 4-year-olds take advantage of the opportunity at a total cost of \$118 million, or \$6,731 per child.<sup>104</sup> The North Carolina “More at Four” program meets all 10 benchmarks. It costs a total of \$85 million and serves 18,000 at-risk children, more than half of whom had never previously been served, an investment of \$7,400 per child.<sup>105</sup> Both programs bring children better able to learn, with better basic skills and improved behavior.<sup>106</sup>

### ***Tomorrow***

Child care and early childhood education needs to grow in America. The benefits greatly outweigh the economic and social costs. In the Perry Preschool Project, each dollar invested saw a return over seven dollars when the children turned 27.<sup>107</sup> Students in Tulsa, Oklahoma—as a whole—increased their scores in letter-word identification, spelling and applied problem solving.<sup>108</sup> Currently, there are over 4.1 million four-year-olds in the United States, but only a small fraction has access to programs of Oklahoma quality. If an investment at the Oklahoma level were made for all of them, it would require roughly \$28 billion per year, split between local, state and federal governments.<sup>109</sup>

## **K-12 Education**

### ***Yesterday***

America's public education system has long been a cornerstone of its vibrant economy and thriving democracy, investing in the next generation and providing opportunity to all. Now, instead of lifting our children up, our education system is holding too many of them back.

America's public education system came into fruition in the 20<sup>th</sup> century. The American economy was changing; the nation was becoming more industrial, less agrarian and more international. To cope with these challenges, the current public school system was created. By 1918 all states had passed laws requiring children to attend at least elementary school.<sup>110</sup> The United States created the current public school system to meet the needs of a changing and evolving economy.

In fall 2008, a record 49.8 million students attend public elementary and secondary schools.<sup>111</sup> Public school systems employ about 3.3 million teachers in 14,200 school districts with 97,000 schools.<sup>112</sup> The total investment is approximately \$500 billion, with a national average of \$11,702 per pupil in fall enrollment (2008 dollars).<sup>113</sup>

The benefit of the investment in education hardly needs to be proven. Students that graduate high school have more income on average, produce more tax revenue, are more likely to have employer-provided health insurance and pension plans, have lower unemployment and poverty rates and less likely to participate in public assistance programs.<sup>114</sup>

### ***Today***

Nowadays America's public education system is faltering. It has not kept pace with either the growth of the population or the rest of the world. Spending between suburban and urban school districts has developed severe educational inequalities. Teacher pay does not compete well with other opportunities available to qualified professionals. The physical infrastructures of schools are deteriorating and the use of trailers and other portable classrooms are putting our children at great risk. The following sections will discuss each of these issues in turn—performance, inequality, teacher pay and physical infrastructure.

