THE NEXT ECONOMY: ECONOMIC RECOVERY AND TRANSFORMATION IN THE GREAT LAKES REGION

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EXECUTIVE SUMMARY

As the American economy works its way slowly out of the Great Recession, a consensus is developing among public and private-sector stakeholders that simply re-constructing our old economy, one based on highly-leveraged domestic consumption, would be a serious mistake. The nation must instead focus on building the next economy, one that is oriented towards greater exporting, powered by a low-carbon energy strategy, driven by innovation, and that creates opportunities for all.

The Great Lakes region, too long tagged with the misleading nickname, The Rust Belt, could show the rest of the country the way forward to the next economy. Although battered by decades of declining economic health, and particularly by the recession, the nation's heartland still has many of the fundamental resources—top-ranked universities, companies with deep experience in global trade, and emerging centers of clean energy research to name just a few—necessary to create a better, more sustainable, economic model.

This is not to disregard the region's challenges. Its major metros have neither the economic development strategies nor the transportation infrastructure in place to fully take advantage of their export generating capacity. Many have inefficient physical development patterns, hollowed out urban neighborhoods, and concentrations of energy-intensive industries, and thus remain the epicenters of the nation's fossil fuel-reliant economy. They lack the early-stage capital and other supports needed to strengthen existing firms and encourage start-up enterprises. And many suffer from deep, entrenched poverty, and have low educational attainment levels compared with their peers nationwide.

With both the strengths and challenges clearly in mind, this report provides a roadmap to economic recovery and transformation in the Great Lakes region, powered by its metropolitan areas. It describes how federal, state, and local stakeholders can leverage the region's substantial assets to create a more productive, sustainable, and inclusive economic future.

The report finds:

First—The Great Lakes region, particularly its metropolitan areas, has significant resources essential to creating the next economy:

- **Global Trade Networks**—These networks, developed in large part by the auto industry, are critical to an export economy. Seven Great Lakes metros—Dayton, Detroit, Grand Rapids, Indianapolis, Milwaukee, Toledo, and Youngstown—are already among the country's top 20 metro areas in terms of the share of their metro output that is exported. In particular, Great Lakes metros can capitalize on the growth potential of knowledge exports, as they have a concentration of top universities and associated medical complexes.

- **Clean Energy/Low Carbon Capacity**—Industries and universities in Great Lakes metros have created the research capacity and manufacturing prowess needed to build a clean energy, low-carbon economy. They have an outsized ability to lead on wind and solar renewable component manufacturing, and to capitalize on the "green-blue" potential of the Great Lakes and their waterways. The region's research and innovation infrastructure is already spurring the development of new products and processes: Michigan, Ohio, and Illinois are among the top states in terms of green tech patenting, focused on new technologies in battery power, hybrid systems, and fuel cells.

- **Innovation Infrastructure**—Great Lakes metros have the industrial and institutional infrastructure necessary to power an innovation economy. The 21 largest Great Lakes metros alone are home to 32 major public and private research universities, which attract substantial federal research investment. The region produces approximately 36 percent of America's science and engineering degrees each year. Between 2001 and 2007, an average of nearly one-third of the country's patents each year were awarded to the Great Lakes states.

- **Opportunities**—Like innovation, opportunities grow in the presence of a robust educational network, such as the one that exists in the Great Lakes region. In addition to its public and land grant universities—the latter created in the 19th century to promote agriculture, science, and engineering—the region is also dotted with community colleges, which help the region's workers develop skills and credentials necessary to secure jobs in the region's industries, and in so doing maintain a pool of skilled employees to attract and support them.

Second—To realize the promise of the next economy, federal, state, and metropolitan leaders should join with the private and philanthropic sector to:

- **Invest in the assets that matter: innovation, infrastructure, and human capital**
- **Devise new public-private institutions that are market-oriented and performance-driven.**
- **Reimagine metros' form and governance structures to set the right conditions for economic growth**

The economic transformation of the Great Lakes economy must be led by a strong, innovative, and flexible private sector. But private sector efforts must also be married to effective government and public sector action that will leverage the private sector's strengths, fill roles that sector cannot, and create conditions in which markets, places, and people can flourish.

Neither sector can return to the business-as-usual ossified thinking that became ingrained in our institutions over generations. There must be a new approach that is connected with global economic realities and the fact that metros are the nation's economic engines, engines that need re-tuning for better performance.

As Washington grapples with the next round of economic policy, the Great Lakes region could see a new wave of federalist policy innovation in its states and metros. In an era dominated by fiscal challenges unlike anything seen in decades, leaders will be forced to streamline not just for austerity's sake, but with an eye towards transformation and re-investment. For example, the recession could offer an opportunity for state leaders to tie public funding to results, and pursue voter referendums that seed state investments in new types of economic growth; for metropolitan leaders to accelerate efficiency-enhancing collaborations across jurisdictional lines; and for state and local officials to match economic development efforts to metropolitan economic geography.

Overall, public policy should focus on three key, next-economy driving ideas:

Invest in the Assets that Matter: Innovation, Human Capital, and Infrastructure—In an era when public budgets at all levels are under severe stress, federal, state, and local leadership must resist the temptation to simply cut, cut, cut, and must instead look beyond the current situation to their futures. Long-range economic health is not just a matter of spending less, but spending and investing to spur growth. To advance the next economy in the Great Lakes region, elected officials need to concentrate on several market-shaping areas:

- ***Regional Innovation Clusters:*** The transition to an export-oriented, innovation-fueled, and opportunity-rich economy will require that federal, state, and metropolitan economic development efforts focus intently on the existing regional industry clusters that drive metropolitan growth and give a particular metro its reason for existing. In many cases, cluster strategies could be less a matter of programs and policy products than a paradigm through which to inform, draw in, and organize multiple activities.

  The federal government is warming to the cluster paradigm with a variety of programs and undertakings across agencies. For their part, states can undertake state cluster inventories to provide a detailed snapshot of clusters and their competitive advantages and prospects, and conduct surveys to probe particular cluster constraints or challenges. They can make regional innovation clusters a central component of state economic policy, building on the campaign promises of many leading candidates for governor. Governors could direct representatives from multiple state agencies, for example, to work closely with business leaders, universities, and local and metropolitan government officials on cluster strategies that meet rigorous criteria. Some of these initiatives could also have a spatially targeted component, particularly with regard to clusters that naturally congregate around institutions of advanced learning or logistical hubs like ports and airports. The Ohio Department of Development's 2008 strategic plan could serve as a model for many states to replicate.

  As part of their cluster-based approaches, states and metros need to develop metropolitan export strategies, since most exports come from particular export clusters. These export strategies must be evidence-driven and metropolitan in

scope and scale. They should include, or even be led by, the global universities and private firms that already have global business, commercial, research, and learning partnerships, and that sell education, medical, business, professional, and technical services to customers around the world.

- ***Workforce Development at Community Colleges**:* The region's network of community colleges plays a key role in bolstering the supply of human capital essential to greater economic growth and opportunity. So it stands to reason that state and federal actors need to help leverage this system to create a workforce suited to the next economy. States should use federal workforce resources to encourage dislocated and incumbent workers in the region to enroll in degree or certificate programs that can help move them into new careers, as Michigan has done.

  The federal government should, over the long run, provide greater direct federal support to community colleges**,** which currently receive less than one-third of the funding amount provided to their four-year counterparts, despite the fact the majority of post-secondary students start at a community college. In the meantime it should use the Community College and Career Training Grant Program—which allocates federal funding to community colleges to provide retraining for workers who qualify for benefits under the Trade Adjustment Act—to promote new approaches to workforce training and education. Such funding could be used strengthen community colleges' ability to retrain workers through its non-credit programming, while helping them to pursue post-secondary credentials though credit-granting courses.

- ***Smart Spending on Infrastructure**:* The next economy will require a world-class infrastructure, which can only be achieved with smart, targeted investments.

  For example, there are many federal and state reforms that can help Great Lakes states and metros use transportation dollars more efficiently and in a way that points them in the direction of the next economy. Because of their export strengths and close proximity to Canada, a major U.S. trading partner, Great Lakes metros need a transportation infrastructure that provides efficient and effective connections to global markets. The federal government—in collaboration with states, metropolitan areas, the freight-rail industry, and shippers—should develop a comprehensive National Freight Transportation Plan as a framework for goods movement policy and investment. Such a plan should identify freight gateways and corridors of national significance, including the ports and border crossings between the Great Lakes and Canada, and use a rigorous benefit/cost methodology to determine which corridors and transportation modes warrant the highest investment priority.

  States need to rethink their infrastructure spending priorities in several ways. First, there should be a bias towards fixing existing infrastructure (fix-it-first)

before building new road capacity, particularly since Great Lakes states and metros generally have not seen robust population growth that would call for new roads. Second, states need to reform their existing infrastructure banks, adopting a tough, merit-based approach to funding and focusing on those transportation projects that will lower carbon emissions, or facilitate the flow of exports, or connect workers to jobs. Third, states need to use some of their federal highway funds to pay for statewide sustainability challenge grants, to encourage metropolitan areas to devise a broad vision for reducing congestion and carbon emissions—a long-term necessity. Fundamentally, states need to change the incentives for metropolitan areas away from the status quo and towards more integrated and strategic use of transportation, housing, and economic development funds.

Devise new public-private institutions that are market-oriented and performance-driven. Our existing institutions will not deliver the next economy, so state and metropolitan leaders, both public and private, need to create a new set of market-oriented, private-sector-leveraging, performance-driven institutions. It may seem odd to recommend new institutions when so many political leaders are preparing the public for more deep cuts in public spending, but the need to balance budgets in the short term cannot blind voters and officials to the need to invest to lay the foundation for growth. State and metro leaders should be prepared to go to voters to support bond issues or dedicated tax sources for these institutions. But they need not be capitalized solely with new money; rather, a large portion of funding could be freed up by reorienting existing investments away from programs and systems that are underperforming.

- ***New Infrastructure Banks:*** As described above, the current system of transportation investments is uncoordinated at all levels, and is largely based on archaic funding formulas that work against many metropolitan areas' efforts to maintain modern and integrated transportation networks. A national infrastructure bank would help remedy these issues by using merit-based criteria to choose large, multi-modal and multi-jurisdictional infrastructure projects to finance. The bank would evaluate projects using cost-benefit analysis, such as the regional or national significance of the project and whether or not the project reduces greenhouse gas emissions. Projects that pass this rigorous screening process would receive a loan or grant from the bank. Electrical grid and broadband development could also be funded and financed through the bank, thereby breaking the traditional silos through which the federal government currently funds infrastructure development. A national infrastructure bank could be capitalized with appropriations amounting to a total of $25 billion over five years (this is the amount put forth in the administration's 2010 budget proposal, and a recent House bill).

  States also must create new kinds of economic development banks, different from their existing state infrastructure banks. These new state economic development banks should fund not just roads and rails, but energy and water infrastructure, and even school and manufacturing development. The projects

should be evaluated according to merit, not selected with an eye towards spreading funding evenly across the state. California's "I-Bank" provides a compelling model for Great Lakes states to emulate. After its initial capitalization from the state, the I-Bank has not needed state funds to continue operating, relying instead on fees, interest earnings, and loan repayments.

- ***Advanced Manufacturing Laboratories****:* To help improve manufacturing performance, the federal government should administer a new national advanced manufacturing laboratory. This lab would focus on research that is more applied than that of other government labs, including engineering research on early-stage applications that are useful in a range of manufacturing processes, but that no one else is doing right now. It would also concentrate on best practices in manufacturing management, especially the management of shared supply chains and the diffusion of up-to-date technology and business processes to new and existing manufacturing firms.

  Great Lakes states should also bolster their own networks of advanced manufacturing institutions, including the universities, industry-funded research centers, federal labs, and community colleges already doing work relevant to some aspect of the sector. In addition, Great Lakes states and metros should work together to determine how to build the advanced manufacturing brand in the region.

- ***Regional Energy Research and Innovation Centers:*** The federal government should foster the region's energy innovation potential by creating a network of high-powered, commercialization-oriented regional energy research and innovation centers designed to remake the nation's energy system. Involving research universities, national laboratories, and private industry, these centers would address national sustainable energy priorities, generate jobs, and stimulate regional economic activity through the nearby location of start-up firms, private research organizations, suppliers, and other complementary groups and businesses. A competitive award process would designate centers—perhaps as many as six, organized around different themes—for federal support and inclusion in the Great Lakes network. Additional investment would come from state governments, business and industry, and other investors that want to help catalyze innovate energy research in the region. These centers would require funding of between $1 and $2 billion annually.

- ***Venture Capital Fund of Funds:*** The Great Lakes region has several of the prerequisites for successful venture investing, including the capacity to create innovative products and services that can become investable deals, a knowledgeable investor community, and a growing support structure that can help lower investor risks and costs. But concerted, collaborative actions by a range of state and metro stakeholders are needed to create and sustain a virtuous cycle of venture investment, entrepreneurship, and growth in the region. Private investors should create a Great Lakes 21st Century Fund, a $1 billion to

$2 billion fund of funds that would invest in early-stage venture capital funds operating in and focused on the Great Lakes region. The work of this new venture institution should be complemented by a variety of private and public stakeholders—including catalytic enterprises like JumpStart Cleveland and Techtown Detroit—working to create a vigorous support system for business development and growth.

Reimagine metros' form and governance structures to set the right conditions for economic growth. Industrial metros in the Great Lakes region must overhaul their physical redevelopment strategies and local governance structures to set the conditions for market growth and innovation in the face of steep population and economic declines.

