AN Infrastructure and Economic

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Two solar-electricity generating systems in Daggett, California, along with seven other similar facilities in the Mojave Desert, produce enough electricity for 500,000 people.

Petra Todorovich

Infrastructure is something that often goes unnoticed. Unless it breaks or the delivery system fails, the bridge that spans the river, the drinking water that comes out of the tap, and the light that switches on attract little attention. However, in recent years high-profile disasters—the levee failures in New Orleans, the bridge collapse in Minneapolis, and the steam pipe explosion in New York City—have demonstrated the increasing age and disrepair of the infrastructure that was built by earlier generations and that Americans have increasingly come to take for granted.

There is growing recognition that even the highways, bridges, transit systems, electrical grids, water pipes, and sewers that are not failing in spectacular ways are nonetheless increasingly overburdened, outdated, or obsolete. While other nations, including Germany, France, Spain, the United Kingdom, and China, are making bold investments in high-speed rail, public transit, and renewable energy, the United States is struggling to maintain its existing infrastructure in a state of good repair. Earlier this year, the Congress acted to fill an $8 billion funding shortfall in the Highway Trust Fund, much of which goes to maintain roads and bridges. Mass transit agencies, also underfunded and struggling to keep up with rising ridership levels, are now facing the lose-lose proposition of having to raise fares while also cutting service.

And in recent months, a new, harsh reality has emerged, overtaking infrastructure in the national debate: the tightening of global credit markets and the slowing of the national economy. A global financial crisis, precipitated by the collapse of America's subprime mortgage market and seizing

up of credit, has played out in the closure of storied investment banks, wild gyrations in the stock markets, rounds of layoffs, and pleas from America's banking and automobile industries for assistance from the federal government.

Impetus for Bold Action

The convergence of these infrastructure and economic crises provides an impetus for bold action. America 2050, a joint venture of the Lincoln Institute of Land Policy and Regional Plan Association, is working with a national committee of civic, business, and government leaders to develop a Strategic Investment Framework for roads, bridges, transit systems, the energy grid, water infrastructure, and telecommunications. Since its launch in 2005, America 2050 has been gaining traction among policy makers and professionals in the planning and development fields in its call for a national strategy to accommodate America's projected population growth and the emergence of megaregions in the twenty-first century. The onset of a deepening recession changes the context of this discussion and adds urgency to the need to create jobs and invest wisely in the nation's future.

President-elect Barack Obama and the U.S. Congress are considering bold actions to create jobs and restore economic prosperity early in the new administration. There is talk of a major economic recovery bill when Obama takes office, and both he and the Democratic leadership in Congress have proposed focusing on infrastructure spending as a way to stimulate the economy. Such an approach could be targeted to address the dismal condition of America's existing infrastructure and to develop the capacity that is needed to accommodate the next generation of population and economic growth.

In anticipation of this unusual opportunity, America 2050 is developing a comprehensive approach to infrastructure investment that could help the nation meet its core challenges: rebuilding the economy, achieving energy independence, and mitigating climate change, while positioning the nation for long-term economic prosperity and competitiveness in the global economy.

This spring, America 2050 launched a "Rebuilding and Renewing America" campaign to draw national attention to the need for an infrastructure investment plan. Even before the full extent of the economic crisis had been revealed, strong interest was evident in the caliber of participants at a kickoff forum held at the Woodrow Wilson Center in Washington, DC, on May 9, 2008. With the support of the Lincoln Institute, the forum convened business and labor leaders, philanthropists, and elected officials, including the Governor of Pennsylvania and Democratic and Republican members of Congress, demonstrating broad, bipartisan interest in the need to address America's infrastructure needs.

Moving forward, America 2050 is holding a series of forums in the nation's megaregions to engage experts in different regions on policy approaches to transportation, energy, and water infrastructure, and to draw attention to this opportunity to create jobs and stimulate the economy.

