

# M I D W E S T E R N E N E R G Y S E C U R I T Y A N D C L I M A T E S T E W A R D S H I P R O A D M A P

2009



ADVISORY GROUP  
RECOMMENDATIONS

EXECUTIVE SUMMARY

# Executive Summary

---

This *Energy Security and Climate Stewardship Roadmap: Advisory Group Recommendations* (Energy Roadmap) outlines strategies for capturing the enormous opportunity for the Midwest to build on its historic strengths and reclaim its position as a manufacturing powerhouse and a place of innovation and meaningful work. We have the opportunity to improve and expand our region's electric grid, reduce our dependence on foreign oil, and mitigate environmental impacts of conventional energy sources. The recommendations found in this document represent nothing short of a new industrial revolution that will reshape this century and beyond. The Midwest has the human, intellectual and natural capital to lead this new economy.

Still, the challenges we face are real. The Midwest is a major producer of agricultural, forestry, and energy-intensive industrial products, and is therefore highly vulnerable to the volatility of petroleum prices characterizing oil markets over the last few years. Its reliance on electricity generated from conventional coal-fired plants also makes it very CO<sub>2</sub>-intensive in its overall emissions profile at a time when the world is transitioning to a low-carbon energy economy. The Midwest faces the challenge of how to sustain its dynamic industrial, manufacturing and agricultural economy, while lessening its dependence on energy imported from overseas and increasing its climate stewardship.

The high energy intensity of the Midwest has emerged naturally from the long-term availability of low-cost coal and oil in the region and the fact that the Midwest has been and remains a manufacturing and agricultural center that produces goods and grows commodities for a much larger North American and world market. The region's economic growth and energy security now depend on rapidly accelerating the deployment of cost-effective ways to use the current energy supply more efficiently, diversify energy sources, and lower the carbon intensity of the region's traditional fossil energy supply.

These ambitious objectives require a multi-pronged policy strategy that changes incentives for both energy supply and demand in multiple sectors. The sectors in the Midwest with the highest greenhouse gas (GHG) emissions are electric generation, transportation, and industrial energy use, in that order. Approximately 72 percent of the electricity generated in the region is from coal; that electricity supports local commercial, residential and industrial end-use, as well as wholesale markets in the eastern United States.<sup>1</sup> The transportation sector is responsible for the highest GHG emissions of any end-use sector in the region, with the majority of those emissions from gasoline combustion in passenger cars. Both sectors continue to generate increasing emissions due to regional population growth, and, in the case of transportation, increased energy demand per person. Emissions from the industrial sector, on the other hand, are declining, in part due to a contraction of the manufacturing sector itself, but in part due to improved efficiencies and to the use of less GHG-intensive fuels in that sector.<sup>2</sup>

Smoothly transitioning to a fundamentally new, lower-carbon energy economy in the region will require a commitment for:

- Immediate adoption of policies capitalizing on existing low-cost, low-carbon opportunities such as energy efficiency measures in multiple sectors;
- Modifications of the existing regulatory framework for energy supply to remove disincentives for reduced energy use;

<sup>1</sup> Climate Analysis Indicators Tool (CAIT US) Version 3.0. (Washington, DC: World Resources Institute, 2009).

<sup>2</sup> Larsen, John, Thomas Damassa, Ryan Levinson, "Charting the Midwest: An Inventory and Analysis of Greenhouse Gas Emissions in America's Heartland" World Resources Institute, 2007.

- Establishment of a stable regulatory environment for development of renewable energy, the regional transmission infrastructure needed to bring it to market, and advanced technologies such as carbon capture and storage;
- Adoption of additional market policies to expedite research, development and commercialization of existing and advanced renewable and fossil energy technologies; and
- Large-scale investment in the human capital necessary for an advanced energy economy to thrive, including consumer education, workforce and regulator training, and technical assistance for business interests and entrepreneurs.

A transition of this magnitude cannot happen overnight. Logistical, technical and cost obstacles persist for many promising zero- and low-carbon renewable and fossil energy technologies. Aggressive commercial deployment of a host of new advanced technologies will require development of necessary legal and regulatory frameworks, together with public funding and incentives to reduce the financial risk incurred by early innovators deploying new technologies in a commercial setting. While the full potential of many advanced technologies will not be available in the near term, current policy decisions are critical to establishing a foundation for industry development and to providing the support and incentives needed to accelerate the pace at which such technologies move forward.

The governor-appointed advisory groups responsible for developing this Energy Roadmap were asked to identify the highest-priority next steps that states and provinces should take in order to help achieve the MGA's energy targets. The advisory groups have deemed the following 16 recommendations as the most critical in the near term. However, the full Energy Roadmap contains a larger number of important actions that the advisory groups urge Midwestern jurisdictions to take to secure their energy future, accelerate the transition to low-carbon energy technologies, and stimulate manufacturing and job growth.

## ENERGY EFFICIENCY

Energy efficiency technologies are often cited as the most cost-effective and easily deployed method of reducing energy demand and GHG emissions and lowering energy prices. There are underutilized energy options available today that can have a substantial and immediate impact on energy demand and emissions.

