

# Executive Summary

In the decades ahead, the Midwest will have to grapple with the fundamental and interconnected issues of climate change, maintaining competitiveness in an increasingly globalized economy, and improving energy security. Despite growing support for action—particularly on the issue of climate change—the path forward is far from clear. The overall challenge has been vastly complicated by the current global financial crisis, which has relieved upward pressure on energy demand and prices in the near term, but also poses grave threats to U.S. and world prosperity. The crisis can be expected to shape the political and economic context for energy policy decisions in profound but as yet unpredictable ways for some time to come.

The Task Force on National Energy Policy and Midwestern Regional Competitiveness was convened in May 2008 by The Chicago Council on Global Affairs. Comprised of thirty-two experts and stakeholders, it has sought to bring a Midwest perspective to the ongoing national debate on climate and energy policy. Because the region is a major energy consumer and greenhouse gas emitter, climate and energy legislation will have a dramatic impact on its economy. To manage these impacts while simultaneously revitalizing the region's economy, state governments and other organizations and institutions throughout the Midwest will have to be more proactive and coordinate more effectively than they have in the past. The work of the Task Force is a step in this direction.

## Key Task Force Findings

### **1. The Midwest can and must turn the challenge of changing energy and climate policy to its economic advantage.**

The Midwest comes to the national energy debate with a unique combination of advantages and disadvantages. With 22 percent of the nation's population, the region's twelve states account for more than one-quarter (29 percent) of national greenhouse gas emissions and roughly 4 to 5 percent of global greenhouse gas emissions. The overall carbon intensity of the Midwest economy is higher than the national average, in part because of the region's substantial reliance on coal. This could mean disproportionate near-term costs under a national policy to limit greenhouse gas emissions. Given the importance of its manufacturing sector, the Midwest could be especially

vulnerable to trade impacts and competitive disadvantages as a result of higher energy prices. At the same time, the region has substantial opportunities to improve energy efficiency and to deploy its strong manufacturing base; an experienced, skilled work force; distinctive research universities; and innovative technology companies in the transition to a low-carbon economy.

Realizing these opportunities requires predictable incentives, a predictable and transparent cost of carbon, and reliable rules of investment so that the private sector can make appropriate long-term investment decisions. Second, it requires well-regulated markets and policies designed to ensure that the nation and region capture the lowest-cost opportunities first. Finally, government stimulus and support must be targeted to those low-carbon solutions that would not achieve economic viability in the necessary time frame without a public partner to help overcome otherwise prohibitive up-front development costs or risks. There is no single technological answer to the nation's climate or energy security concerns, and policymakers must not prejudge winners and losers.

## **2. Prompt enactment of national climate change legislation is essential to the Midwest's future prosperity and competitiveness.**

As important as predictability is the need to get started without further delay on the technologies and investments that will be required to address the long-term challenges we face. A coherent national policy is needed because no state or region by itself can mount a sufficient response to global problems like climate change and oil dependence. We must rectify a national approach to energy policy that for more than thirty years has consisted of a patchwork of short-term responses—usually prompted by an equally short-lived perception of crisis.

## **3. Regional and local action is likewise essential.**

Federal action is essential, but the Midwest cannot afford to wait for it. Individual states and the broader region must begin moving forward on a number of fronts. These include maximizing the energy efficiency of buildings, industries, and transportation systems; modernizing outdated infrastructure; developing new energy technologies; engaging the region's universities in leading-edge energy research and innovation; addressing critical workforce issues; and improving regional coordination and cross-jurisdictional decision-

making processes. All of these are things the Midwest can and must do to save jobs and sustain a vibrant economy well into the twenty-first century.

#### **4. Addressing carbon emissions will not be cheap.**

Addressing climate and future energy security will require coordinated action across every sector of our economy. An analysis of the cost of different greenhouse gas abatement options in the Midwest shows that while energy efficiency and emission offsets offer relatively low-cost alternatives, substantial long-term investments in new energy supply and end-use technologies will be essential.