- ***Right-Sizing Communities:*** For the many older industrial cities in the Great Lakes grappling with severe population and job loss, the move to the next economy will require a dramatic reshaping and repurposing of their surplus land. States need to provide their cities and metros with tools that can help them become, stronger—if smaller—communities, such as the ability to establish a land bank. A land bank allows localities to exercise some control over their land, helping them to take vacant and abandoned properties, particularly tax foreclosed properties, into public control, and to build the capacity to hold, manage, and dispose of that inventory in ways that are consistent with the public welfare, sensitive to variations in market conditions, and that address their long-term land use and economic development goals. The Genesee County Land Bank Authority in Flint, Michigan, is an excellent model.

  By linking state resources to effective local strategies, states can spur collaboration between older cities and neighboring jurisdictions that share the same land market challenges or encourage strategic property redevelopment approaches linked to larger economic development planning rather than simply support distinct, unrelated transactions. States can also work with universities to provide local governments and their partners with access to up-to-date economic and housing market data at the neighborhood or census tract level.

  The federal government could play a role in helping foster planning and innovative strategies around land reconfiguration. The Community Regeneration Sustainability and Innovations Act (CRSI) (2009) would support the development of strategic regeneration plans and demonstration vacant property renewal activities (such as land banking and greening strategies) in cities that meet distress or population-loss criteria.

- ***Green Development and Infrastructure*:** Using institutions like the infrastructure bank described above, and new urban land banks, Great Lakes metropolitan areas can turn the legacy of the past into an opportunity for the future by creating a cutting-edge model of urban development and become the greenest cities in the country, places where ambitious experiments in urbanism can occur.

Right-sizing strategies offer a valuable opportunity to incorporate strategies for green reuse of surplus urban land, including ecosystem restoration, urban agriculture, and green infrastructure. In Cleveland, dozens of groups are undertaking pilot projects under the city's Reimagining Cleveland plan, ranging from single lot side yard expansions, native plant pocket parks, and permeable parking lots to agriculture projects such as community gardens, orchards, and multi-acre market gardens. The use of vacant land for stormwater management can be especially beneficial if it substitutes for costly expenditures to separate outmoded storm and sanitary sewer systems. The Milwaukee Metropolitan Sewerage District has initiated a number of green stormwater management projects and a public education campaign centered on reducing runoff and pollution.

- ***Governance Reform*:** The metropolitan areas of the Great Lakes are ruled by a byzantine network of cities, counties, towns, townships, villages, school boards, fire districts, library districts, workforce boards, industrial development authorities, water and sewer districts and a host of other entities. To compete successfully in the next economy, state and local leaders—from all sectors—need to reduce the barriers caused by too many governments with too many competing priorities. Most importantly, metropolitan areas need to begin speaking with a unified voice on economic development and design and implement a unified strategy: The competition today is between U.S. metros and metropolitan areas in nations across the globe, not between dozens of little jurisdictions within them.

  States need to work toward consolidating units of local governments, starting with school districts and special-purpose authorities, with an eye towards merging towns, townships, and other jurisdictions when it makes good sense to do so. For their part, local jurisdictions need to collaborate better and share services. In Northeast Ohio, for example, more than 20 public and private sector organizations have submitted a joint application for a multi-million dollar regional planning grant under the federal government's new Sustainable Communities Regional Planning initiative. In Chicago, a metropolitan mayors' caucus, formed over a decade ago by Mayor Richard Daley, still meets regularly to develop consensus on shared, cross-border challenges such as air quality, transportation funding, and workforce development. States should establish mechanisms for disseminating, and encouraging, these kinds of innovations in other jurisdictions.

America has a historic opportunity, driven by urgent necessity and new economic and social realities. The familiar domestic consumption economic model has exhausted itself, and a new one must replace it. This country has been there before, during the Industrial Revolution of the 19th Century and the long recovery from the Great Depression. The demands of rapid, fundamental change were met with innovative thinking, risk-taking, and investment aimed at creating a future, not re-creating a past.

Our future security, in the broadest sense of that term, depends on how we rise to this latest challenge. Doing so will require that we invest in the metropolitan assets that will characterize the next economy, and that we create new institutions and new communities that reflect next economy imperatives. This is how we will renew America's leadership not only as an economic power but also as the source of new ideas that will define the remainder of this century.

The bridge between past and future could be built in the Great Lakes region. Its historic strengths, in terms of geography and development, could be marshaled to help the nation transition to the next economy—while putting its own communities back on the path to prosperity.

I. Introduction

The nation's recuperation from the Great Recession remains sluggish, with high unemployment and a weak housing market continuing to squelch hopes that a full economic recovery will soon be at hand. The intensity and nature of the recession's lingering effects vary considerably across the country, however. Some metro areas, like Austin and Washington, D.C., have fared relatively well during the downturn, buoyed by strong health and education sectors, and an outsized share of jobs in government. Metros like Tampa and Phoenix are hurting, but these pains are related largely to job losses from the housing and real estate bust.

The story in much of the Great Lakes region is different. Its many older industrial metros didn't enter the latest recession on the housing and finance-fueled "bubble" that "popped" the economies of the south and west. Rather, they were hit with a one-two punch: The financial crisis accelerated the demise of already struggling credit-dependent auto and manufacturing firms, which together with the housing market collapse swept the economic foundation out from under already stressed families and communities.

As the recession slowly recedes, these metros are furiously grappling with how to mitigate the acute pain associated with job loss, foreclosures, and all their ancillary impacts, while at the same time working to determine, and ultimately secure, their role in an emerging economy.

Though its specific contours are still coming into view, it is becoming increasingly clear that this next economy will be ***export-oriented, low-carbon, innovation-fueled***, and ***opportunity-rich***, extending benefits to a broader cadre of citizens. It will be a future in which we send more of our goods and services overseas, while wasting less at home, in which we innovate in what matters, while providing the chance for all workers to get the skills and schooling they need to produce and deploy more of what we invent. And it will be a future in which the nation's metropolitan areas play a central role: Their fate during this crisis has been the fate of the country, and they will determine the nation's success in the economy to come.

The imperatives of this economy are well understood, as evidenced by President Obama's call in his State of the Union speech to double U.S. exports, expand federal research and education supports to drive innovation, invest in the nation's infrastructure to help our communities compete globally, and accelerate the clean energy technologies and the jobs they create. Key elements of the American Recovery and Reinvestment Act of 2009 (ARRA), followed by dozens of programs and investments enacted in the president's FY 2010 budget, and proposed in the president's FY2011 budget, are beginning to make good on these promises.

But the United States is competing in a world where established nations like Germany and rising nations like China and India are purposefully building their metropolitan

economies through strategic and sustained interventions—laying 21st century communications and transportation infrastructure, improving educational systems, increasing R&D, and creating massive incentives for clean technologies and their manufacture. The scope and scale of these investments, if continued, could crowd out the U.S.'s ability to exploit new markets and new opportunities.

Ensuring a competitive position in the next economy demands that the United States, too, thinks and acts with similar strategy and purpose. The Great Recession has forcefully demonstrated that an economy based on over-leveraged consumption and financial manipulation cannot endure—and in turn has provided an extraordinary opportunity to shift national priorities decisively toward more productive, sustainable activities. In practice, this means establishing a common national platform for private-sector led economic growth, particularly in emerging markets like clean energy. It means getting smarter about how, where, and on what precious public dollars are spent so as to grease the wheels of innovation in both new and existing industries. And it means attending to the varied attributes and market realities of the nation's metropolitan areas so that they can *all* be full participants—indeed, leaders—in the country's transition to the next economy.

The Great Lakes region has much at stake in this shift—and much to offer. Engines of the American economy in the 20th century, the region's metros have the global market experience, research and educational institutions, advanced manufacturing expertise, and other assets that will be essential to the nation's economic prosperity in the 21st century. But many also have some serious deficits—carbon-reliant economies, crumbling infrastructure, declining urban cores, low educational attainment levels, lagging entrepreneurship, antiquated governance structures—that need to be addressed so that these assets can be maximized.

Countless innovations aimed at re-tooling Great Lakes' older industrial metros are already underway, aided by growing alliances among private, nonprofit, government, and philanthropic leaders. But they aren't enough. These communities, battered by years of economic decline, need a new set of strategies to help them surmount their problems, leverage their strengths, and take innovative ideas, policies, and programs to scale. This doesn't simply mean pouring more money into all the same old government programs in all the same old ways. With yawning fiscal deficits and public anxiety over government-led efforts rising, fresh, smart partnerships among public and private sector leaders at all levels—i.e. a new brand of federalism—must be the order of the day.

This recommendations put forth in this report are rooted in this reality, and the economic context in which Great Lakes metros are uniquely embedded. First, this report discusses the trends and forces that built and shaped older industrial metro areas in the region, and provides a candid assessment of the strengths and weaknesses such forces have wrought. It then describes what the shift to the next economy will mean for the nation, and the tremendous opportunities that it will present for the region to regain and reassert its economic leadership. Finally, it provides a roadmap to guide public and

private sectors leaders through a successful the transition to the next economy, one framed around three primary goals:

- **Investing in the assets that matter**: innovation, human capital, and infrastructure
- **Devising new public-private institutions** that are market-oriented and performance-driven
- **Reimaging metros' form and governance structures** to set the right conditions for economic growth

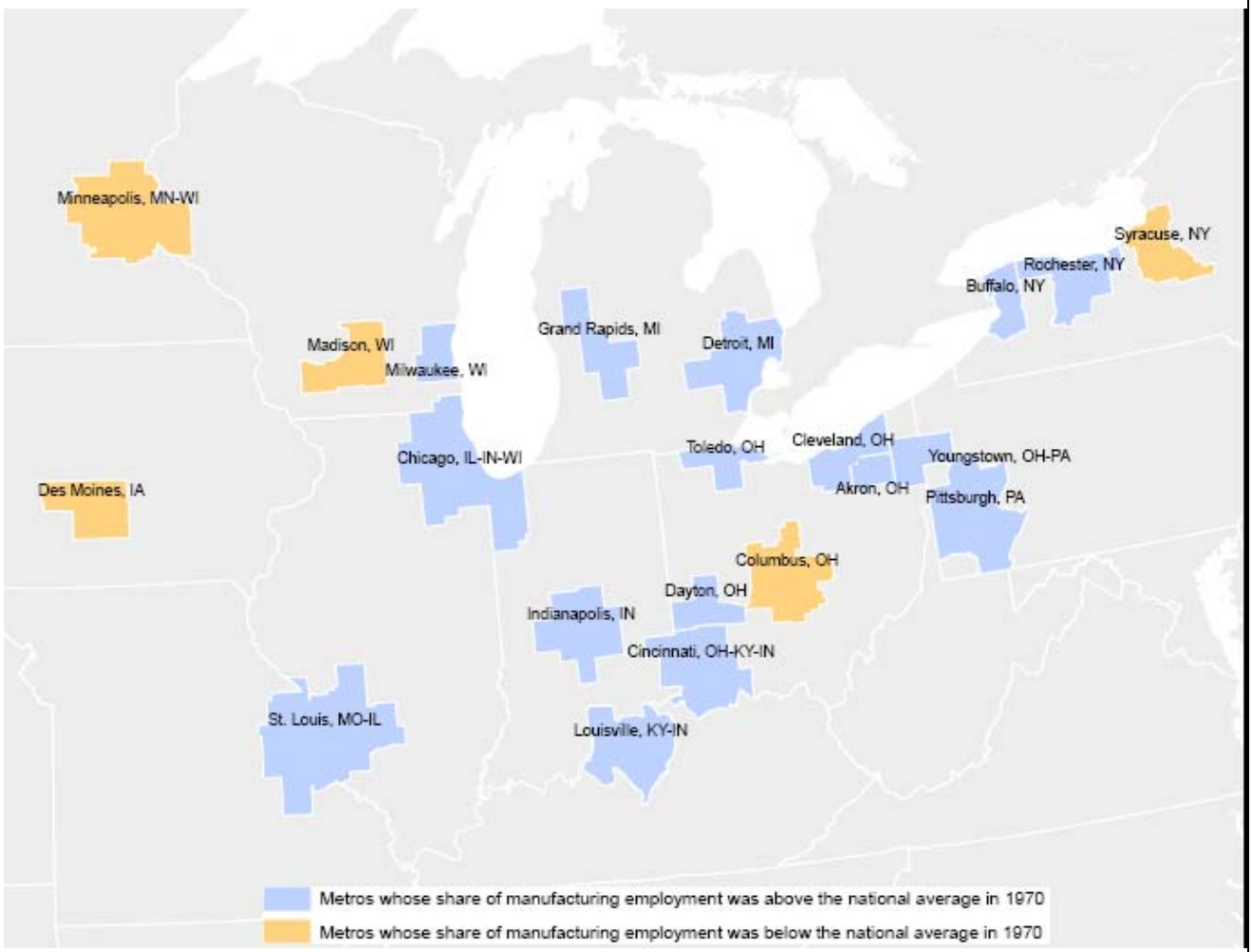
There is no sugar-coating the fact that the older industrial metros in the Great Lakes face steep challenges. But their foundations are sturdy and resilient, and, with the right sort of supports, can serve as the platform on which to grow a new economy for the region, and build a stronger nation. In doing so, these metros can serve as a model that other transitioning communities can look to for inspiration.

Older Industrial Metropolitan Communities in the Great Lakes Region

Launched in 2005, the Brookings Institution Great Lakes Economic Initiative (GLEI) focuses on all or parts of twelve states surrounding the Great Lakes, and tracking the Upper Mississippi and Ohio River valleys: Illinois, Indiana, Michigan, Ohio, Wisconsin; eastern Iowa, Minnesota, and Missouri; western New York, Pennsylvania, and West Virginia; and northern Kentucky. This region was the economic engine of the agro-industrial era, and its innovations—including the auto assembly line that created the mass-production based industrial economy—powered much of the U.S. and the world economy in the 20th century.

Within this region are 21 metropolitan areas that are among the largest 100 such communities in the country. These 21 metros are the primary drivers of the region's economy, and are therefore the central, though not the sole, focus of this report. The region's many other small and mid-sized metropolitan areas, as well as its more rural towns, face similar challenges as its large metros and boast some of the same assets and opportunities. As such, the framework and policy ideas presented here are intended to speak to the entire Great Lakes region.