The notion of a national infrastructure plan for the United States may seem like, in the words of historian Robert Fishman (2007), "an exercise in bureaucratic hubris," but in fact, it is one of the oldest traditions of our country. In 1808, under President Thomas Jefferson, Treasury Secretary Albert Gallatin proposed a series of roads and canals in corridors that were later used to build the nation's rail network, and to develop and unify the Northwest and Louisiana territories. In 1908, President Theodore Roosevelt completed a second national plan designed to promote development in underperforming regions of the South and West, such as Southern California, Atlanta, Seattle, and Phoenix, through conservation and development of natural resources. In the 1930s, President Franklin D. Roosevelt's National Resources Planning Board proposed public works investments, including what later became the interstate highway system.

At the bicentennial of the Gallatin Plan and the centennial of the TDR's Conference of Governors, and as our nation faces the worst economic crisis since the New Deal, perhaps the notion of a new national plan to provide a roadmap for infrastructure investments and economic recovery is not so

outlandish. Like these precedents, a new national infrastructure plan could give shape and purpose to transportation, energy, and water legislation for decades to come. And like the jobs created during FDR's New Deal, an economic recovery plan shaped by infrastructure investment could leave a lasting legacy for America's future generations.

In this crisis we may have a once-in-a-lifetime opportunity to finance an ambitious program of infrastructure spending while improving the effectiveness and strategic focus of our infrastructure investments. To achieve this goal we need to be successful in articulating the importance of infrastructure investments, both as counter-cyclical projects that can put people to work during the crisis, and as the foundation for a stronger, more resilient economy in the future. Without these investments in creating capacity for future growth, it can be argued that America's economic prospects and future competitiveness could be diminished.

America 2050's Strategic Investment Framework will include a physical plan for national networks of goods and passenger movement (including freight rail, intercity passenger rail, major seaports and airports, and improvements to the interstate system), as well as key investments in energy transmission, water infrastructure, and communications. Inspired by the role that bold visions have played in the past, the framework will include a coordinated set of policies and goals for reforming federal infrastructure legislation. In return for giving states and local governments greater flexibility in how they achieve desired federal outcomes, programs would demand greater accountability to performance standards. America 2050 has adopted a "triple bottom line" approach to evaluating infrastructure investments against the three goals of economic return, environmental sustainability and social equity.

One of the key challenges will be to reform existing policies that work at cross purposes. For example, transportation funding that favors road building over public transit investment makes it more difficult to achieve energy independence; and farm subsidies for commercial agriculture encourage the use of pesticides and fertilizers that pollute watersheds, raising the cost of protecting and providing clean drinking water.

Despite the challenges of overhauling existing policies and implementing a bold agenda for investment, the decisive election of a new President on a platform of change presents a real opportunity and sense of momentum for action in Washington. As Obama's new chief of staff, Rahm Emmanuel was quoted as saying in mid-November, "Rule one: never let a crisis go to waste. There are opportunities to do big things."

Key National and Global Trends

America 2050 was formed in response to a set of long-term national and global challenges that will shape America's growth and development in the next century.