### **Energy Efficiency, Emissions Offsets, and Low-Carbon Supply Technologies**

To inform its assessment of the challenges that confront the Midwest and provide a fact base for its recommendations, the Task Force commissioned a new region-specific analysis of carbon abatement options and their costs. The Task Force also consulted a number of existing sources and recognized experts in different fields. The region-specific analysis was conducted by McKinsey & Company and produced a detailed cost curve comparing different carbon dioxide abatement options. The cost curve shows the full range of emission reduction actions that are possible with technologies that either are available today or offer a high degree of certainty about their potential within a 2020 time horizon.

Based on the cost-curve analysis and input from other sources, the Task Force focused on energy efficiency, emissions offsets, and low-carbon supply technologies as three critical areas for advancing regional goals with respect to climate change, the economy, and energy security. A full list of our specific recommendations in each of these areas may be found on pages 10 through 16, immediately following this summary. A few key points from the discussion are highlighted below.

#### **Energy Efficiency**

Energy efficiency improvements offer the most cost-effective, near-term options for reducing greenhouse gas emissions in the Midwest. Efficiency improvements also provide a variety of other important benefits. These include reducing other kinds of pollution, reducing

costs and improving productivity, mitigating the economy's exposure to high and volatile energy prices, enhancing grid reliability, and keeping resources that would otherwise go to purchase imported fuels, like oil, inside the region. Capturing these opportunities will require up-front investment, but can greatly reduce the long-term costs of achieving substantial greenhouse gas reductions.

Policy options for improving energy efficiency include standards for appliances, equipment, and vehicles; technology incentives such as tax credits for certain types of efficiency improvements; informational programs such as the federal government's Energy Star and other labeling programs; and utility-sponsored demand management programs. Given the importance of energy efficiency, the Task Force developed specific efficiency recommendations for each of the three chief energy-using sectors of the economy: buildings, transportation, and industry.

### **Emissions Offsets**

Emissions offsets are credits for emission reductions that are achieved at sources or in sectors that are not covered by a mandatory regulatory regime. Offsets have special relevance for the Midwest for at least two reasons: (1) because they are a means of reducing near-term compliance costs under a new greenhouse gas regulatory regime and (2) because the region seems likely to enjoy a comparative advantage as a supplier of domestic agricultural offsets. Offset opportunities in the Midwest include reductions in methane emissions from waste management and feedlot operations and reductions in nitrous oxide emissions from fertilizer applications as well as soil carbon sequestration.

There are compelling economic and environmental reasons to recognize offsets as an alternative compliance mechanism in the context of a mandatory climate program, provided rigorous standards are applied to ensure that credited reductions are real, verifiable, additional, permanent, and enforceable. The challenge for policymakers is to design a robust offsets program that creates effective incentives for capturing these opportunities without undermining either the environmental integrity of the broader effort or incentives for long-term technology investments. The Midwest has a significant head start in this area inasmuch as roughly seven years have already been invested in the development of a full suite of offset protocols, including protocols for agricultural offsets, at the Chicago Climate Exchange. In addition, Midwest universities—several of

which have already been active in this work—can continue to play a key role in advancing scientific understanding and methodological innovations in this area.

### **Low-Carbon Supply Technologies**

Even with aggressive efforts to boost efficiency throughout the Midwest economy and the ability to tap a wider array of abatement options via emissions offsets, realizing the kinds of long-term greenhouse gas reductions targeted in current regional and national proposals will require a substantial push to develop and commercialize new low-carbon energy supply technologies. Though recent years have seen substantial progress in this area, additional low-carbon resources will need to be deployed at lower cost and on a far larger scale to achieve and sustain dramatically lower overall carbon emissions, while reliably meeting society's energy demands over the long term. Thus, an important element of positioning the Midwest for economic prosperity in a carbon-constrained future involves fostering the region's competitive advantage in emerging low-carbon technologies.

The Task Force examined four major categories of low-carbon supply technologies: advanced coal with carbon capture and sequestration, nuclear power, renewable energy (primarily wind), and bio-fuels. Overall, the Task Force concluded that continued efforts to advance all of these technologies are warranted by the important contribution each can make to meeting future energy needs in the context of significant carbon constraints. But the Task Force also recognizes that significant hurdles must be overcome in all cases and that a clear-eyed view of each technology's real-world drawbacks, costs, potential, and development and deployment time frame is crucial to guide sound policymaking and cost-effective investments.