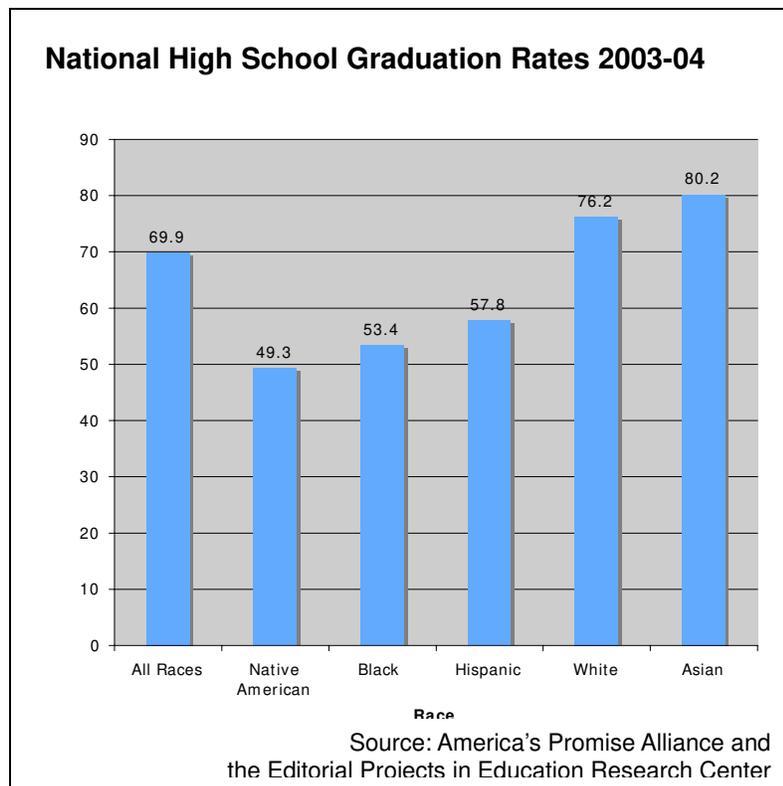
## Performance

American students are falling behind other students in other countries, putting us at a disadvantage in the global economy. The Department of Education reveals the United States ranks very low compared to the 30 country members of the Organization for Economic Cooperation and Development. In mathematics, science, and problem solving, the United States ranked 25<sup>th</sup>, 20<sup>th</sup>, and 25<sup>th</sup>, respectively; and scored well below the average score. Reading was the only subject that the United States was above the average score—however, it only ranked 16<sup>th</sup> out of the 30 Organization for Economic Cooperation and Development countries.<sup>115</sup>

## Inequality

School should be an equalizing institution. Bright kids who work hard should be able to get ahead, regardless of race or socioeconomic background. But it is not turning out that way. There are severe inequalities in both access and outcomes of K-12 education.

Minorities have higher drop-out rates and lower test scores than white students. The national graduation rate is 70 percent nationwide. But the graduation rate of Whites is 76 percent, African Americans is 53 percent, Native Americans is 49 percent and Hispanics 58 percent. Location matters too. The suburban school district graduate rate is 15 percentage points higher than urban school districts.<sup>116</sup>



school districts.<sup>116</sup>

Much of this education achievement gap rests in the funding inequality of school districts. Local taxes contribute a great deal of funds for public schools and provide some of the most troubling funding inequalities for school systems, especially between suburban districts and urban or rural districts. In the words of one respondent to an *Education Week* survey “reliance on property taxes created perennial inequities and an overall issue of adequacy.”<sup>117</sup>

While wealthier school districts use their strong property tax bases and other local revenues to fund quality public education; school districts in

less-wealthy neighborhoods cope with fewer resources and less funding. Schools in these low property tax neighborhoods tend to have a higher poverty concentration and more minority students; they are often located in urban or rural areas. The average per-pupil spending in some

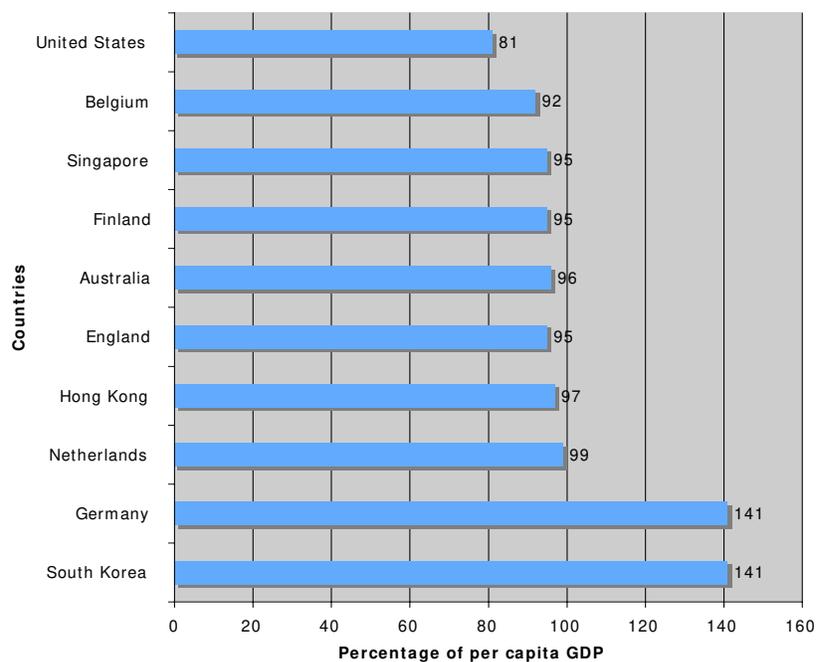
school districts is higher than \$15,000 per student while other school districts spend less than \$5,000 per pupil.<sup>118</sup>

In 2005, districts serving the highest concentration of poor students received, on average, \$938 less per pupil in state and local money than the lowest poverty districts, a gap that was essentially unchanged (given inflation) from 1999. During the same time period, high-minority districts received, on average, approximately \$877 less per student in state and local funds than low-minority districts.<sup>119</sup> The gap is especially troubling because students with impoverished backgrounds often need more, not less, support to achieve their personal potential.