The vast majority of communities in the Great Lakes region share an economic past, and present, dominated by manufacturing: In 1970, the share of residents employed in the sector exceeded the U.S. average of 22.1 percent in 16 of the 21 largest metros (see map below); that number remained the same in 2009 (though the precise communities did not). As described in this report, the region's manufacturing heritage has had a profound impact on its growth and development; it is for this reason that "older industrial metros" is used frequently throughout this report as a fitting, if not perfectly inclusive, moniker for these communities.



II. The Economic Transition of the Great Lakes Region: Past as Prologue

In the aftermath (or perhaps the second wave) of the Great Recession the nation's public and private leaders—indeed, the country at large—must address the difficult issue of how, and how well, the country will compete in the "next" economy. But what is this economy likely to look like—and how will it, and should it, shape our path toward recovery, and beyond?

In July 2009, in a little-noticed conclusion to a speech about the health of the economy, Lawrence H. Summers, the director of the National Economic Council, offered a compelling view of what the nation's post-recession economy might be, one later echoed in President Obama's 2010 State of the Union speech:

> "The rebuilt American economy," said Summers, "must be more export-oriented and less consumption-oriented, more environmentally-oriented and less fossil energy-oriented, more bio- and software engineering-oriented and less financial engineering-oriented and less oriented to income growth that disproportionately favors a very small share of the population."[1]

In short, Summers presented a vision of an American economy that is *export-oriented, low-carbon, innovation-fueled, and opportunity-rich*. This vision is aspirational, given where the economy's been the past 10 years; attainable, given the tremendous asset base we have to exploit; and ultimately critical if we are to grow in ways that are productive, sustainable, and inclusive of all citizens who want the opportunity to achieve and prosper.

To build the next economy, though, the United States needs to connect this macro vision to the metropolitan reality on the ground. Broadly speaking, this means that federal, state, and local leaders must prioritize and align their policies and investments in ways that maximize the infrastructure, human capital, innovation, and other prosperity-driving assets that concentrate in the nation's metropolitan areas—our economic engines—such that, as a group, they can propel the country forward.

But America is a vast and varied place, and such "macro to metro" connections cannot be uniformly considered or applied. Rather, they must be rooted in a firm awareness of the trends and forces that over time have shaped our diverse regions, and the communities within them: Just as the nation's metropolitan areas went into the recession carrying their own peculiar economic baggage, so, too, are they emerging from it differentially equipped to participate in the economy to come.

Like New England, the South, or the Mountain West, the Great Lakes area has a unique culture and identity that is deeply felt by those who live there—one formed in large part by its industrial heritage, particularly the influence of the auto industry. The region's history—the fantastic rise and fall of manufacturing, the dominance and descent of the Big Three, the birth of great industrial cities and their subsequent

decline—provides important context for where this vital center of our country has been, and how it got there. Its past, to be sure, helped shape its current distress. But as this report will later describe, it also endowed the region with a tremendous number of assets and competencies that will help lead it, and the nation, toward a more prosperous future.

The Rise of the Great Lakes Region

Geography and history conferred the industrial Midwest with a distinct economy, society and, culture. Natural resources—pelts and timber, coal and iron ore, fertile soil and abundant fresh water—were the initial magnets that attracted people and commerce to the region, and by the 19th century, government and private actors were making huge investments in the rail and water corridors that opened such bounty to the rest of the country. It wasn't long before these transportation networks, an influx of capital, and increasing numbers of skilled workers and labor together began to convert agricultural products and raw materials into new manufactured goods, stoking the industrial development that came to identify the region.

By the beginning of the 20th century, cities like Chicago, Cleveland, Milwaukee, and Detroit had emerged as major manufacturing, research, and trading centers. The production of autos, trucks, and tractors, along with other durable goods, drove the steel, machine tool, metal-bending, rubber, chemical, and later plastics and electronics industries in the region, and millions of migrants poured in from the south and abroad to take advantage of the new opportunities they offered. By this time, too, the growing wealth in the region had been used to establish, with federal help, the nation's first land-grant and public universities and junior and community colleges—all designed to educate the region's swelling populace and support innovation in its growing agro-industrial metros.

Though the Great Lakes region excelled in many types of manufacturing, car making grew to be its signature, indeed iconic, economic activity—one whose fortunes, for better and worse, have in many ways come to symbolize those of the region as whole. Indeed, the industry's rapid rise in the early 1900s spurred the growth and development of dozens of Midwestern communities whose economic reality and culture became intricately bound with Detroit—which by 1920 had had become world's foremost automobile production center—and one another. Electronic components from Dayton, engine block parts from Saginaw, and tires from Akron all came together to create the "Detroit Three" brand cars and trucks—those manufactured by General Motors, Ford, and Chrysler—that, at their pinnacle in 1955, accounted for 94.5 percent of autos sold nationwide.[2]

The Slide of the Detroit Three

By mid-century, the auto industry was both a driver and a beneficiary of the Great Lakes region's—and America's—soaring economic growth, a fact punctuated by General Motors Chairman Charles Wilson when he proclaimed that "What's good for the country is good for General Motors, and vice-versa." Unfortunately, this cut both ways: From their heyday in the mid-1950s to 2008, these once dominant companies lost over 40

percent of U.S. market share—a fact which speaks volumes not just about the condition of the sector, but about the health of the many Midwest communities whose economies were linked to it.

The deterioration of the auto industry in the Great Lakes—and its effects on the region's overall wellbeing—did not happen all at once, however, nor did it happen in an economic vacuum.[3]

From the late 1950s through the end of the 20th century, the strength of the domestic auto industry waxed and waned. Over these decades, increasing inroads by foreign producers chipped away at the Big Three's dominant market position, while the ups and downs of gas prices and the national economy variably impacted sales, and their overall bottom line.[4] All the while, the industry's continued supremacy in the Great Lakes region was becoming less and less assured, as the number of foreign-owned auto facilities in North America grew. While some of these "transplants" landed in the Midwest, particularly Ohio and Indiana, many located further south along the "just-in-time" delivery corridor, and began pulling the auto belt into Kentucky, Tennessee, Alabama, and beyond.[5]

By the start of the new millennium, falling market share and high labor costs had taken a heavy toll on the Detroit producers, even as overall auto sales volume and production in the U.S. reached new highs. Over the years, the transplant auto-makers had strategically located their new facilities just out of reach of the United Auto Workers and the perceived complications created by the cost and work organization of union shops—decisions which sharpened their competitive edge.[6] Meanwhile, escalating legacy pension and health care costs were battering the Big Three and the metros areas that depended on them, and they began shedding workers: From the end of 2000 to the end of 2007, the 21 largest Great Lakes metros alone lost over 148,000 auto-related jobs; nearly 65,000 of these vanished from Detroit.[7]

As the recession approached, the Big Three's troubles—the factory shutdowns, the related businesses failures—had already had tangible, conspicuous impacts on communities and families throughout the Great Lakes. But the long term dominance of the industry had other corrosive effects on the region's economy, the insidious nature of which made them difficult to recognize until, in the face of globalization, increased competition, and, ultimately, a failing national economy, the industry collapsed upon itself. In hindsight, however, their causes, and consequences, are more transparent: a reliance on the industry for a lifelong livelihood that discouraged workers—rationally, perhaps, at the time—from pursuing higher education, learning new skills, and moving to new industries; stable, lucrative OEM and supplier relationships that discouraged firms from cultivating diverse customers and new (non-auto) product lines; dominant market power that discouraged the Big Three from making innovations and improvements that responded to changing consumer tastes; and the predictability and safety of a successful, carbon-intensive industry that discouraged the region as whole from entrepreneurial activity that was aligned with the shifting economy, and left the

region's public-private leadership on the wrong side of an emerging national "green" movement, even as it was gaining traction in metros nationwide.

Deindustrialization and Urban Decline

For many Americans, the November 2008 corporate-jet-journey of the Big Three CEOs to Washington, hat-in-hand looking for a bailout, epitomized all that was wrong with the American auto industry and the institutions and places—the unions, the decaying Midwest towns—that were associated with it. It was also emblematic of the region's complicity in its own demise—a reminder that while its industries and communities were once shining examples of American ingenuity and inventive know-how, they had since dropped the baton of change and innovation and in the process became disconnected from the realities of a changing economic milieu.

But as convenient as it may be to attribute the Great Lakes region's precarious economic situation solely on complacency—or, more harshly, on some sort of backward-looking smugness—such views oversimplify the very complex nature of the trends and challenges that have shaped it. While the auto industry's most recent problems have brought widespread attention to the struggles of Detroit and other industrial communities, over the past several decades other important, inexorable forces have played a major role in the slow deterioration of their economic, social, and physical health.

First, the 50-plus year shift from an economy based on routine manufacturing to one based on more knowledge-oriented activities, coupled with technological advances and geopolitical changes, has left many of these communities still grappling to find new, more diverse economic niches. Auto manufacturing was but one of a set of heavy industries highly concentrated in the Great Lakes region, and as other, cheaper places to set up and maintain shop emerged, manufacturing firms of all stripes moved from cities to suburbs, from the North to the South, and ultimately from the United States to countries abroad. The effects of the physical redistribution of manufacturing were later exacerbated by advances in automation, which sparked productivity increases and reduced companies' overall employment needs.

From 1970 to 2007 the 21 largest Great Lakes metros lost over 1.5 million manufacturing jobs, only 13 percent of which were in the auto sector. Only 4,500 of the 68,200 manufacturing jobs lost in the Youngstown metro were in the auto industry, for example; even in Detroit, only a quarter of manufacturing jobs lost were in auto production. Employment growth in other sectors simply hasn't kept pace: Although trends varied across the region, during this period the overall number of jobs in these metros increased an average of just over 48 percent at the same time they grew 83 percent nationwide. Job growth went from slow to worse as time progressed, and collapsed in the run-up to the recession: While all 21 communities saw some job growth during the 1990s, from 2000 to 2007 over half of them experienced job losses, even as employment nationwide increased almost 4 percent.[8]

TABLE 1. Percent Change on Key Indicators, 1970 to 2007

	Employment	Manufacturing Employment	Auto Manufacturing Employment	Population
Largest Great Lakes Metros (21)	48.2%	-40.1%	-44.6%	13.6
Top 100 Metropolitan Areas	90.6%	-27.9%	-31.0%	53.2
United States	82.9%	-19.8%	0.3%	48.3

Source: Moody's Economy.com and U.S. Census Bureau

Second, the sustained bleeding of population and jobs from the urban core of most Great Lakes communities has drained their vitality and created a host of self-reinforcing challenges. The first major exodus from America's older cities began as early as the late 19th century, enabled first by rail, then by streetcar, and within a few decades, accelerated substantially by the automobile.[9] The subsequent decentralization of these cities was slow at first, but as the 20th century wore on, new highways, cheap mortgages, and racial conflicts and prejudice—the hard-fought integration within the region's factories did not extend outside of them—lured millions of predominantly white upper- and middle-class Americans to the suburbs. While suburbanization was, and continues to be, a national phenomenon, most Great Lakes cities continued to lose residents through the 1990s and 2000s, even as many cities elsewhere in the country began to see their populations rebound.

All told, the emptying out of many of these communities has been stark: By 2007, the population of the city of Detroit was less than 44 percent of its 1950 peak; Buffalo was just under 46 percent, and Youngstown was less than 40 percent. Jobs, too, moved outward, and what little metro job growth there was occurred largely on the fringe.[10] By 2006, just 7 percent of jobs in the Detroit metro area, for example, were within three miles of its central business district, while over 77 percent were more than 10 miles outside of it; similar, if less egregious, patterns of 'job sprawl,' characterize many older industrial metros.[11]

The overall decline of older industrial metros' manufacturing base, combined with the rampant decentralization of jobs and residents, have left many of these regions hyper-segregated by race and income, and have caused poverty rates to skyrocket. From 2000 to 2008, the average poverty rate in the 21 largest Great Lakes metros climbed from 10.1 percent to 12.1 percent (a 2 percentage point difference); at the same time it grew from just 12.4 to 13.2 in the nation as a whole (a 0.8 percentage point difference). Part of this increase has somewhat predictably taken place in the region's urban cores, where white flight, job loss, and deteriorating fiscal conditions have devastated families left in decaying neighborhoods with limited access to employment opportunities and good schools. In Grand Rapids, the urban poverty rate rose from 15.7 percent to 24.7 percent over the eight year period; in Youngstown it jumped from 24.8 percent to 33.5 percent. But poverty has also shot up in traditionally more stable suburban communities as well: from less than 5 percent to 7.3 percent in the suburbs of

Indianapolis, for example, and from 6.0 percent to 7.4 percent in suburban Columbus, OH.[12]

These trends have had severe physical ramifications as well. The long-term loss of residents and jobs has led to vast surpluses of vacant, abandoned, and often contaminated land and buildings in these cities: Over 35 percent of Detroit's 343,849 residential parcels are either vacant lots or abandoned structures; in Youngstown, the share is nearly 44 percent.[13] All the while, many of their surrounding suburban communities have continued to spread outward, creating a pattern that has come to be known as "sprawl without growth."[14] All this has had a severely destabilizing effect on neighborhoods housing markets, as well as on these communities' overall fiscal, and environmental, and economic health.

TABLE 2. Population Loss and Vacant Properties

City	2007 population as a % of peak	Number of vacant structures*	Number of vacant lots*	Total share of city lots/structures that are vacant
Youngstown	38.6	4,571	22,804	43.7%
Detroit	43.7	30,806	91,488	35.6%
Flint	53.2	12,000	10,000	39.0%

**Definitions may vary among cities*

The Exacerbating Impacts of the 'Great Recession'

As the above-described trends demonstrate, most older industrial communities in the Great Lakes entered the recession in an already shaky economic position, one very different from their counterparts in the South and West whose booming economies came down with a far more sudden crash.