## **Task Force Recommendations**

### **Building Energy Efficiency**

#### *Federal*

- Update and expand appliance and equipment efficiency standards to ensure they capture technically feasible and economically advantageous energy saving opportunities.
- Charge a designated federal agency (such as the Department of Energy (DOE) or the Environmental Protection Agency (EPA) with (a) establishing national targets for improved building energy efficiency and (b) developing strategies and demonstrating progress toward those targets. The EPA has already developed some tools for comparing efficiency across different building types and climate zones that could be helpful in implementing this and other policies in this section.
- Emphasize efficiency investments and building retrofits in federal energy legislation, climate legislation, or future economic stimulus plans; consider making efficiency performance part of the criteria used to determine eligibility of projects for federal funding as part of that package.
- Extend and expand federal tax credits for building efficiency improvements for both residential and commercial buildings.
- Consider other federal incentives for promoting efficiency upgrades—or at least information disclosure—at the point of sale, especially in the case of federally subsidized mortgages.
- Provide federal funding for state and local programs to train workers to implement efficiency improvements.
- Support research and development (R&D) on new efficiency technologies.
- Support increased funding for the Weatherization Assistance Program to improve the efficiency of low-income homes.

### *State/Regional*

- Develop and promote a regional model for state-of-the-art building codes and appliance standards (for products not preempted by federal standards). The Midwestern Governors Association could play a lead role. Update and expand appliance and equipment efficiency standards.
- Consider new incentives and foster innovation in city- or university-scale programs to promote efficiency upgrades in existing buildings. One strategy may be to target incentives to specific windows of opportunity such as the point of sale for an existing building. Other opportunities exist when building owners undertake major repairs, renovations, or facility expansions (see University of Iowa Flood Recovery, page 45). Innovative policies can also be used to promote improvement above minimum standards, e.g., expedited siting and permit approval for projects that meet aggressive efficiency targets such as LEED certification (see LEED-Certified Renovation of Exelon Headquarters, page 44).
- Ensure that government retraining efforts allocate sufficient funding for developing the talent necessary to achieve the efficiency targets.
- Address workforce training needs to expand in-region expertise and capacity for designing and implementing efficiency improvements and enforcing codes and standards.
- Consider regulatory reforms to increase utility incentives for investment in customer-side efficiency programs.
- Encourage additional financing mechanisms for leveraging energy efficiency opportunities such as energy services companies (ESCOs).

### **Transportation Energy Efficiency**

#### *Federal*

- Extend and expand tax credits for consumers to purchase advanced technology vehicles.

- Provide increased funding for advanced battery research and development.
- Create a market for advanced technology vehicles by implementing strong fleet requirements for the federal fleet.
- Provide increased funding to upgrade regional rail systems, including relieving freight rail congestion in the Chicago area.

### *State/Regional*

- Invest in regional improvements to the high-speed rail network.
- Draw on in-region resources, both universities and the domestic auto industry, to make the Midwest region a national center for advanced vehicle technologies, including plug-in hybrid (PHEV) and battery electric vehicle technology. Begin planning for and investing in the grid and infrastructure improvements necessary to support these technologies in a way that maximizes potential benefits.
- Undertake regional planning for transit and economic development that incorporates integrated land use, transit funding, and new mechanisms designed to better align private incentives with public objectives (examples include user fees and congestion pricing).

## **Industrial Energy Efficiency**

### *Federal*

- Deploy tax policy to promote industrial energy efficiency (e.g., investment tax credits or accelerated depreciation).
- Level the playing field of subsidies/incentives to treat all low-carbon alternatives equally (i.e., not just renewables like wind, but also energy efficiency and combined heat and power [CHP]).
- Provide federal funding for workforce training and skill building to take advantage of opportunities in energy management and advanced energy technologies.

- Modernize all regulatory, tax, and other policies to remove barriers to efficiency and enable efficiency investments to capture more of the value they create.
- Seek effective solutions to concerns about competitiveness in energy-intensive domestic industries in the design of national and international climate policies. For example, the United States should work through multilateral institutions to develop rules for international trade that can accommodate differences in national-level climate policies.

#### *State/Regional*

- Marshal regional resources in combination with federal funding to provide workforce training and skill building.
- Focus on capturing efficiency opportunities in key Midwest industries such as food processing, chemicals, fabricated metals, machinery, and other manufacturing.