### Teacher Pay

Teacher quality is a key ingredient for the academic success of students. Low pay, however, can deter qualified college graduates who might be interested in teaching. The Economic Policy Institute found that public school teachers in 2006 earned 15 percent less than comparable workers. The pay disadvantage has increased since the 1970s, especially the past decade.<sup>120</sup> Teacher pay is also lower in the U.S. than other similar countries.<sup>121</sup>

**Starting Salary as Percentage of Per Capita GDP Percentage**



Source: Economic Policy Institute

### School Infrastructure

America's schools are falling apart. In 1995, the Government Accountability Office found that one third of United States' schools, representing an enrollment of 14 million students, were in need of extensive repair or replacement at a cost \$112 billion. 15,000 public schools had air that was unfit to breathe.<sup>122</sup> School infrastructure construction needs have been estimated between \$127 billion and \$268 billion.<sup>123</sup>

As public school enrollment has grown, investment in school construction and modernization in recent years has decreased—since 2003 and 2004 by about 30 percent. In fact, school construction spending was lower in 2007 than in any year since 1999.<sup>124</sup> About 17 percent of public schools are considered in “unsatisfactory” physical condition, and in roughly one-third of all schools, deficiencies in the school facilities interfere with the ability to teach.<sup>125</sup> Teachers regularly report horrendous school conditions: rodent infestation, falling ceiling tiles, poor lighting, mold in

“When second-grade teacher Susan Seki goes to bed at night and hears rain, she hopes the books in her classroom are dry and that her students won’t have to wear galoshes during class the next day. The Lincoln Elementary School in Burlingame, CA instructor finds it hard to teach vocabulary and arithmetic when the school’s deteriorated roof leaks. Placing buckets around the room — something the school has done twice this school year — does not help the learning environment, either.”

D.C. Examiner  
November 23, 2007

classrooms, asbestos, freezing rooms in the winter and sweltering rooms in the summer, poor ventilation, and unsanitary bathrooms.<sup>126</sup> In 31 states, plaintiffs have challenged the adequacy or equity of public education in low-income communities, with problems partly resulting from the condition of the facilities.<sup>127</sup>

The District of Columbia is a prime example of a school system in need of infrastructure repair. In 2007, the list of repair requests from D.C. schools showed thousands of repair requests were unfulfilled with over one thousand of those marked as “urgent” or “dangerous”—waiting to be fixed, on average, for more than a year.<sup>128</sup> Of the 146 schools, 127 have a pending repair for electrical repairs that have typically been pending for two years. 85 percent of cafeterias had violations, including peeling paint and plaster near food, inadequate hand-washing facilities and insufficient hot water; with over 33 percent of those cafeterias with rodent or roach infestation.<sup>129</sup>

Even places without decay suffer from overcrowding.

Temporary trailers become permanent fixtures, as new construction is deferred, year after year. Almost one in three schools has gone to temporary buildings serving as the primary learning environment.<sup>130</sup> The current population barely fits, let alone the smaller class sizes that many parents and educators dream of.

### ***Tomorrow***

Serious investment is needed to improve K-12 education in America. Performance is lagging behind the world and the current system perpetuates inequality in educational opportunity at home. An investment in teacher pay and school infrastructure is crucially needed for the vitality of our school system. Investing in these key issue areas is paramount for the United States.

### **Performance**

An improvement in the performance of America’s children rests in innovative and effective teaching methods. No Child Left Behind is continuously underfunded, and people worry that it prioritizes testing over learning and thinking.

The National Education Association reports that in 1975-76, the federal government spent five cents of every federal dollar on education and training. To achieve this level of spending today, a federal investment of \$67 billion in addition to the President Bush’s fiscal year 2009 request would be needed. Of this \$67 billion, \$14.7 billion would be invested to close the 2009 gap in funding for No Child Left Behind and \$15.1 billion to fully fund the excess costs of education children with disabilities.<sup>131</sup>

## **Inequalities**

Inequalities in funding must be resolved for the American education system to become an equal opportunity institution in America. States must examine where these funding inequalities exist and put forth measures to correct them. The federal government can act to ameliorate inequalities between the states. These actions will help close the funding equalities that persist in impoverished, minority and urban school districts.