While several of the region's metros—including those in upstate New York, state capitals like Columbus, Madison, and Des Moines, and a handful of others—have weathered the recession relatively well, several older industrial metros, particularly those with a high degree of specialization in automobile and auto parts production, have taken a heavy hit. Still struggling with the long-term erosion of their industrial base, and furiously working to diversify their economies, the "double whammy" of the credit market and housing price collapse crushed what was left of these metros' auto and durable goods manufacturing sector and already weak housing markets—while obliterating states' and localities' ability to make the infrastructure, educational, and other investments needed to fuel their long-term economic transition.

From the fourth quarter of 2007 to the second quarter of 2010, 13 of the 21 largest Great Lakes metros saw employment drop by more than the national average of 5.4 percent percent, including several—such as Detroit, down 12.7 percent, and Toledo, down 9 percent—with declines that far exceeded it. The foreclosure crisis, meanwhile, has hit a few of these metros with brutal force—compounding their economic woes. By the end of June, 2010, six of the 21 metros (Chicago, Dayton, Detroit, Grand Rapids,

Indianapolis, and Minneapolis) had rates of real estate-owned properties (REOs) that exceeded the national average, with the problem being particularly severe in Detroit.[15]

For several Great Lakes communities, the upshot of all this is grim: The recession, combined with pre-recession job losses, has caused their unemployment levels to skyrocket—unemployment levels in six of the region's largest metros climbed at least 5 percentage points from June 2007 to June 2010. Meanwhile, the vacancy and abandonment of housing that has arisen as a result of the foreclosure crisis has only served to heighten long-standing problems of neighborhood decline in many communities where decades of population loss have decimated residential housing markets.

Yet the recession has also had something of upside. For one thing, it has forced a long overdue recognition of the crisis facing the region's states and metropolitan areas, and has helped spur conversations among the media, government, philanthropic organizations, business leaders, academics, and other stakeholders from around the nation about the causes and cures for its economic descent. Such talk and attention has already yielded new ideas, and injected new dollars into the region. As importantly, though, the fallout from recession has created within the region an urgent, almost optimistic, sense that its current trajectory simply has to change—and that, as the nation moves into the next economy, the Great Lakes states and metros can (and must) be a part of the process.

III. The Great Lakes Region and the Next Economy

The news coming out of the Great Lakes region over the past two years—indeed, over much of the past several decades—has no doubt been dispiriting. But as the nation teeters between recession and recovery, it is becoming apparent that the "next" economy is beginning to realign in ways that could play well to the region's existing and emerging strengths, presenting powerful opportunities for its metros and their residents.

The older industrial communities in the Great Lakes have many challenges—the consequences of the economic and demographic shifts described above, and of the failure of public and private leaders at all levels to make the reforms and investments needed to accommodate to them. But the industrial history and culture of the Great Lakes region also helped create a tremendous asset-base—sophisticated, globally engaged firms, technologically-skilled workers, strong educational and medical institutions, outsized research capacity, and unparalleled natural resources, among others—that, if fully exploited and built upon, can help spur the type of transformative changes needed to create a national economy that is export-oriented, low-carbon, innovation-fueled, and opportunity-rich.

Many of these assets are already being leveraged and nurtured by groups of public, private, and philanthropic leaders working together in pockets throughout the region. But these leaders, supported by state and federal actors, must move much more aggressively in areas where they have existing prowess, such as in advanced manufacturing and export capacity, as well as move more fearlessly into areas where they have demonstrated promising strength, such as the growing renewable energy sector.

For much of the 20th century, Great Lakes metros' awesome innovation and entrepreneurship helped power the U.S. economy. The best legacies of that era provide the chance for them to again be at the forefront of change, and to help lead the nation toward a competitive and prosperous economic future.

The Great Lakes Region and the Export Economy

In an ***export-oriented*** economy, American firms would provide more goods and services to the rest of the world, particularly to the rising nations that are rapidly urbanizing and industrializing. This would represent a significant departure from the consumption-based economy that has dominated the country since the 1980's, an economy which helped drive our pre-recession trade deficit from around $380 billion in 2000 to nearly $700 billion in 2008. In fact, in 2008, exports made up only 12.7 percent of the GDP of the U.S., compared to 35.8 percent in China, 35.1 percent in Canada, 23.5 percent in India, 17.6 percent in Japan, and 14.5 percent in the European Union.[16] Less than one percent of America's 30 million companies export, and of those that do, 58 percent sell to only one international market.[17]

As America strives to get back in the export game, the older industrial metros of the Great Lakes—building on the might of both their manufacturing and knowledge services sectors—can be key players on the team.

Metros in the Great Lakes region already have depth in exports, developed in no small measure by the auto sector. In fact, even after suffering severe job losses in manufacturing and related industries, export industries (which are dominated by manufacturing), are still are responsible for 1.95 million jobs in the region's 21 largest metropolitan areas. Eighteen out of the 21 have a higher share of their jobs coming from exports than do the nation's largest metros as a whole; eight are among the top 20 metros nationwide based on this measure. As of 2008, one out of every eight jobs in Youngstown and Detroit was tied to exports, for example; in Grand Rapids, the share was almost one out of every seven.[18]

Overall, the 21 largest Great Lakes metros exported an estimated $231 billion worth of goods and services abroad in 2008. Twelve of these communities sent 8.6 percent or more of their export value to Brazil, India, and China (the BIC countries), meeting or exceeding the average rate for the nation's 100 largest metros. Chicago, Pittsburgh, and Rochester, for example, all count China as one of the five most important markets for machinery manufacturing (their main export industry), and China is the fourth most critical destination for Youngstown's dominant steel export industry. The volume of exports to these countries shot up markedly from 2003 to 2008, and is expected to increase rapidly over the next decade as these markets continue to grow.[19]

Great Lakes metros can take advantage of these new opportunities by capitalizing on their existing strengths in areas like chemical and transportation equipment manufacturing, the products of which are in high demand abroad. The cluster of service industries that developed with automobile manufacturing, such as research and development, engineering, and computer and information services, also represent a potential—though as yet largely underdeveloped—opportunity for export growth.

Many of these communities can also build on their higher-than-average volume of knowledge services exports, which stem largely from their concentration of higher education institutions and associated medical complexes.[20] In the latest 2009 rankings of the world's top universities compiled by Shanghai Jiao Tong University, 16 of the top 100 universities in the world were located in the Great Lakes region, more than in any other comparable geography.[21] Great Lakes' institutions also directly draw top talent, students, and money from across the globe back to its communities. According to Brookings' analysis of data from the International Institute for Education, during the 2008-2009 academic year colleges and universities in the 21 largest Great Lakes metros alone educated over 84,000 foreign students who spent approximately $2.3 billion in tuition and living expenses.[22] As these numbers swell, so too will the immeasurable economic connections and exchanges that grow from the cultural bonds these students form while living and studying in the United States.

The challenge for the region is to advance its manufacturing know-how such that its firms can continue to design and build the kinds of products the world wants. Despite

their strong export-orientation, Great Lakes metros are generally less innovative than the average manufacturing-intensive or export-oriented metro. From 2001 to 2008, the 37 large U.S. metros with a 10 percent or higher share of employment in manufacturing had an average patent rate of 5.15 granted patents per thousand workers, yet only three of the 15 manufacturing intensive metros in the region (Detroit, Minneapolis, and Rochester) exceeded that average. Only six of the 21 largest Great Lakes metros had patent rates above the average for the top 100 largest metropolitan areas, regardless of their manufacturing employment. Preserving and growing its export capacity will require the region to leverage its innovation assets (described below) in new and enhanced ways.

Export growth in the Great Lakes region is further threatened by a maxed-out transportation system that is already impeding its ability to move products efficiently within and beyond its borders. Major metros across the region lack the freight and passenger rail network needed to spur business connections, and the metros themselves lack transit, and attractive and effective local metro transportation alternatives. In metropolitan Detroit, for instance, 64 percent of the truck routes are congested, compared to just 50 percent of the overall highway network.[23] Meanwhile, a "thickening" at the U.S.-Canadian border since 9/11 and woefully underdeveloped border infrastructures and smart security regimes are contributing to massive and costly bottlenecks. Such barriers are hindering the flow of goods to Canada, the largest export market for the Great Lakes states, and if not addressed will continue cramp the region's competitiveness and global connectivity.[24]

The Great Lakes Region and the Low-carbon Economy

As America strives to become more export-oriented, it should also aspire to lead the transition to an economy that is ***low-carbon***—both here and abroad. Such a shift will dramatically reshape what we produce, how we produce it, and how we move it from its origin to its destination. It will also profoundly influence where and how we live, work, play, and travel—and the impact these actions will have on future generations.[25]

Our national ambition, as the president has articulated, is to seize leadership in the emerging green and sustainable economy of the future. But we have a ways to go. Dependent on coal and oil, and characterized by decentralization and sprawl, the U.S. continues to rank first among major world economies in per-capita carbon dioxide emissions, with roughly double the emissions rate of the United Kingdom and Germany.[26] Bad habits will be difficult to break—unlike European nations and Japan, the U.S. is still a growing nation—and the competitive obstacles are steep: Countries like Germany and Spain early on embraced the potential of the green economy, and China is now actively seeking to dominate whole sectors of renewable energy production. In fact, a recent report by the Pew Charitable Trusts found that in 2009 the U.S. ranked 11th among its G-20 peers based on its share of GDP devoted to clean energy finance and investment, and fell behind China in total dollars spent.[27]

Meanwhile, despite the boost for energy innovation activities provided by the Recovery Act, and the additional resources called for in the FY 2011 budget, the total federal

commitment to clean energy research and technology development still falls far short of what the nation once invested. The current federal appropriation of $5.2 billion a year for non-defense energy-related R&D, for example, is substantially below the $8 billion (in real 2008 dollars) recorded in 1980, and is actually only about one-quarter of the 1980 investment level when measured as share of national GDP.[28]

The metros of the Great Lakes have the institutional infrastructure, research capacity, and manufacturing prowess that will be needed to help the nation move towards a new energy, low-carbon economy—while creating new jobs and entrepreneurial opportunities in the process.

Taken together, Great Lakes communities have the potential to be the nation's largest clean energy research and new technology development engines. Anchored by industry titans and aided by powerhouse universities, the region's research and innovation infrastructure performs 29 percent of the nation's basic research and development, in areas such as clean energy, new materials, transportation and propulsion technologies, and engineering and systems design.[29] This research is already beginning to be translated into new products and processes: Michigan ranks 4th, Ohio 7th, and Illinois 8th for national green tech patents issues from 1998 to 2007, focused on new technologies in battery power, hybrid systems, and fuel cells.[30]

Michigan, Ohio, and other Great Lakes states are also ranked in the top tier of states for their wind energy generation potential, and have an outsized ability to transfer advanced manufacturing capabilities to wind and solar renewable component manufacturing.[31] Some of this potential is already emerging—wind farms are going into Saginaw Bay, and solar research, engineering and component production centers of excellence are developing in Toledo, Saginaw, and elsewhere. And should the nation heed the call to develop clean nuclear energy capacity (as proposed by the president in his State of the Union address), it can look to the region to lead: Illinois, Michigan, Ohio, and Wisconsin alone produce almost 20 percent of the nation's nuclear power, and are home to the nation's modern nuclear engineering research and development centers.[32]

The Great Lakes region's contributions to the development of a cleaner, greener economy have the potential to be substantially bolstered by its natural assets—in particular its water resources. The Great Lakes alone hold 20 percent of the world's fresh surface water, to which, in 2007, 2.7 million jobs accounting for $150 billion in compensation were already linked.[33] Clean-technology water problem-solving, moreover, is a growing $500 billion global business—with innovations in water cleaning, efficient use, infrastructure, and conservation in fields from energy to agriculture of growing value in markets like China (90 percent of whose urban water is polluted), India (which has massive water shortages), and the Middle East.[34] Technologies developed to clean Lake Erie, polluted bays, and Great Lakes rivers, as well as improve water-use efficiency, are already producing new jobs for Michigan engineering services firms in China, water-treatment and measuring firms in Milwaukee, and bio-technology companies in Cleveland—and with the right investments, could power additional innovation, firms, and jobs across the region.

The challenge for the older industrial metros of the Great Lakes is the ability to transfer their formidable industry, technology, and innovation base into emerging clean energy and sustainable technologies development, while cleaning up their own environmental act. For all their expertise and resources, these metros remain the creation agents and epicenter of the nation's fossil fuel-reliant economy—bringing national energy challenges painfully home. Invested in making cars, dominated by a declining manufacturing sector, and impacted by social, economic, and race-driven factors that have fostered sprawl even in the face of little metropolitan growth, many Great Lakes communities have energy-intensive economies, inefficient physical development patterns, hollowed out urban neighborhoods, and a large number of the nation's under used, contaminated industrial sites.

The upshot is in the numbers: With the country's largest concentration of energy-intensive industries—manufacturing, agriculture, and transportation equipment (including autos)—the Great Lakes states account for over 30 percent of all U.S. industrial carbon emissions.[35] Meanwhile, 13 of the 21 largest Great Lakes metros are in the top half among their peers nationwide based on their per capita transportation and residential carbon emissions; five (Cincinnati, Indianapolis, Louisville, St. Louis, and Toledo) are among the top seven.[36] It's little surprise, then, that a Chicago Council on Global Affairs study found that the Midwest overall (their definition includes most of the Great Lakes states plus a few Plains states) produced a full 29 percent of national greenhouse gases, and 4 to 5 percent of global GHG emissions.[37]

The Great Lakes Region and the Innovation Economy

Becoming a true "low-carbon" leader, while generating competitive products and services to export abroad, will require an economy centered on ***innovation*****.** Every aspect of the low carbon transition, for example, requires technological, engineering, and managerial breakthroughs—in renewable energy, in infrastructure, and in sustainable products, design, and building. An export economy, likewise, requires the development and deployment of goods and services that are constantly improving so that, in a more crowded global market, American products stand out for their quality. Indeed, it has always been through innovation that economies and societies advance and, for the most part, improve.