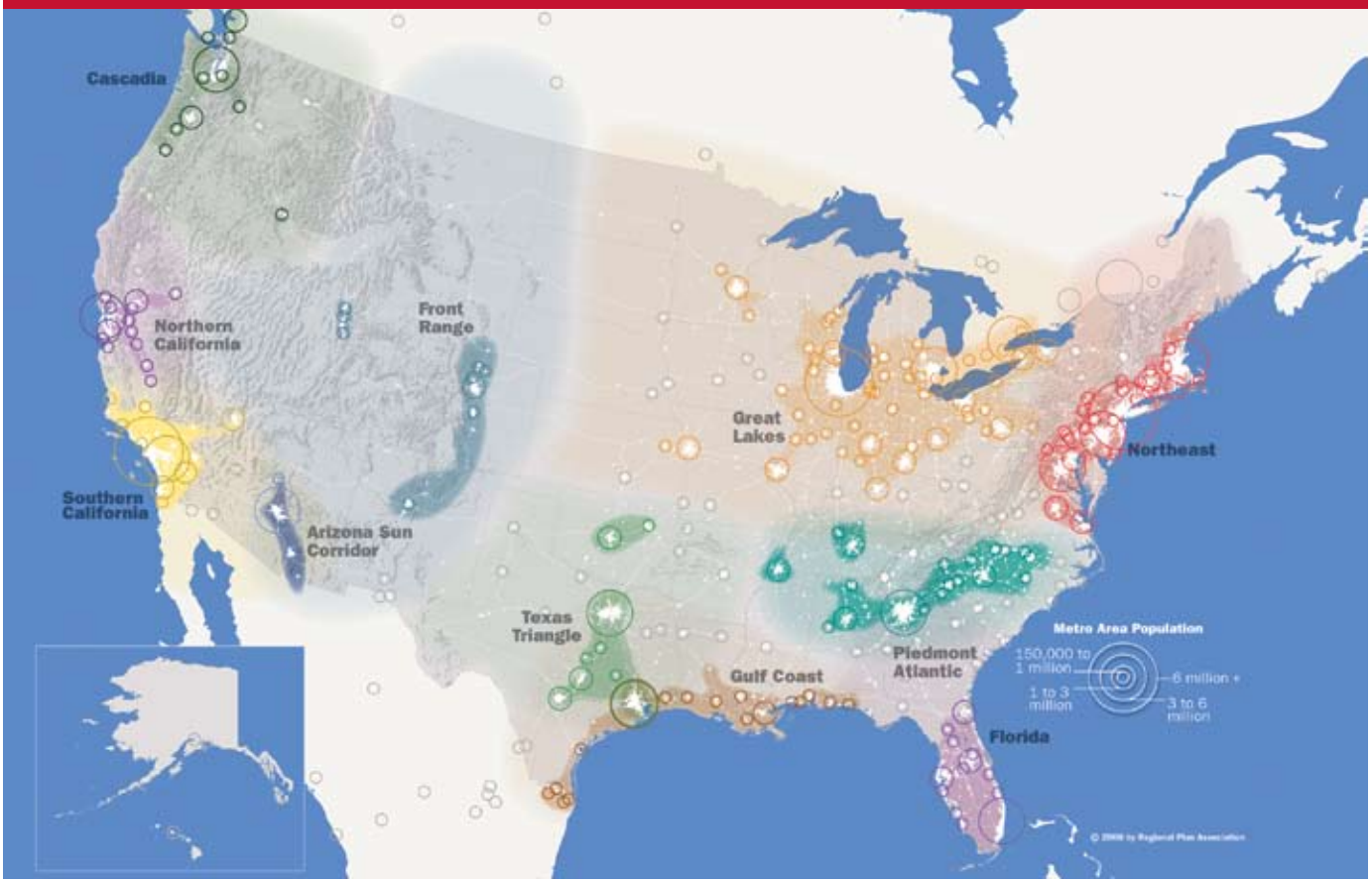
Population growth and demographic change. Despite the current economic crisis, America is growing. The U.S. Census estimates the population will reach 439 million people by 2050, and will be older and more racially diverse than it is today. That number represents a 50 percent increase in population over the year 2000, compared to an increase of only about 130 million people from 1950 to 2000.

Energy independence and climate change. Perhaps the greatest challenge we face as a nation is the need to shift from our dependence on foreign oil to a new energy economy that does its part to reduce greenhouse gases. Such a transition can create millions of "green collar" jobs, by manufacturing solar panels and wind turbines, creating fuel-efficient cars, retrofitting buildings to become more energy efficient, and developing technology for carbon capture and storage.

Movement of goods. We live in a global economy, and one-third of our GDP is based on foreign trade. As never before, the United States is reliant on truck-based freight, which is expected to double by 2035 (AASHTO 2007). As a result, congestion on our highways will have a disproportionate impact on businesses. Even if the trade volumes were to level off, America's existing ports, intermodal connections, and freight networks are ill equipped to handle the volumes of freight they move today with efficiency or reliability.