## **Teacher Pay**

We must be sure that teachers are paid enough to lure in the qualified and dynamic teachers into the field, especially in places that they may not otherwise choose to live and work. The American Federation of Teachers reports, “To make teacher pay competitive with pay in other professions by the end of the decade, teacher need a 30 percent raise—an additional investment in our children’s future of almost \$15 billion per year.”<sup>132</sup> Raising teacher’s wages has a reciprocal effect; it is estimated increasing teachers’ wages by at least 10 percent reduces high school drop out rates by 3 to 6 percent.<sup>133</sup>

## **School Infrastructure**

Safe and modern school facilities allow our children to stay healthy and provide more opportunities to expand their educational horizons. An investment on rebuilding America’s school can begin with \$20 billion for deferred maintenance. The Economic Policy Institute estimates this would generate close to 250,000 skilled maintenance jobs with nearly \$6 billion for materials and supplies.<sup>134</sup> And that’s just the beginning. Estimates to fully revitalize our school infrastructure run in the range from \$127 billion to \$268 billion.<sup>135</sup> A full investment would produce millions of new jobs and better schools for our kids.

## **You Should Know**

- Native Americans, African Americans, and Hispanics graduation rates are 26.9, 22.8, and 18.4 percentage points below the graduation rate for Whites.
- In mathematics, science, and problem solving, the United States ranked 25th, 20th, and 25th, respectively; and scored well below the average score against Organization for Economic Cooperation and Development countries.
- In 2005, districts serving the highest concentration of poor students received, on average, \$938 less per-pupil in state and local money than the lowest poverty districts.
- Public school teachers in 2006 earned 15 percent lower weekly earnings than comparable workers.
- In 2007, 85 percent of Washington, D.C. public school cafeterias had violations.
- Between \$127 billion to \$268 billion is needed to bring our schools into good repair.
- A federal investment of \$67 billion would return the U.S. to the 1975 level of five cents of every federal dollar dedicated to education and training.
- To make teacher pay competitive; an investment of almost \$15 billion per year would increase teacher pay by the needed 30 percent.

# Higher Education

## *Yesterday*

Higher education is extremely important to the vitality of the United States. Early generations recognized it, and invested accordingly. Starting with the Morrill Acts of 1862 and 1890, the federal government provided grants of lands to states to establish institutions of higher learning. There is now at least one land-grant university in every state and territory of the United States, including the District of Columbia.<sup>136</sup>

The United States also invested in higher education with the GI Bill. President Franklin D. Roosevelt signed the bill into effect in 1944 and made college accessible to many veterans coming back from World War II. Among other things, the GI Bill helped furnish a college education by providing tuition, books, fees and other college costs, along with a small living allowance. By 1947, veterans made up 49 percent of U.S. college students.<sup>137</sup>

A generation later, the federal government renewed its investment with “need-based aid” in the form of the Pell Grant covered by the Higher Education Act of 1965. The Pell Grant in 1979-1980 covered 77 percent of tuition, fees, and on-campus room and board,<sup>138</sup> while tuition and fees at a public institution cost \$738 (\$2,049 in 2006 dollars).<sup>139</sup>

The federal government also helped to establish the current system of private lending that dominates college financing today. In the beginning, students looked like poor financial risks. Young in age, with little credit history and few personal assets, students were not attractive candidates for private sector lending—certainly not for the large sums needed to finance a college education. The federal government helped solve the problem by creating incentives for banks to lend. The Federal Family Education Loan Program guarantees lenders a higher interest rate than the base market rate, ensuring a healthy profit on monies loaned. On top of that, the government guarantees payment of principle and interest in case of default.<sup>140</sup> For the banks, it was a win-win proposition: higher interest rates with no real risk. The Student Loan Marketing Association (Sallie Mae) was created to manage the money.