But American leadership on key indicators of innovation is slipping compared to our competitors. As the Council on Competitiveness has shown, U.S. shares of worldwide total domestic R&D spending, new U.S. patents, scientific publications and researchers, and bachelors and new doctoral degrees in science and engineering all fell between the mid-1980s and the beginning of this century.[38] And the U.S. lags on the conversion of innovation into home grown production: The nation had a trade surplus in advanced technology products in the mid-1990s, but now has a trade deficit.[39]

In an innovation-fueled economy in which new sectors—IT, bioscience, clean energy, nanotechnology, new materials—emerge out of the interplay of leading research universities and the private market (and the talent they produce) the Great Lakes region can play a leading role.

No U.S. region possesses a richer array of the institutional assets that will power an innovation economy than the Great Lakes. The 21 largest Great Lakes metros alone are home to 32 major research universities, as classified by the Carnegie Foundation for the Advancement of Teaching. These include both private universities, such as Carnegie Mellon and University of Dayton, and some of the great public institutions established in the land grant tradition, like the University of Minnesota and Ohio State. Many other such universities are located in small and mid-sized communities throughout the region.

These institutions and their research, working synergistically with private sector R&D generators—particularly in the research intensive manufacturing sector—drive the Great Lakes region to produce a significant share of national output on key innovation metrics. Data compiled by the National Science Foundation (NSF), for example, shows that 2006 research expenditures in the Great Lakes states represent 33 percent of total national research expenditures. Metros such as Lansing, home of Michigan State, and Columbus, home of Ohio State, receive far more university-based federal research dollars per capita than the largest 100 metros nationally, on average, and far more still than the nation as a whole.

The large universities of the Great Lakes region, along with its smaller colleges and community colleges, also educate the nation's talent that drives innovation—particularly in the coveted STEM (science, technology, engineering, and math) disciplines. For example, with just a third of the national population, the region as a whole produces approximately 36 percent of the nation's science and engineering graduates annually.[40] Many of these workers go on to work in the region's manufacturing firms, which helps explain why both large and mid-sized metros like Detroit and Dayton, as well as small communities like Holland-Grand Haven and Niles-Benton Harbor (MI) are home to heavy concentrations of workers in the architecture and engineering fields.[41]

The challenge for the Great Lakes region is to be able to build on its existing research and innovation proficiencies, and to then translate them into both stronger existing firms as well as new commercial ventures. A too-comfortable reliance of incumbent workers on dominant big employers, the continued out-migration of young, educated residents, and low levels of in-migration of skilled foreigners have over a period of decades quieted the constant churn of innovation that helped build the nation's industrial communities and today powers their more dynamic metropolitan peers.

TABLE 3. Major Research Universities in the 21 Largest Great Lakes Metropolitan Areas

University	Metro Area
University of Akron Main Campus	Akron, OH
Kent State University-Main Campus	Akron, OH
SUNY at Buffalo	Buffalo-Niagara Falls, NY
University of Chicago	Chicago-Joliet-Naperville, IL
University of Illinois at Chicago	Chicago-Joliet-Naperville, IL
Northwestern University	Chicago-Joliet-Naperville, IL
Illinois Institute of Technology	Chicago-Joliet-Naperville, IL
Loyola University Chicago	Chicago-Joliet-Naperville, IL
Northern Illinois University	Chicago-Joliet-Naperville, IL
University of Cincinnati-Main Campus	Cincinnati-Middletown, OH
Miami University-Oxford	Cincinnati-Middletown, OH
Case Western Reserve University	Cleveland-Elyria-Mentor, OH
Ohio State University-Main Campus	Columbus, OH
University of Dayton	Dayton, OH
Wright State University-Main Campus	Dayton, OH
Wayne State University	Detroit-Warren-Livonia, MI
Indiana University-Purdue University-Indianapolis	Indianapolis-Carmel, IN
University of Louisville	Louisville-Jefferson County, KY-IN
University of Wisconsin-Madison	Madison, WI
Marquette University	Milwaukee-Waukesha-West Allis, WI
University of Wisconsin-Milwaukee	Milwaukee-Waukesha-West Allis, WI
University of Minnesota-Twin Cities	Minneapolis-St. Paul-Bloomington, MN-WI
Carnegie Mellon University	Pittsburgh, PA
University of Pittsburgh-Main Campus	Pittsburgh, PA
University of Rochester	Rochester, NY
Washington University in St. Louis	St. Louis, MO-IL
University of Missouri-St. Louis	St. Louis, MO-IL
Saint Louis University-Main Campus	St. Louis, MO-IL
SUNY College of Environmental Science and Forestry	Syracuse, NY
Syracuse University	Syracuse, NY
Bowling Green State University-Main Campus	Toledo, OH
University of Toledo	Toledo, OH

Research Universities are defined as those universities that the Carnegie Foundation for the Advancement of Teaching lists as "RU/VH: Research Universities (very high research activity)" and "RU/H: Research Universities (high research activity)."

Meanwhile, these communities lack the early stage capital necessary to convert the new technologies, products, and services they *are* creating into the innovative, high value firms they need to transition their economies. Less than 14 percent of the nation's venture capital is invested in the Great Lakes states, despite the fact that they produce almost one-third of new U.S. patents.[42] As a result, many Midwest breakthroughs end up creating new jobs in Boston or Silicon Valley rather than in Toledo or Detroit. In fact, the Kauffman Index of Entrepreneurial Activity ranks Indiana, Ohio, and Michigan—the heart of the region—among the bottom third of states based on their average annual number of business start-ups between 1996 and 2007. Improving these statistics will

be essential to the region's ability to diversify its economy and lay the foundations for future economic growth.

The Great Lakes Region and the Opportunity-Rich Economy

The shape of the next economy described thus far implicates the last piece of the vision, which is to create an economy that is rich in ***opportunity***. This may be the nation's tallest order: to routinely and constantly deliver a high volume of rewarding jobs with good pay and benefits.

The economy of the past several decades was opportunity deficient. It yielded a false, consumption-driven prosperity as well as a prosperity whose benefits were not widely shared: According to a recent article in the Financial Times, the annual incomes of the bottom 90 per cent of U.S. families have risen by just 10 per cent in real terms since the early 1970s; over the same period the incomes of the wealthiest 1 per cent have tripled.[43]

The shift to the next economy could produce a more inclusive opportunity structure, if the right supports are put into place.

Researchers have found, for example, that, on average, exporting firms have almost twice the number of workers as firms that produce goods for the domestic market, they pay workers more, and they are more likely to provide health insurance and retirement benefits.[44] Thus, increasing exports should increase the wages of workers in competitive industries.

Likewise, shifting to an economy that is low in carbon—and all the innovation that will require—could also drive new job creation, as the nation will need scientists to invent, entrepreneurs to take to market, and workers to build solar panels, wind turbines, biomass plants, advanced fuel cells, and efficient finished products. These new sources of energy are also more job-intensive than traditional sources: A 2010 study conducted by scholars at Berkeley found that per unit of energy, solar and wind energy yield more than five times the number of jobs as coal or gas.[45]

Investments in energy—or health care, telecommunications, or new technology—will not automatically redound to the benefit of a broad range of workers, however. Innovation demands a constant upgrading of skills, at all levels, to help workers invent and create and implement. It's thus vital that policies and investments aimed at facilitating the nation's renewed economic competitiveness very deliberately include a sustained commitment to ensuring that both new and incumbent workers have the education, training, and work supports they need to compete for—and help create—the well-paying jobs the new economy promises to generate.

The Great Lakes region has a robust set of educational assets that can be leveraged to help the nation close the opportunity gap.

Arguably, the auto industry itself helped build America's great middle class. From Henry Ford's $5 a day, to the unions that spread the industries' returns and helped

ensure advancements in pay and worker's rights for men, women, immigrants, and minorities, the auto and related industries were agents of economic prosperity.

The nation's network of community colleges, critical centers for human-capital building and economic development, were also born in the Midwest. The first community college opened in Joliet, Illinois in 1901, and the great build-out of these institutions after World War II was centered in auto-country to serve the swelling civilian ranks and provide the occupational training needed in growing auto and related industries. The largest community colleges, and the nation's most innovative in their linkages to employers and their communities, are institutions like Macomb, Cuyahoga, Henry Ford, Tri-County, Loraine, and DuPage, among others.

Today, 19 of the 21 largest Great Lakes metros have at least one community college, and in total these colleges enroll over 745,000 students; dozens more exist throughout the broader Great Lakes region.[46] These institutions play a vital role in helping existing workers and the region's youth get the credentials and skills they need to secure jobs in local businesses, and, in turn, help ensure these firms continually have access to the skilled employees they require to expand and innovate.

The region's pioneering network of public and land grant universities, moreover, produce a high-quality, relatively low-cost education that can be further leveraged to grow national and regional economic opportunity. Several of the nation's largest public university systems—including the State University of New York system, The University System of Ohio, The Minnesota State Colleges and Universities System, and the University of Wisconsin System, among others—serve the region, educating well over a million students on their multiple campuses.

The challenge for the region's older industrial communities is to dramatically increase their citizens' postsecondary credentials and skills so that they can successfully compete in the next economy. As robust as the Midwest's network of institutions is, the challenges before them are steep. Many of these communities suffer from deep, entrenched poverty, the result of a host of longstanding social, racial, and economic factors. Meanwhile, the huge declines in the manufacturing sector have obliterated what were once sources of good paying jobs for less-educated workers, and many of those who are now displaced are finding that they lack the skills necessary to gain employment in other industries, especially at pay levels commensurate with their old jobs.

The share of Great Lakes residents that have continued their education post-high school is actually slightly higher than in other parts of the country, a testament to the strong network of community colleges in the region: 7.8 percent of adults in the 21 largest metros have an associate degree, for example, compared with 7.4 percent of residents living in the 100 largest metros nationwide. But fewer of them are going on to attain four-year degree: In 15 of the 21 metros, the share of residents with a bachelor's degree or higher is below the average (31.3 percent) of their peers; only 19 percent of Youngstown residents and 23 percent of Toledo residents, for example, have a college

degree.[47] These numbers limit the growth of productivity in a knowledge economy, and the higher-paying jobs that such productivity helps create.

Ensuring that the shift toward the next economy includes those that have been left behind, and making sure their talents are harnessed to drive renewed U.S. economic success, will be the true test of how well the macro vision of a cleaner, more globally-connected, and more creative economy gets applied and implemented at the metro level where it matters most.

A Critical Issue for the Region: Improving K-12 Education

For many decades, a relatively high-wage job on the assembly line was available for those with only a high school diploma, or less. As a result, the economy and culture of older industrial communities, both large (like Detroit and Louisville) and small (like Kokomo, Indiana, and Springfield, Ohio) alike, had not prioritized education—since it was not required for residents to realize a decent standard of living. But those days are gone.

The success of older industrial metros in the next economy demands better performing pre-K-12 education systems, and the virtuous cycle of community regeneration that better schools can drive. Recent studies have shown significant educational challenges in the Great Lakes region, particularly the largest cities. Detroit's National Assessment of Education Progress (NAEP) 4th and 8th grade math scores were the worst in the nation, for example, and scores in Cleveland, Milwaukee, and Chicago were far below average; three of the fourteen big city metros with the lowest graduation rates were also in the region (Detroit, Cleveland, and Milwaukee).[1] These challenges certainly aren't unique to the Great Lakes—Atlanta, Fresno, Philadelphia, Baltimore and other major metros are grappling with many of the same issues. All these communities require new thinking and new innovations, from both the public and private sectors, if they are to reform long-broken systems.

The recent federal response to improving pre-K-12 education nationally—embodied in the strong bi-partisan support for Secretary of Education Duncan's Race-To-Top and related efforts—is aggressive, and stands to significantly aid distressed metros that are organized for reform. In addition to the $4.5 billion Race to the Top Funds that New York and Ohio won in the second round, Detroit and other communities are also in the hunt for other direct support. The FY 2011 Budget projects a $3 billion increase in funding for federal K-12 education programs, including $900 million for School Turnaround Grants. There is also $500 million for charter school development, available to states that help communities commit to shutting down or restructuring troubled schools.

Great Lakes leaders are also themselves taking path-breaking approaches to tackling these challenges. In metro Detroit, for example, a group of local foundations led by the Skillman Foundation has teamed up on a $200-million plan to start 70 new schools, replacing low-performing schools with high-performing ones. The schools, which will be based in Detroit and its inner-ring suburbs, will be developed by a network of public and non-profit education service providers, and will focus on meeting clear student performance goals. Other older industrial metros in the Great Lakes region need to follow their lead, using federal funding streams to leverage their own efforts to overhaul failing systems in bold and creative ways. Only by doing so will they be able to improve the life opportunities for their residents, and successfully transition their regional economies.

See: Nation's Report Card, NCES report math scores 4th and 8th grade, available at http://nces.ed.gov/nationsreportcard/; Greg Toppo, "Big City Schools Struggle With Graduation Rates" USA Today, June 20, 2006, available at www.usatoday.com/news/education/2006-06-20-dropout-rates_x.htm#grad

IV. A Roadmap for Rebuilding the Great Lakes Region

In tumultuous times like these, there is a temptation to try to mitigate the impact of the disruptive changes in the economy and world at large. But in fact, the Great Lakes region must be at the vanguard of even more disruption and change. This region that has been so hard hit by globalization needs to be the most globally oriented in the country, building on its export base to create even more innovative products and services for global consumers, and attract more international students and entrepreneurs to its metros. The region that helped create the high-carbon American lifestyle of the last century must pivot to become the source for low-carbon technologies, and new, greener urban infrastructures and spaces. And the region that has lagging educational attainment levels and stark racial divisions must become an example of how to create an economy that offers opportunity to all on equal terms. Crisis, in short, must be used to spur innovation and renewal.