Rising household costs and regional inequity. The global economy has created winners and losers, and many cities and regions hit by the loss of manufacturing jobs have yet to recover. Household budgets are increasingly pinched by transportation and energy costs. At a regional level, access to jobs is often segmented by geography, with the location of jobs and affordable homes moving in opposite directions.

FIGURE 1
Megaregions Are Expanding Across the United States



Source: America 2050, Regional Plan Association.

Changing spatial patterns. We are seeing changing spatial development patterns and lengthening commutes. The fastest growing areas of the nation are those at the outer fringe of metropolitan regions, as people "drive to qualify" for a nice house with a yard, good schools, and other perceived amenities. In exchange, they spend more time in traffic and more of their household budgets on transportation.

Emerging megaregions. We are also witnessing the emergence of a new urban form—the megaregion—that consists of networks of metropolitan areas connected by overlapping commuting patterns, business travel, industrial value chains, transportation infrastructure, natural systems, and shared historical and cultural characteristics. America 2050 has identified 11 emerging megaregions where over three-quarters of the population and economic growth will be focused by 2050 (figure 1). These megaregions are becoming the new productive engines in national and global economies, but only if we make the right investments to make them efficient, productive, sustainable places.

New Approaches to Transportation, Energy, and Water Infrastructure

Driving the need for a Strategic Investment Framework is the recognition that our current approaches to planning, financing, building, and maintaining infrastructure in this country are insufficient, misguided, or outdated. America's transportation infrastructure, with its direct impacts on the nation's economic competitiveness and environmental sustainability, is widely maligned for its effect of perpetuating America's dangerous dependence on foreign oil and automobile-based land development. The national interest in reforming transportation policy is clear: the transportation sector consumes roughly two-thirds of America's total oil consumption, with impacts on our balance of payments and foreign policy.

In its "Transportation for Tomorrow" report, the National Surface Transportation Policy and Revenue Study Commission (2007) condemned the nation's transportation program for "pursuing no discernable national interest" other than the rights of "donor States" and congressional earmarks.

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Houston has introduced a light-rail transit system into its downtown areas.

And yet, while the program has no defined national purpose, it has inherent biases that are driving us down the wrong path toward increased fossil fuel consumption and foreign oil dependence.

We must change the vast imbalance between federal investment in highways and in public transit—a cumulative ratio of 9 to 1 highway to transit investment since 1956 (U.S. PIRG Education Fund 2008). While it was most pronounced during the construction of the interstate system, the funding imbalance persists today in decisions about new capacity. Federal funding for new transit projects is provided through a highly competitive grant program, New Starts, with limited funds and many applicants. This level of scrutiny does not exist for comparable new road projects.

Energy infrastructure in America is similarly ill equipped to meet the energy supply and climate change challenges facing the nation today. The nation's electrical grid is badly outdated, comprising a patchwork of private owners, and still vulnerable to the type of widespread blackout that crippled the Upper Midwest and Northeastern Seaboard in August 2003. Despite the recent spurt of production in new wind and solar technologies, the grid lacks the capacity to transport electricity over long distances from the wind farms of upstate New York or the solar farms of Arizona to the population centers where the energy is needed (Wald 2008).

The federal government has invested minimally in developing the Smart Grid, a technology that combines broadband technology with the grid, allowing for real-time monitoring, peak hour pricing, greater redundancy, and two-way flows of energy. The Smart Grid will allow distributed generation, so consumers with solar panels on their roofs or electric cars with leftover energy at the end of the day can power their own homes and even sell electricity back to the utility company. Also needed are investments in superconductor technology to transport electricity over longer distances to make better use of renewable energy generated in remote places.