By the 1990s the market was mature. Well-educated, high-earning college graduates proved to be excellent credit risks, and student lending grew into a highly profitable industry. While “reinventing government” President Bill Clinton questioned whether expensive subsidies for the middleman were needed any longer. In 1993, the Department of Education created the Federal Direct Loan program that lent money directly to students at low rates available only to the U.S. Treasury. Such loans reduced payments for students and did not increase the government’s risk because the old system already used the government to guarantee defaults. Students flocked to the new program. By the 1997-98 school year, direct loans had grown to 33 percent of student borrowing, to nearly \$11 billion.<sup>141</sup>

## ***Today***

Students and their families are scrambling to pay for college. States have been trimming their budget support for higher education, forcing colleges to raise tuition and fees to make up the difference. With wages flat or declining, college is being priced out of reach of middle-class families. Since 2000, the average cost of tuition at a public college has increased 39 percent but median household income has fallen 1 percent.<sup>142</sup>

Furthermore, subsidies used to entice banks into the business of making student loans appear to have outlived their usefulness. Banks now appear to benefit from federal largesse at least as much as students. They appear to be competing against students for limited federal resources.

The Federal Direct Loan program is the more cost-efficient lending program. The administrative costs are lower and the design is simpler. The costs for the Federal Direct Loan program is \$0.77 per \$100 borrowed as compared to \$5.25 per \$100 borrowed through the Federal Family Education Loan program with bank intermediaries.<sup>143</sup>

Given the total funds distributed by each program, the Federal Family Education Loan program cost over \$1.2 billion more than the Federal Direct Loan program in 2006-07. Add the additional \$3 billion per year that the private student loan industry makes in subsidies for participating in the Federal Family Education Loan and it totals \$4.2 billion—the Federal Direct Loan program only cost \$47.5 million that same academic year.<sup>144</sup> Furthermore, when total loans from both programs are combined—equaling over \$30.1 billion—the costs under the Federal Direct Loan program are over \$1.3 billion cheaper than using the Federal Family Education Loan program.

## ***Tomorrow***

First, states must provide sufficient support for their state institutions to keep the cost of tuition down and provide access to higher learning institutions. Even in tough economic times, investing in higher education is critical to our economic vitality in the future.

Secondly, the federal government could make more money available for loans, especially through the Federal direct student loan program. It is more efficient and doesn't divert funds to subsidize banks. Changing to the direct program would free up the more than \$13 billion in student loan subsidies that could be reinvested into federal grants and programs to promote access to dedicated and qualified students.

Another method to make more money available to students is grant aid, especially the Pell Grant. In 1979, Pell Grants covered 77 percent of the cost of college; now that share is down to 32 percent.<sup>145</sup> The grant needs to be restored to more meaningful purchasing power to keep the college dream alive for millions of American students.

### ***You Should Know***

- States must be able to provide adequate support for their state institutions to keep the cost of tuition down and provide access to higher learning institutions.
- The federal government should move toward the Federal Direct student loan program.
- An investment of \$51 billion would return the Pell Grant to its 1979-80 coverage of 77 percent.

For the 2006-07 academic year, an investment of \$51 billion would return the Pell Grant to its 1979 level.

## Lifetime Learning

Today's global economy is far different from the economy of the 1950s. Back then, skills were more portable, people could make adjustments if they were laid off or their factory moved. By contrast, the new economy demands more specialized skills that people can't simply learn while job-hunting after the factory closes down.

“American manufacturers are facing a serious shortage of qualified employees. The skilled worker shortage is the result of several factors: the retirement of baby boomers; the need for greater skill created by advancing technology; increased competition in the global marketplace; and difficulty with retaining highly-skilled talent. To help match manufacturers with highly skilled workers, the U.S. must improve the quality of education in our primary, secondary, and post-secondary school systems. We must also improve job training programs to address the continuous demands of training and re-training of workers.”

National Association of Manufacturers

We need to find innovative ways to support lifelong learning and retraining capabilities for our country's workers. Denmark, for example, provides free job training and education for workers through “flexicurity”—providing generous training, retraining and incentivized welfare benefits.<sup>146</sup> Unemployment benefits can be as high as 90 percent of previous income if workers accept jobs or enter in retraining programs to find new employment.<sup>147</sup>

The U.S. has no such program. Community colleges are filling in the gaps for some workers, but the system is haphazard and the costs must be incurred by workers themselves. The closest equivalent we have in the U.S. is the Trade Adjustment Assistance (TAA) program created in 1962 under the Kennedy administration. TAA provides income support, job training and other benefits for manufacturing workers who lost their jobs as a result of international trade. In 2007, roughly 93,000 people were covered by TAA benefits but, in the same year, efforts to expand

TAA to the service as well as manufacturing sector were defeated in Congress. The U.S. needs to develop new ways to invest in people for the long haul, and to keep people productive as times change and the economy shifts. It's a key to success in a competitive global economy.