This a very challenging environment in which to retool an economy long on the wane. As of this writing, the fortunes of the major domestic auto makers have improved dramatically, but their vaunted efforts to get leaner and modernized have come at the cost of plant closings and layoffs. While manufacturing output in the 21 largest Great Lakes metros has grown in each of the last three quarters, it is still lagging its pre-recession levels. More broadly, businesses are still reluctant to hire and wary about the durability of the recovery.[48]

On the public sector side, the fiscal and political environment is complicated, constrained, and in flux—and not conducive to making the structural changes necessary to support the Great Lakes transition. Despite major achievements in the past two years, Washington has acted haltingly to lay the platform for the next economy. Restructuring requires serious work on policies as disparate as exports, energy, innovation, manufacturing, infrastructure, immigration, post secondary education, and skills training and that work is either at its early stages or not even started. The unfinished business at the federal level may well remain so for the next several years, as the concerns about the debt and deficit dominate the political agenda and squeeze out other concerns.

But while Washington's grapples over the next round of economic policies, the Great Lakes region could see a new wave of federalist policy innovation at the state and metropolitan level. New governors will take the helm in Michigan, Minnesota, New York, Pennsylvania and Wisconsin. New or re-elected and re-charged governors will lead Illinois and Ohio. Because states face their most dire fiscal challenges in decades, all states will be compelled to cut spending. Yet a subset of smart states will use the fiscal crisis to change how they do business. They will invest more strategically: Indiana and Ohio, for example, have restructured funding for their public universities, tying funding to performance goals, such as degree completion or other milestones.[49] States can also seize the opportunity to push through much needed reforms to streamline local government (e.g., consolidate local school districts), and match economic development

efforts to the metropolitan geography of the economy (e.g., develop regional innovation clusters and metropolitan export initiatives).

Like incoming governors, city and metropolitan leaders will also have to innovate in conditions of scarcity. The fiscal storm in municipalities is gathering, driven by the cessation of federal stimulus funds, declines in property tax revenues, and state cuts in aid to local government. As with the states, cities and metros are likely to couple austerity measures with high profile policy advances in a limited number of arenas. The recession could accelerate efficiency-enhancing collaborations across jurisdictional lines, for instance. And fiscal declines could lead to "no competition" pacts between cities and suburban municipalities and the replication of collaborative efforts like metropolitan mayors caucuses across the country.

Great Lakes states and metros could be at the forefront of these state and metropolitan innovations. In fact, there are already efforts underway in the region that exemplify the bold moves that are required for this region's prosperity. States and metros are working to nurture innovative industries and firms, for example, like Ohio is doing though its Third Frontier program, a $2.8 million effort designed to build world-class research programs, grow early-stage companies, and foster technology development that makes existing industries more productive. They are working to become greener, as Grand Rapids is doing by leveraging its location on the Grand River, and near Lake Michigan, for smart water use and technology development. And they are working to expand job opportunities, as Illinois, Indiana, Minnesota, Ohio, and Wisconsin are doing, with help from the Joyce Foundation, with Shifting Gears, an initiative focused on re-engineering adult education, workforce development, and postsecondary education policies so that workers can gain the skills and credentials today's employers require.

To be clear: The economic innovation that will renew and even transform the Great Lakes region must be led by a strong, innovative, and flexible private sector. But government action can, and must, go far in laying the groundwork for private sector strength, filling holes that firms will not, and creating the conditions in which markets, places, and therefore people can flourish. Indeed, it will take a broad network of actors—corporate, civic, university, philanthropic, elected, federal, state, and local—to create the next economy in the Great Lakes region.

This chapter puts forth some goals for this effort. The federal government has to take on some macroeconomic fundamentals: trade, currency, carbon pricing strategies, and a baseline of investment in economy-growing fundamentals like the nation's infrastructure and education systems.[50] But there is another set of policies and investments that can be undertaken or supported at the federal, state, or metropolitan level, or all three—policies and investments that can help the region build on the export capacity, research and educational institutions, advanced manufacturing prowess, and other "next economy" assets endowed by their industrial heritage, and overcome the long-term, structural challenges and shortcomings that are holding them back. To realize the promise of the next economy, state and metropolitan leaders in the Great Lakes,

together with their private sector and philanthropic partners, need to align their efforts around three goals:

- **Invest in the assets that matter:** innovation, human capital, and infrastructure
- **Devise new public-private institutions** that are market-oriented and performance-drive
- **Reimagine metros' form and governance structures** to set the right conditions for economic growth

Invest in the Assets that Matter

The next economy will be created through smart public and private interventions on the assets that matter most to metropolitan areas (and therefore to the nation's economic success): innovation, human capital, and infrastructure. The problem in these areas is not a lack of policy attention; rather it is that current policies are out of synch with the metropolitan geography of the economy and with the emerging next economy.

On innovation, for example, federal policy focuses too much on basic research and not enough on commercialization, aims too much at large firms and major research universities, leaving out smaller firms and institutions, and inexplicably neglects innovation in service industries, which represent the bulk of jobs in the U.S. and have incredible export strength.[51] More critically, neither federal, state, nor local actors pay sufficient attention to the practical mechanisms for translating the intense local interactions of firms, workers, institutions, associations, and investors into innovation and jobs.[52] Few U.S. innovation programs recognize how important regional economies and especially regional industry clusters are to the nation's economy.[53]

When it comes to human capital, local workforce development efforts aren't generally very well coordinated with one another. Under the federal Workforce Investment Act (WIA), local Workforce Investment Boards (WIBs) are supposed to work with other regional institutions (e.g., universities, community colleges, and economic development agencies) to bring together services for workers and firms. This convening role has not been fully embraced by most WIBs, though.[54] Worse, the current workforce system doesn't often treat businesses as a primary customer; instead the majority of WIBs focus on job-seekers and take a social-service approach to their work.[55] Thus the widely held perception by business remains that the public workforce system primarily serves low-income, low-skilled workers, and therefore isn't focused on their needs.[56]

And the failings of infrastructure policy at all levels—federal, state, and metropolitan—are undercutting our ability to efficiently move people and goods within and across borders. The nation's current network of airports, seaports, rails, and roads have become overtaxed by just-in-time deliveries and the modern logistics systems that can ensure the efficient operation of supply chains. Nowhere is this more evident than along the border between the Great Lakes states and Canada, where supply chains have grown more complex, and thus more sensitive to deteriorating road and rail systems, higher border-crossing wait times, increased congestion, and other

transportation-related disruptions. Yet we have no coherent national plan for addressing these challenges. The country's freight transportation industry, for example, is highly decentralized, with private operators owning almost all of the trucks and rails, and the public sector owning the roads, airports, and waterway rights. And unlike our international peers, such as Germany, Canada, and Australia, the United States doesn't have a unified strategy that aligns disparate owners and interests around national economic objectives.

Such limitations demonstrate that, as federal, state, and local policy makers scrutinize existing programs and funding streams looking for areas to make cuts, they must also consider how to reform programs so that the dollars that remain provide the most powerful return on investments. To advance the next economy in the Great Lakes region, elected officials need to concentrate on several key market-shaping areas:

Regional Innovation Clusters:[57] The transition to an export-oriented, innovation-fueled, and opportunity-rich economy will require that federal, state, and metropolitan economic development efforts focus intently on the existing regional industry clusters that drive metropolitan growth and give a particular metro its reason for being.[58] Cluster initiatives should only be attempted where clusters already are because there is virtually no evidence that government policies are capable of successfully creating clusters in particular locations where none previously existed.[59] Cluster initiatives should be tightly focused on attacking specific, documented constraints, institutional deficiencies, or resource shortcomings, and contingent on painstaking, transparent quantitative analysis of the cluster's specific needs.[60] Such needs may entail shortcomings in the level or quality of R&D; problems with the practical skills of the local workforce; or particular institutional problems or flaws in local government policy implementation.

In many cases, cluster strategies could be less a matter of programs and policy products than a paradigm through which to inform, draw in, and organize multiple activities. For example, at the federal level, programs like the R&D tax credit as well as SBIR and SBTT grants, patent and intellectual property law, and transportation and broadband programs, may all rightly be viewed as "cluster" programs in particular cases. At the state level, banking regulations and tax credits for venture capital are relevant to potential financing gaps, while education policy, land use regulations, and infrastructure issues all touch on issues relevant to clusters. And at the regional and local level, zoning policies or transportation initiatives may be relevant "cluster" issues since they may affect the access of workers to industry concentrations. Thus, a strong cluster strategy will not necessarily entail specific new "cluster" programs and initiatives but a targeting of existing efforts (informed by cluster analysis) to ensure a supply of high-quality inputs and build up basic public and quasi-public goods that have a significant impact on many linked businesses.[61]

The federal government is warming to the cluster paradigm with a variety of programs and undertakings across agencies.[62] For their part, states can undertake state cluster inventories to provide a detailed snapshot of clusters and their competitive advantages and prospects, and conduct surveys to probe particular cluster constraints or

challenges. They can make regional innovation clusters a central component of state economic policy, building on the campaign promises of many leading candidates for governor. Governors could direct representatives from multiple state agencies, for example, to work closely with business leaders, universities, and local and metropolitan government officials on cluster strategies that meet rigorous criteria. Some of these initiatives could also have a spatially targeted component, particularly with regard to clusters that naturally congregate around institutions of advanced learning or logistical hubs like ports and airports. The Ohio Department of Development's 2008 strategic plan could serve as a model for many states to replicate.

As another aspect of a cluster-based approach, states and metros need to develop metropolitan export strategies, so that goods, services, and expertise, including newly fashioned advanced manufacturing products and sophisticated services, can reach the fast-expanding markets beyond our borders, while creating new jobs in the region. These export strategies must be evidence-driven, cluster-led, and metropolitan in scope and scale. Ideally, they should be organized and even implemented by business groups with support from other sectors—civic, government, labor, and university—that are critical to success. Such initiatives should start by creating a clearinghouse for data collection and analysis on exports, using surveys, publicly available data, and research to achieve a clear understanding of the metro area's strengths and its current and potential export markets. And they should tap into the firms and universities already engaged in international business, commercial, research, and learning partnerships, and that sell education, medical, professional, and technical services to customers across the globe.[63]

Metro leaders should build on their export clusters in other ways as well, such as through collective marketing efforts to nurture distinctive regional brands, tailored assistance to exporters, workforce training, and freight prioritization (these last two areas are described in more detail below). For example, most metro areas could take advantage of the federal Export Assistance Centers at home and abroad to organize trade missions under a metro brand. The newly created Economic Development Administration/International Trade Administration Job Creation Mission helps U.S. communities generate jobs by connecting metropolitan areas with opportunities offered by the global marketplace. In April 2010, the first mission to Hannover, Germany included 16 U.S. economic development organizations, half of which represented auto-impacted communities.

***Workforce Development at Community Colleges**:* To build the human capital base required to increase economic growth and opportunity, state and federal actors need to help leverage the strengths of the region's extensive community college system.[64]

The Great Lakes region's many community colleges, which were established by state and often local policies, are an integral part of the workforce network. These institutions not only provide workers effective short-term training in non-credit programs, but also integrate technical training with basic skill enhancement and post-secondary education credentialing, and offer a bridge to four-year degree programs. Annual community

college enrollment is increasing at more than twice the rate of that at four-year colleges, growing by 2.3 million students in the first half of this decade alone.[65]

States can take several steps to better exploit the multiple strengths of community colleges and enhance their role in regional job creation and economic development efforts. For example, states should use federal workforce resources to encourage dislocated and incumbent workers in the region to enroll in degree or certificate programs that can help move them into new careers. Michigan, for example, has used federal funds to establish a program that guarantees two years of education to dislocated workers willing to enroll in a post-secondary "critical occupation" program, with promising results. An analysis of the program's first 18 months found that nearly half of the 62,206 workers enrolled in training had already found jobs; many others were still in training and continuing their post-secondary education.[66]

Community colleges themselves must repurpose their own institutional priorities and systems to address the poor basic skills of many Great Lakes metro residents, preparing them for credential granting programs (see sidebar). These institutions will also have to focus on degree completion, particularly among poor and minority students, as dozens of Great Lakes communities are already doing as part of the national philanthropic-led Achieving the Dream demonstration program.

The federal government, for its part, should over the long run provide greater direct federal support to community colleges**,** which currently received less than one-third of the funding amount provided to their four-year counterparts, despite the fact the majority of post-secondary students start at a community college.[67] (The American Graduation Initiative would have been a start at rectifying that imbalance.) In the meantime it should use the adoption of the $2 billion Community College and Career Training Grant Program—which allocates federal funding to community colleges to provide retraining for workers who qualify for benefits under the Trade Adjustment Act (TAA)—to promote new approaches to workforce training and education.[68] Such funding could be used strengthen community colleges' ability to retrain workers through its non-credit programming, while helping them to pursue post-secondary credentials though credit-granting courses.

Public-Private Partnership Model: Improving Opportunity Through the Region's Community Colleges

Across Michigan's older industrial metros, the C. S. Mott Foundation is supporting area community colleges through **Breaking Through**, a multi-year national demonstration project designed to enhance the efforts of community colleges to help low-literacy adults prepare for and succeed in occupational and technical degree programs. The project also gathers and disseminates information about state-level policies that support adult advancement through college degree programs.

The Michigan Breaking Through initiative is helping institutions like Mott Community College (MCC), in Flint, integrate education and work experience with key support services such as access to affordable child care and transportation, which helps struggling adult students stay the college course. A statewide learning network created through the initiative is providing participating Michigan colleges the opportunity to share and learn from these and other emerging strategies and experiences.