In addition to these investments in the energy infrastructure of the future, a strong commitment to efficiency is the most cost-effective strategy for all levels of government and the private sector. Cities like Boston, Chicago, Seattle, and New York are leading the way by changing vehicle fleets, retrofitting old buildings to become more energy efficient, and promoting greater use of public transit. A stronger commitment to energy efficiency by the federal government could include an ambitious program to retrofit all federal buildings, and a policy for locating federal buildings in areas accessible to public transit, walking, and biking.

Water infrastructure is a third area where national policies must be updated to meet the needs of the new century. During the 1970s, the federal government financed significant investments in programs such as the Clean Water Act, which achieved great gains in controlling pollution from point sources, such as sewage plants and factories. The growing challenge today is to control nonpoint source pollution that flows in runoff from urban stormwater systems and agricultural facilities, while also ensuring an adequate, safe supply of clean drinking water.

Today more than 72,000 miles of municipal water and sewer pipes in this country are more than 80 years old, and the investments made in the 1970s are now reaching the end of their useful lives. The Environmental Protection Agency has identified a gap of about $534 billion in unmet capital, operating, and maintenance needs to renovate or replace clean water and drinking water systems over the next 20 years. (U.S. Environmental Protection Agency 2002).

Population growth and migration in fast-growing megaregions such as southern California, the Southeast, Arizona, and Las Vegas are also taxing drinking water supplies and demanding coordinated, watershed-wide approaches. Even in water-rich regions like the Northeast and the Great Lakes,

suburban sprawl is requiring new infrastructure investments and degrading drinking water quality for downstream communities.

All the challenges we face today in providing clean drinking water, maintaining our water infrastructure, and controlling flooding will only be magnified by the effects of climate change. Meeting the challenges will require engaging in complex, multi-stakeholder strategies such as the recently signed Great Lakes Compact, which created an eight-state commission to protect water quality, along with investments in land management, infrastructure repair, and public education.

The Role of Megaregions in a National Plan

Megaregions are composed of multiple states, regions, or local jurisdictions that will absorb the majority of the population and economic growth in the twenty-first century. The complexity of working across jurisdictional boundaries often complicates infrastructure planning, whether for transportation corridors, electric transmission lines, or watershed protection. However, these megaregions can provide one-stop shopping for surmounting the trickiest hurdles to large-scale infrastructure planning, and they are logical partners with the federal government in developing and implementing a national infrastructure plan.

America 2050 is hosting forums in each megaregion to identify the strategic infrastructure priorities and common policy approaches that could facilitate the creation of a federal infrastructure and economic recovery plan. In late 2008, forums in Chicago (for the Great Lakes megaregion) and Sacramento (for the Northern California megaregion) convened stakeholders to begin this discussion. The forums are already providing insights about strategies that can help the megaregions meet their own challenges.

In the Great Lakes megaregion, the long-term decline of manufacturing has been compounded by the crisis in the auto industry, skepticism over the effectiveness of ethanol as an alternative fuel, and concerns about carbon emissions from coal-powered plants. Smartly addressing three carbon-related "Cs"—cars, coal, and corn—could point the way to a new energy economy for the Midwest.

In Northern California, the high cost and limited supply of housing in the Bay Area has pushed sprawl inland to the Central Valley, giving rise to longer commutes for workers in San Francisco, Oakland, and the Silicon Valley. Rampant development in the Central Valley also threatens its prime agricultural land—the Valley's economic base and a major source of food for the nation. These concerns call for a megaregion-scale planning approach to coordinate transportation, housing, and economic development.

Conclusion

The crisis in our financial markets and the deepening national recession suggest difficult times for the United States. But, sometimes a crisis is necessary to rally sufficient leadership and popular support for radical changes to address entrenched policies, practices, and inertia. With regard to infrastructure and economic recovery, we have two key challenges to meet. First, we must rally support for making sufficiently bold investments to put people to work and make transformative investments in infrastructure. Second, we must ensure that the choices we make about infrastructure provide new models of decision making and accountability to obtain investments that will transition the nation to be a low-carbon economy with energy independence, and a sustainable, equitable future.

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