## Financing

Interstate highways and transcontinental railroads weren't cheap. Schools built years ago usually paid for themselves in the long run, but in the short run they took cash out of state and local budgets. Addressing the disinvestment outlined in this report in these and other public resources will require massive expenditures. The American Society of Civil Engineers estimates \$1.6 trillion is needed to return our nation's infrastructure back to "good" condition. Hundreds of billions are needed for freight and commuter rail; hundreds of billions are needed for classrooms; countless billions are needed for solar panels, windmills and better pay for public school teachers.

The investment won't be paid for nor paid off in a single budget cycle. But we need to think on a scale proportionate to the need and consistent with the lifetime of the project, and we need to develop ways to raise and distribute vast sums of money fairly and effectively. While there are many ways that this can be accomplished, two systems stand out: first, the establishment of a federal capital budget modeled after existing state capital budgets; second, the creation of a national infrastructure funding body or infrastructure bank.

### Federal Capital Budget

Many state and local governments, as well as businesses, employ "capital budgeting." They structure their budgets to separate long-term capital expenditures—like school and highway construction—from short-term operating expenses—like employee salaries and heating oil. Operating expenses are typically financed on an ongoing basis; capital expenses, however, are financed over time with devices like bond issues or long-term loans.

Families budget themselves the same way. They pay for ordinary expenses like food and clothing from an operating budget, and try to keep the expenditures from exceeding the income. But they pay for long-term capital expenses—such as their car, their house or their child's college education—by borrowing. They don't ever expect to earn enough in one year to pay for these long-term investments.

Almost alone among the world's advanced industrialized nations, the U.S. government does not have a separate capital budget that distinguishes between current consumption and long-term investment.<sup>148</sup> Without a distinct capital budget, the federal government pays for public infrastructure projects through general government revenue. This discourages long-term capital planning.

However, the government has been reluctant to adopt a federal capital budget. In 1997 President Clinton convened a federal commission to study capital budgeting. Its 1999 report recommended against the reform. The Commission did not deny the merits outright; it simply concluded that the entire federal budget process "has significant weaknesses" and recommended a "thorough examination of how the budget process may be improved beyond addressing capital-related

needs.”<sup>149</sup> The Commission recommended that a capital account be considered in the context of a dozen other related reforms.

### **National Infrastructure Funding Body**

A leading current idea is the creation of an independent body to fund and oversee large public investment projects, often called an “infrastructure bank.” Such a bank would be similar to the World Bank, private investment funds, or any other entity that accumulates funds from diverse sources, evaluates potential projects, and invests funds in projects according to its goals and priorities.

The bank would accumulate resources from the federal and state governments, and investment by private companies or private capital holders. It would create board of directors that reflects the interests of those paying in and create a transparent, agreed-upon catalog of projects and priorities. Candidates for investment would then compete for bank resources on the basis of those priorities. Private investors would receive a return on their investment akin to a bond.

The primary benefit of such an infrastructure bank is its ability to attract private funds from partners that have specific interests or who lack confidence in government institutions to direct tax collections in their desired ways.<sup>150</sup>

## Conclusion

The challenges ahead are great—but no greater than the challenges that previous generations of Americans overcame. It is time to renew America for the 21st century so our children will inherit a country as special as the country we inherited from our grandparents.

The American Society of Civil Engineers estimates that \$1.6 trillion is needed over the next five years to bring our infrastructure back to good condition.

The Apollo Alliance estimates that a \$500 billion investment in clean energy would march us towards energy independence and create 5 million new jobs.

Roughly \$400 billion more is needed for human capital, investing in schools for our first-graders, college for our young men and women, and lifetime learning for the mid-career changes that millions of workers will experience in the new economy.

The total investment runs in the range of \$2.5 trillion. Seen as a cost, it may look like a problem. Seen as a long-term investment that will take years to pay off and pay dividends over time, it looks like a solution. The investment will create good jobs now—particularly in construction and manufacturing—that stay in America and build things that will never leave. The investment will hire school teachers and train engineers, strengthening our greatest resource—our people. These long-term investments will pay back the up-front cost many times over the years.

The great challenge for the American people is not finding the money. The great challenge is finding the political will to think beyond the current budget cycle or the next election, to think on a time horizon of decades and design solutions on the scale of the problem.

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