***Smart Spending on Infrastructure**:* There are many federal and state reforms that can help Great Lakes states and metros not only use transportation dollars more efficiently, but also move them strongly in the direction of the next economy.

Because of their export strengths and close proximity to a major U.S. trading partner, Great Lakes metros need a transportation infrastructure that provides efficient and effective connections to global markets. Therefore, the federal government—in collaboration with states, metropolitan areas, the freight-rail industry, and shippers—should develop a comprehensive National Freight Transportation Plan as a framework for goods movement policy and investment.[69] Such a plan should identify freight gateways and corridors of national significance, including the ports and border crossings between the Great Lakes and Canada, and use a rigorous benefit/cost methodology to determine which corridors and transportation modes warrant the highest investment priority.[70] Ultimately, a plan aimed at enhancing the system for freight movement would, among its other benefits, enhance the Great Lakes' state and metro export capacity. Three Senators have just introduced the FREIGHT Act of 2010, which is a promising move towards this needed freight strategy.

For their part, states need to rethink their infrastructure spending priorities in several ways. First, there should be a bias towards fixing existing infrastructure (fix-it-first) before building new road capacity, particularly since Great Lakes states and metros generally have not seen robust population growth that would call for new roads.

Second, states need to reform how they spend their transportation dollars. Most Great Lakes states (all but Kentucky and Illinois) have infrastructure banks, which were created and capitalized under a provision of federal transportation law. But rather than bringing a tough, merit-based approach to funding, many state infrastructure banks are used to pay for the projects selected from the state's wish list of transportation improvements, without filtering projects through a competitive application process. Or they use criteria that are not adjusted to the current economic climate—Ohio, for example, rewards local contributions to projects. States should use their infrastructure banks more strategically, focusing on those transportation projects that will lower carbon emissions, or facilitate the flow of exports, or connect workers to jobs.

Third, states need to use some of their federal highway funds to pay for statewide sustainability challenge grants, to encourage metropolitan areas to devise a broad vision for reducing congestion (the immediate need) and carbon emissions (the long-term necessity). The grants would fund the development of plans that link transportation, housing, land use, economic development, and energy strategies; a second round of grants would pay for the implementation of the best plans, incorporating funding streams from other agencies and allowing greater flexibility in the use of those funds. Fundamentally, states need to change the incentives for metropolitan areas, away from the status quo, and towards more integrated and strategic use of transportation, housing, and economic development funds.

Devise New Public-Private Institutions

Our existing, legacy governmental institutions will not, for the most part, deliver the next economy. Rather, state and metropolitan economic development strategies need to include a new set of market-oriented, private-sector-leveraging, performance-driven institutions.

It may seem odd to recommend new institutions when so many political leaders are preparing the public for deeper and deeper cuts in public spending. Cuts are inevitable given the current fiscal crisis, but the need to balance budgets in the short term cannot blind voters and officials to the need to spend public money to lay the foundation for growth. It is not enough for the nation, states, and metros just to weather the crisis, and emerge at its end no worse than they were at the beginning. Our competitor nations have decided that the crisis is a time to gain ground. For example, China is seeking to dominate the renewable energy field, dedicating 38 percent of their recent stimulus package on renewable energy and other green investments, compared to 12 percent in the United States.[71]

Creating new institutions doesn't require a whole new trough of (increasingly scarce) resources, however—rather, it demands that existing dollars be used more wisely. Federal, state, and local governments, together with the private sector, already spend billions each year on innovation-, human capital-, and infrastructure-related programs, some of which, as noted above, are underperforming or downright broken. A portion of these investments should be reoriented toward the type of entities described here.

Still, some new sources of capitalization may be required, and state and metro leaders should be prepared to go to voters to support bond issues or dedicated tax sources. Voters get the need for smart, targeted investments. On May 4, 2010, Ohio's voters approved a $700 million bond issue to preserve the Third Frontier, the state's premier technology-based economic development initiative. The budget crisis had forced state leaders to borrow Third Frontier's 2012 funds to spend in 2010 and 2011. Yet Ohion's knew that stopping Third Frontier investments would be devastating for their state.[72] Admittedly, Third Frontier is an established program with a proven track record, and thus it may have been easier for its supporters to convince voters to back it. But its success suggests that voters in hard-hit Great Lakes states understand the difference

between debt or spending that lays the foundation for future growth, and that which does not make sense during a fiscal crisis.

New Infrastructure Banks: Investments in the nation's transportation systems are critical for fueling exports growth (e.g., through multi-modal facilities at major air, rail and water hubs) as well as accelerating the transition to a low-carbon economy (e.g., through green infrastructure, such as an electric vehicle fueling network). The current system of transportation investments is uncoordinated at all levels, however, and is largely based on archaic funding and equity formulas that work against many metropolitans areas' efforts to maintain modern and integrated transportation networks.

The creation of a national infrastructure bank would help remedy these issues by using merit-based criteria to choose large, multi-modal and multi-jurisdictional infrastructure projects to finance. The bank would evaluate projects using cost-benefit analysis, which include both the regional or national significance of the project and, and whether or not the project reduces greenhouse gas emissions. Projects that pass this rigorous screening process would receive a loan or grant from the bank. Electrical grid and broadband development could also be funded and financed through the bank, thereby breaking the traditional silos through which the federal government currently funds infrastructure development. The national or metropolitan impact criteria and analysis would be the most critical parts of the bank, because it would require project evaluators to keep their attention on the benefits of a specific project. Right now, projects in different modes and sectors are evaluated by specific standards, making cross-mode comparisons difficult. A national infrastructure bank could be capitalized with appropriations amounting to a total of $25 billion over five years (this is the amount put forth in the administration's 2010 budget proposal, and a recent House bill).

For their part, states need to create new kinds of economic development banks, separate from their existing Infrastructure Banks—institutions that have little money and, by law, can only fund transportation projects. These new state economic development banks should fund not just roads and rails, but energy and water infrastructure, and even school and manufacturing development. The projects should be evaluated according to merit, not selected with an eye towards spreading funding evenly across the state. California's "I-Bank" provides a compelling model for Great Lakes states to emulate.[73] After its initial capitalization from the state, the I-Bank has not needed state funds to continue operating. Its funding comes from fees, interest earnings, and loan repayments.[74] I-Bank financing can cover 16 categories of infrastructure projects, including streets and highways, public transit systems, water and sewage systems, power and communications, educational facilities, environmental mitigation measures, and public safety facilities. Criteria for project selection include: job creation and retention, relationships with local employment and training entities, contributions to improved quality of life and long term economic competitiveness; local economic need; land use and environmental protection factors; leveraging of other financing sources; and readiness to commence construction.

***Advanced Manufacturing Laboratories**:* The public sector plays an important role in helping to ensure that the U.S. manufacturing sector stays competitive in the next economy. Current policies are lacking in both strength and scale, however. Federal manufacturing R&D efforts, for example, do not focus sufficiently on the needs of suppliers, nor do they support a robust innovation-to manufacturing continuum: Federal R&D programs provide little support for later-stage applied research or early-stage development, and have generally not helped fill early stage capital gaps.[75]

A national and/or a Great Lakes region network of manufacturing laboratories could help overcome these deficiencies.[76] A national laboratory, for example, would focus on research that is more applied than that of other government labs, including engineering research on early-stage applications that are useful in a range of manufacturing processes, but that no one else is doing right now (e.g., joining two kinds of materials together, a key capability in product weight-reduction efforts that decrease energy use). A significant piece of its research would focus on best practices in manufacturing management, especially the management of shared supply chains and the diffusion of up-to-date technology and business processes to new and existing manufacturing firms. A federal lab could disseminate best practices to federal Manufacturing Extension Partnership (MEP) centers and train MEP staff and manufacturing management and union personnel in those practices. The lab should also include a Supply Chain Office to coordinate the delivery of third-party support to large manufacturers for supply-chain upgrading. To avoid the insularity and remoteness from business practice that particularly characterize national labs, the lab would have an advisory board that would include representatives of suppliers, assemblers, labor unions, professional engineering associations, universities, and others from the Great Lakes region and elsewhere with expertise in manufacturing applications.[77]

Great Lakes states should also bolster their own networks of advanced manufacturing institutions, including the universities, industry-funded research centers, federal labs, and community colleges already doing work relevant to some aspect of the sector. In addition, Great Lakes states and metros should work together to determine how to build the advanced manufacturing brand in the region.

Regional Energy Research and Innovation Centers: Public funds should also be used to leverage the kinds of breakthroughs in energy generation and water management required to bolster energy efficiency and the transition to cleaner fuels. Unfortunately, existing efforts fall short: The current federal energy research infrastructure—anchored primarily at DOE national laboratories—focuses largely on discrete fuel sources (e.g., coal, oil, nuclear), a set-up that is not well suited to tackling the complexity of the nation's energy challenges.[78] Meanwhile, regional assets that could accelerate advances in new energy technologies—like those in the Great Lakes region—remain untapped, underutilized, or poorly leveraged or connected with one another.

The federal government should foster this energy innovation potential by creating a network of high-powered, commercialization-oriented regional energy research and

innovation centers designed to remake the nation's energy system. Involving research universities, national laboratories, and private industry, these centers would address national sustainable energy priorities, while also generating jobs and stimulating regional economic activity through the nearby location of start-up firms, private research organizations, suppliers, and other complementary groups and businesses.

Given its many energy innovation-related strengths—renowned public universities, national and corporate research labs, and top-flight science and engineering talent—the Great Lakes region is ripe for a federal approach that "floods the zone" with an array of these new energy hubs, strategically situated across the region to reach critical mass through their number, size, variety, orientation to regional industry clusters, and networking.[79] A competitive award process would designate centers—perhaps as many as six, organized around different themes—for federal support and inclusion in the Great Lakes network. Additional investment would come from state governments, business and industry, and other investors that want to help catalyze innovate energy research in the region. These centers would require funding of between $1 and $2 billion annually.[80]

Policy Idea: A Water-Based Research and Innovation Center

The federal government could capitalize on the Great Lakes region's huge supply of fresh water, strong research capacity, and growing expertise in water technologies by organizing one of the proposed Great Lakes energy research and innovation centers around water-related issues. Such a center would focus on (1) improving national water policy, and identifying state and regional policies and structures that will support and motivate environmentally appropriate development and use, (2) researching, developing, and commercializing new clean-water technologies, including water infrastructure, treatment, and conservation systems that could be used here and abroad, (3) developing a better understanding of how human and natural drivers influence ecosystems, and (4) developing and disseminating best practices and tools. To these ends, the center would undertake research and development that covers the variety of water contexts across the nation—including the Great Lakes region—and focus both on creating technical solutions to regional problems, as well as on governance analyses related to more effective water use and restoration strategies.

In this way, the federal government could advance the water innovations needed to solve national and global challenges—and help the Great Lakes region secure and grow their toehold in a burgeoning industry area.

See: Burton, G. Allen and others. 2010. "Leveraging the Great Lakes Region's Water Assets for Economic Growth." Washington: Brookings Institution

Venture Capital Fund of Funds: Recent trends reveal major changes in the U.S. innovation ecosystem. Firms are outsourcing their innovation needs to smaller firms and universities through technology alliances and acquisitions, which in turn rely on private venture capital to commercialize new technologies.[81] Meanwhile, venture capital investments are declining, in particular in seed and pre-revenue companies. As noted earlier, these investments are particularly lacking in the Great Lakes region, thwarting its ability to translate disruptive technologies and services into the high value firms, products, and services that, as the recession recedes, will define the next economy.

Public-Private Partnership Models: Turning New Innovations into New Businesses

In Detroit, **the New Economy Initiative for Southeast Michigan (NEI)** has marshaled $100 million from ten regional and national foundations to strategically support new economic development. One of their centerpiece initiatives is building an entrepreneur and new business "hothouse" at **Techtown** on the Wayne State University campus, where the Kauffman Foundation's FastTRAC program is helping dislocated auto "talent" to become entrepreneurs, Shorebank is financing new firms, and Kauffman's Urban Entrepreneur Training Program and Bizdom University are preparing the new gazelle entrepreneurs of the future. See: http://neweconomyinitiative.cfsem.org/

In Northeast Ohio, the **Fund for Our Economic Future** has aligned **over 60 regional philanthropies** across a 16-county the cities of Akron, Canton, Cleveland, Mansfield and Youngstown. The fund is investing hundreds of millions of dollars to develop new firms, help existing firms in auto supply and manufacturing retool, and expand businesses in the areas of clean energy (including wind and solar), industrial design, logistics, and biomedical research. Their successes include the creation of **JumpStart,** an entrepreneur training and support organization, and **BioEnterprise Cleveland** which, in partnership with the Cleveland Clinic and Case Western University, is attracting national venture capital dollars to commercialize and develop new firms from the metro's rich bio-medical innovation base. See www.futurefundneo.org/

The Great Lakes region has several of the key prerequisites for successful venture investing—including the capacity to create innovative products and services that can become investable deals, a knowledgeable investor community, and a growing support structure that can help lower investor risks and costs. But concerted, collaborative actions by a range of state and metro stakeholders are needed to create and sustain a virtuous cycle of venture investment, entrepreneurship, and firm growth in the region.