### **Emissions Offsets**

#### *Federal*

- Enable use of emission offsets as an alternative compliance mechanism in any mandatory national program to limit greenhouse gas emissions.
- Enforce rigorous regulation and verification requirements to ensure that credited project benefits are truly additional, verifiable, permanent, and enforceable.
- Support research efforts at universities, national laboratories, and research centers to identify domestic sources of offsets that meet these criteria, especially in the agriculture sector.

#### *State/Regional*

- Build a regional center of expertise in offset identification, verification, management, and trading leveraging the Midwest's historic human capital strengths in commodities, futures and options, agriculture, and business services. Such a center could

combine the best of our private-sector institutions with the strength of Midwest universities and key public sector agencies, leading to further growth opportunities in this area.

- Support efforts by universities and other institutions in the region to obtain public and private funding for research in innovative offset opportunities such as improved verification protocols.

## **Low-Carbon Supply Technologies**

### *Federal*

- Ensure that the market rewards innovations that reduce emissions. This is the most effective way to advance low-carbon technology. Thus, a federal policy that establishes a market price on carbon is the essential foundation for other programs and incentives to spur carbon reductions and promote climate-friendly technologies. Either a carbon tax or a cap-and-trade program could achieve this important objective. Each has advantages and disadvantages, but both have the effect of providing a tangible market incentive for developing and adopting low-carbon technologies.
- Emphasize well-designed, performance-based (rather than technology-specific) deployment incentives for technologies that have been (or are ready to be) successfully commercialized. Incentive programs should also provide greater consistency and temporal stability to avoid the boom/bust effect that uncertainty about the federal production tax credit has had on the wind and solar industries. This does not mean that some technologies should get perpetual incentives. Rather, public support should decline as technologies become commercially viable. But since investors need predictability, information about changes in incentives should be known in advance. Finally, because it is impossible to predict the path of technological innovation, programs must be open to new technologies, even if they were not originally anticipated. One of the advantages of performance-based policies is that they have the natural flexibility to accommodate new technologies.
- Provide longer-term clarity about future incentives so that investors have enough confidence to move forward with new

technologies. The recent three-year extension of the renewable production tax credit adopted as part of the economic stimulus package was a step in the right direction, but predictability will continue to be important going forward.

- Provide sufficient loan volume under the loan guarantee provisions for low- and zero-emitting technologies included in Title XVII of the Energy Policy Act of 2005. The current cap allows for the development of at most two or three new nuclear plants. In addition, Congress must continue to appropriate and DOE must more efficiently deliver funds for programs that have already been authorized under existing legislation.
- Provide funding for basic scientific R&D to advance technologies that are still in the experimental phase. Much of this R&D has historically been conducted or coordinated through the DOE national laboratories.
- Provide public support in the form of direct cost, risk, and/or equity sharing for first-mover and demonstration projects for technologies that are at the precommercial stage (e.g., coal integrated gasification combined-cycle [IGCC] with carbon capture and sequestration [CCS]). In choosing projects, the government inevitably has to focus on specific technologies and make judgment calls about which technologies and projects merit public support. To improve on the past record, these choices should be based to the greatest extent possible on objective assessments of potential payoffs and likelihood of success.
- Commit to partnering with the private sector to provide the necessary cost- and risk-sharing support to implement a minimum number of demonstration plants for key technologies like CCS and nuclear. Even generous authorizations for such efforts will be meaningless unless Congress follows through with adequate appropriations.

### *State/Regional*

- Rationalize state or regional policies to promote the deployment of technologies that are commercial or close to commercial to focus on desired outcomes (e.g., carbon reductions).

- Foster innovation across the Midwest's university system to drive technological advances and successful commercial applications in critical renewable energy areas. In particular, increased collaboration between Midwest universities, research institutions, and the private sector would enhance the region's ability to win a share of federal R&D resources and to establish itself as a world leader in the development of new low-carbon technologies.
- Work across jurisdictions and regulatory agencies and with the federal government and private sector to develop risk-sharing approaches that open the door to the financing of new technologies and first-mover projects. Financing is a critical barrier for many new technologies as they advance to the demonstration/precommercial stage.