The private sector, for its part, should create a Great Lakes 21st Century Fund, a $1 billion to $2 billion fund of funds that would invest in early stage venture capital funds operating in and focused on the Great Lakes region.[82] The work of this new venture institution should be complemented by parallel efforts from variety of private and public stakeholders—including federal, state, and local government leaders, research institutions, the philanthropic sector, and catalytic enterprises like JumpStart Cleveland and Techtown Detroit—operating alongside the investor community to create a vigorous support system for business development and growth. These actors should not only play a direct role in growing and sustaining venture investment, but also in supporting the research and development, talent generation, and entrepreneurial activities needed to create profitable deals. Such a two-pronged strategy would help leverage the region's substantial resources and promising opportunities for venture capital investing, and in turn help the region grow, and retain, the new businesses and jobs it needs to ensure a more prosperous and secure future. [83]

Reimagine Metros' Form and Governance Structures

The Great Recession and the fiscal meltdown of states and localities are pushing leaders across the nation to reevaluate existing spending regimes, and begin to implement reforms that will either save money or yield better outcomes for money spent. Investing in economy-building assets and creating and capitalizing new types of economy-building institutions must be part of this process. But the successful transition to the next economy demands that these efforts be accompanied by a marked change in the form and governance of the nation's cities and metropolitan areas.

The imperatives for a new metropolis will vary depending on the kind of economy and history a particular region has, and the unique challenges and strengths they have engendered. Metropolitan areas like Indianapolis, for example, need to focus on efforts to integrate transportation, housing, land use, and economic development in ways that efficiently and sustainably manage their strong population gains—and the pressures that come with them. Older industrial metros in the Great Lakes region, by contrast, must put their energies into overhauling both their physical redevelopment strategies and local governance structures so that they set the right vision and conditions for market growth and innovation in the face of what have been steep population and economic declines. These efforts should center on three areas:

Right-Sizing Communities: For the many older industrial cities in the Great Lakes grappling with severe population and job loss, the move to the next economy will require a dramatic reshaping and repurposing of their surplus land.

Several Great Lakes cities, including Cleveland, Detroit, Flint, and Youngstown, are now openly acknowledging that they are, and will continue to be, far smaller communities than they once were, and are developing and implementing innovative strategies for reimagining their landscape to reflect that reality. Their efforts are based on the recognition that a large surplus of land and buildings undermines their residential and commercial real estate markets, reduces their tax base, and diminishes their ability to attract and retain skilled workers and new firms—and that preserving neighborhoods where market activity is still taking place, while preparing vacant land in other areas for new uses, is thus critical to keeping and attracting residents and jobs. In this way, these cities are seeing urban land as a key asset for curbing wasteful, inefficient land use patterns, maximizing their built and natural assets, and ultimately spurring economic growth—a paradigm shift in thinking that other similarly situated communities in the region need to embrace.

Unfortunately, these and other distressed cities don't have the manpower, resources, nor all the expertise needed to effectively develop and implement bold, actionable plans, coordinate efforts both within and across local jurisdictions, and undertake the essential short- and long-term activities—such as demolition, acquisition and assembly (including land bank capitalization), or brownfields remediation—that would help set the stage for sustainable re-use and redevelopment. Meanwhile, various policy barriers restrict their ability to utilize available federal and state resources in ways that best allow them to meet their local needs.

State governments have a powerful interest in helping their cities rethink and remake their physical footprint, and make the most of the economic assets that still exist within their borders—healthy, productive cities can only (and significantly) benefit their states' economies. To this end, states need to provide their cities and metros with tools that can help them become, stronger—if smaller—communities.

The ability to establish a land bank is one of those key tools. A land bank allows localities to exercise some control over their land—helping them to take vacant and abandoned properties, particularly tax foreclosed properties, into public control, and to build the capacity to hold, manage, and dispose of that inventory in ways that are consistent with the public welfare, sensitive to variations in market conditions, and that address their long-term land use and economic development goals.[84] Great Lakes states should follow the lead of Michigan and Ohio, both of which have statutes that enable their counties to establish land banks. The Genesee County Land Bank Authority in Flint, Michigan, has for years been demonstrating that a well-run land bank entity can not only improve the community's quality of life through blight removal and redevelopment, but bestow fiscal benefits to the city and county not provided by land and buildings that are held indefinitely by speculators.[85]

States should also help provide cities and metros the tools they need to make smart, strategic decisions about how to allocate their resources and investments in ways that maximize their existing economic assets. While states may not now have new resources to assist older localities with developing new comprehensive plans and zoning ordinances, they can help encourage their development by prioritizing state funding to jurisdictions that adopt them. By linking state resources to effective local strategies, states can spur collaboration between older cities and neighboring jurisdictions that share the same land market challenges, or encourage strategic property redevelopment approaches linked to larger economic development planning, rather than simply support distinct, unrelated transactions.[86] Further, states can, at little cost, partner with universities to help local governments and their partners have access to the best available data to support smart planning and decision-making, including up-to-date economic and housing market data at the neighborhood or census tract level.[87]

The federal government could also play a role in helping foster planning and innovative strategies around land reconfiguration, potentially through a competitive grant program targeted in whole or part to communities with substantial population loss and large inventories of vacant properties. The Community Regeneration Sustainability and Innovations Act (CRSI) (2009) now pending in Congress would effectively address this goal, by supporting the development of strategic regeneration plans and demonstration vacant property renewal activities (such as land banking and greening strategies) in cities that meet distress or population loss criteria.

***Green Development and Infrastructure*:** Older industrial metros in the Great Lakes region can become low carbon leaders in the next economy by re-envisioning themselves as sites for experimentation and innovation in green development and 21st

century infrastructure. Using institutions like the infrastructure bank described above, and new urban landbanks, Great Lakes metropolitan areas can turn the tough legacy of the past into an opportunity for the future by creating a cutting edge model of urban development, whereby they become the greenest cities in the country, and places where ambitious experiments in urbanism can occur.

The design of comprehensive right-sizing strategies, for example, offers a valuable opportunity to incorporate strategies for green reuse of surplus urban land, including ecosystem restoration, stormwater management, and urban agriculture. These and other types of novel urban greening strategies are presented, many for the first time, in "Re-Imagining a More Sustainable Cleveland," a plan (now undergoing its second iteration) for repositioning the city's vacant and abandoned properties for economic and environmental opportunities. This document offers a variety of sustainable alternatives for recycling land, including development of green infrastructure and creation of productive landscapes through agriculture and alternative energy generation. Dozens of grassroots neighborhood groups, churches, schools and individuals from around the city are now engaged in public- and privately-funded pilot demonstration to carry out vacant land reclamation projects presented in the plan, ranging from single lot side yard expansions, native plant pocket parks, and permeable parking lots to agriculture projects such as community gardens, orchards, and multi-acre market gardens.[88]

The use of vacant land as green infrastructure for stormwater management can be especially beneficial, particularly if it can substitute for costly expenditures to separate outmoded storm and sanitary sewer systems**,** a major issue in many Great Lakes communities. Metropolitan leaders should look to cities like Grand Rapids and Milwaukee for progressive models of such infrastructure. The Milwaukee Metropolitan Sewerage District has initiated a number of green stormwater management projects and a public education campaign centered on reducing runoff and pollution. Its Greenseams program, for instance, makes voluntary purchases of undeveloped, privately owned properties in and open space along streams, shorelines and wetlands to prevent flooding and sustainably manage storm runoff.[89]

Public-Private Partnership Model: Becoming a Green Leader

Aided by local philanthropy such as the Frey Foundation, **Grand Rapids** is leveraging their location on the Grand River, near Lake Michigan, to become a **leader in smart water use and technology development.** The city has the highest number of "green" buildings per capita of any city in the country—driven, according to Mayor George Heartwell, largely by water conservation measures—and infrastructure, esplanades, and events organized along the Grand River in downtown Grand Rapids are aiding the cities downtown renaissance. Regional philanthropy has helped fund path-breaking watershed management organizations for the Grand Rapids region, as well as projects to preserve wetlands and open space, protect watershed game habitats, reduce runoff, and improve water quality. In addition, Grand Valley University has created a water research center of excellence, the **Annis Water Resources Institute (AWRI).** The Institute was launched with support from the Annis Foundation, a multidisciplinary research organization to solve water management problems and develop new water technology solutions.

***Governance Reform*:** The metropolitan areas of the Great Lakes are governed by a byzantine network of cities, counties, towns, townships, villages, school boards, fire districts, library districts, workforce boards, industrial development authorities, water and sewer districts and a host of other entities. Indiana has 3086 local governments, for example, including 117 cities, 451 towns, and 1008 townships; Ohio has 3,800. The result is a profound mismatch between the metro-scaled economy in which firms and workers actually operate and the local-scaled geography in which the policies that impact them are made and implemented.

Such fragmented systems of governance have high economic, fiscal, environmental, and social costs:

- They keep governments weak, with limited tax bases and high, often duplicative, administrative structures and costs
- They exacerbate sprawl and decentralization, with declining cores and rampant edge development—even when overall growth is slow or nonexistent
- They facilitate segregation by race, class, and ethnicity, with decentralization creating concentrated poverty and a spatial mismatch between jobs and workers
- And they exert a negative impact on long-term regional economic performance, with jurisdictions spending their time competing for firms, talent, and resources—including from the federal government—rather than working together to compete in the world economy.

This last point is exacerbated by the fact that state programs and policies often have their own mish mash of geographies they serve, with different agencies and divisions using different maps for planning and resource allocation. This not only discourages regional coordination efforts, but can force local municipalities to compete against one another for state funding.

These antiquated governance structures and systems make it exceedingly difficult for older industrial communities to act with common strategy and purpose to overcome shared challenges and maximize their next economy assets. In fact, competing "tiny-box" jurisdictions rarely have a unified economic development vision or plan that comports with the reality of their metropolitan-based economy—undermining their ability to develop strong clusters, for example, or to leverage the regional economic benefits that the energy research and innovation centers proposed here might yield.

To compete successfully in the next economy, state and local leaders—from all sectors—need to work together to reduce the barriers caused by too many governments with too many competing priorities:

First, states need to work toward consolidating units of local governments, starting with school districts and special-purpose authorities—with an eye toward merging towns, townships, and other jurisdictions when it makes good sense to do so. Most importantly, metropolitan areas need to begin speaking with a unified voice on economic development, and design and implement a unified strategy: The competition

today is between U.S. metros and metropolitan areas in nations across the globe, not between dozens of little jurisdictions within them.

Second, local jurisdictions need to collaborate better and share services. In Northeast Ohio, for example, more than 20 public and private sector organizations have submitted a joint application for a multi-million dollar regional planning grant under the federal government's new Sustainable Communities Regional Planning initiative.[90] In Chicago, a metropolitan mayors caucus, formed over a decade ago by Mayor Richard Daley, still meets regularly to develop consensus on shared, cross-border challenges such as air quality, transportation funding, and workforce development. States should establish mechanisms for disseminating, and incentivizing, these kinds of innovations in other jurisdictions.

The time for isolated, piecemeal efforts—at all levels—is long past. The federal government and the Great Lakes region—cities and suburbs, metros and states—need to move together in order to move forward.

V. Conclusion

If there is any sort of silver lining in the dark cloud of the Great Recession, it's the opportunity it has presented the country to reevaluate our economic paradigm, and re-focus our national economic strategy on building the foundations for lasting economic growth. For all the heated discussions these days about the best way to pull the nation out of its economic doldrums, there is no arguing with the fact that the domestic consumption model that has dominated our economy the past several decades has exhausted itself, and a new one must replace it.

We've been through such upheavals before, during the Industrial Revolution of the 19th Century and the long recovery from the Great Depression. The demands of rapid, fundamental change were met then with innovative thinking, risk-taking, and investment aimed at creating a better future—not re-creating an untenable past. Our future security, in the broadest sense of that term, depends on how we rise to this latest challenge. It will require that we invest in the metropolitan assets that will characterize the next economy, and that we create new institutions and new communities that reflect its imperatives. This is how we will renew America's leadership not only as an economic power, but also as the source of new ideas that will define the remainder of this century.

The bridge between past and future could be built in the Great Lakes region. Engines of the economy through much of the 20th century, its metros grew and thrived with a powerful combination of private innovation and investment and large scale public support for infrastructure, research, education, and other foundational elements. Today's public and private sector leaders should together marshal the assets and strengths created and nurtured during that era—top-ranked universities, companies with deep experience in global trade, and emerging centers of clean energy research to name just a few—to help facilitate the kind of growth that will not only bring about a healthy recovery, but make the nation strong and prosperous over the long-term. Doing so will give the region a chance to create a new and improved narrative about itself, one based on not on how it failed to adapt to the economy we just left behind, but on the important role it will play in the one that is to come.

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[80] Ibid.
[81] Dr Erica Fuchs, "ITIF Breakfast Forum: Does DARPA Still Effectively Spur U.S. Technological Innovation?" October 14, 2008, available at http://archive.itif.org/index.php?id=183.
[82] This report uses the same definition of the Great Lakes region as that used in "The Vital Center", the Brookings Institution report that presented its Great Lakes Economic Initiative. The region includes Minnesota, Wisconsin, Iowa, Missouri, Illinois, Indiana, Michigan, Kentucky, West Virginia, western Pennsylvania and western New York.
[83] See Samuel, "Turning Up the Heat."
[84] Alan Mallach and Lavea Brachman, "Ohio's Cities at a Turning Point: Finding the Way Forward" (Washington: Brookings Institution, 2010).
[85] Ibid.
[86] Ibid.
[87] Case Western Reserve University's NEO-CANDO (Northeast Ohio Community and Neighborhood Data for Organizing) data system, is an example of the power of such information: Developed as an "early warning system" for targeted foreclosure outreach, the system has become a national model for helping to improve planning and targeting of community development resources. Using a wide range of data sources and datasets, including foreclosure filings, recorded sheriff's deeds, scheduled sheriff sales,

water shut-offs, code enforcement reports, and building data, NEO CANDO's neighborhood data system provides an "early warning system" for at-risk vacant and abandoned properties on a parcel by parcel basis for a 17-county region. See http://neocando.case.edu.
[88] See http://reimaginingcleveland.org/
[89] See http://v3.mmsd.com/
[90] "Region Unites to Pursue Federal Dollars," available at: www.theplus.us/Advance/2010/August/Region-Unites-to-Pursue-Federal-Dollars.aspx

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