### **A. Priority Recommendation: Require Utility Energy Efficiency Savings**

**Require retail energy providers to make energy efficiency a priority in order to meet a region-wide energy efficiency standard of 2 percent annual savings for electric utilities and 1.5 percent annual reductions for natural-gas utilities. Energy efficiency standards should be applied consistently to investor-owned, cooperative and municipal utilities, while recognizing regulatory and other differences in customers served and service territories, making appropriate adjustments to individual goals.**

*The Energy Security and Climate Stewardship Platform for the Midwest* (Energy Platform) includes a commitment to “meet at least 2 percent of regional annual retail sales of natural gas and electricity through energy efficiency improvements by 2015, and continue to achieve an additional 2 percent in efficiency improvements every year thereafter.” A review of studies of energy efficiency resource potential in the region found this to be an aggressive but supportable goal for electricity given the range of mitigation options available.

All MGA jurisdictions should carry out an assessment of their energy efficiency potential. Retail energy providers are in a good position to drive energy efficiency across their customer bases, and several states and provinces have already been actively involved in developing energy efficiency programs through their energy providers. Iowa, Minnesota and Wisconsin have established programs that are among the most ambitious in the nation and that provide many examples of award-winning efficiency programs. Illinois, Iowa, Michigan, Minnesota, Ohio and Wisconsin all have policies or regulatory proceedings under way to ramp up to achieve energy savings between 1 and 2 percent. South Dakota recently included energy efficiency as an eligible activity in new renewable energy standards or objectives. In addition, Manitoba Hydro has Power Smart programs that provide energy efficiency assistance to Manitoba's residential, commercial and industrial customers, with resulting savings of over \$36 million annually on electricity and natural-gas bills.<sup>4</sup>

### **B. Priority Recommendation: Reward Utility Energy Efficiency Investments**

**Implement changes in regulatory practices and rate designs to remove financial disincentives and provide appropriate incentives for prudent expenditures on energy efficiency by regulated utilities, including providing cost recovery for energy efficiency programs and services and providing new opportunities for utility earnings associated with the successful achievement of energy efficiency goals.**

Regulatory practices and rate designs can result in barriers to efficiency investments. Jurisdictions should examine their regulatory frameworks to identify the changes needed to provide appropriate incentives for prudent expenditures in energy efficiency by regulated utilities. This policy recommendation develops the next generation of utility regulatory practices, and as such is key to successfully implementing all other energy efficiency policy options.

Efforts by the federal government to strengthen efficiency standards for appliances have been historically slow to evolve and do not cover many common energy-using household devices. Where allowed, MGA states should set the stage for the federal government to act by adopting standards for appliances and equipment that go beyond federal law and cover types of appliances and equipment not currently covered by federal law. An analysis performed for the MGA by the Center for Climate Strategies suggests that strengthened appliance standards for televisions alone could save more than 14 million megawatt-hours (MWh) in the Midwest region by 2025 — more than enough to power North Dakota or South Dakota for a year at 2007 use rates.

While much of the focus of energy efficiency programs is placed on the instrumental role that utilities play in capturing energy efficiency savings, the role of combined heat and power (CHP), a form of distributed generation, is often overlooked and underutilized. CHP generation involves systems located at or near the point of use that generate a portion of the electricity required at the site and simultaneously utilize system heat, which would otherwise be lost, for heating, cooling or dehumidification. Recognizing the significant efficiency gains associated with using CHP systems, EEAG recommends doubling the installed CHP capacity in the Midwest by 2030. Along with systemwide efficiency gains, CHP has significant GHG reduction potential. Revisions in regulatory policies and procedures, together with recognition of the energy efficiency benefits of CHP, will be required to encourage industry and utilities to expand the utilization of CHP.

### **C. Priority Recommendation: Strengthen Building Codes**

**Adopt residential and commercial building codes that meet or exceed the national model energy codes, with an automatic, statutorily required increase to coincide with the national model code review process.**

Strengthening building energy codes and appliance efficiency standards is also key to improving the efficiency of energy use in the residential and commercial sectors in the Midwest. Where jurisdictions do not have statewide building energy codes, new legislation may be needed. Even where building codes do exist, full compliance is rare. One market-research report estimates that, nationwide, only 80 percent of new projects comply with commercial-code lighting requirements; that number drops to 76 percent when West Coast respondents are excluded.<sup>5</sup> Improving rates of compliance with building codes will require complementary commitments to more-active code enforcement and additional training for code officials, builders, building operators and homeowners. Options for improving the energy performance of rental properties should also be explored through existing codes and ordinances.

The cost savings associated with energy efficiency investments are substantial, and measures of energy efficiency should therefore be visible selling points for a much wider array of products in the region, including homes and rental units. Point-of-sale disclosure programs and greater application and adaptation of certification programs such as Leadership in Energy and Environmental Design (LEED) and ENERGY STAR® would be invaluable tools for increasing returns to energy efficiency investments and encouraging greater voluntary adoption of energy efficiency measures.

### **D. Priority Recommendation: Government Leading by Example**

**Demonstrate public sector leadership in applying energy efficiency technologies by reducing energy consumption in existing and new government buildings by 15 percent by 2015, 20 percent by 2020 and 25 percent by 2025, relative to forecasted levels. Furthermore, 20 percent of all government buildings should be recommissioned and improved to meet or exceed current energy codes by 2015, with an additional 3 percent of buildings improved annually in each subsequent year.**

Many states, along with the federal government, have taken the lead in establishing challenging energy-use reduction goals for state and federal buildings. These programs provide leadership, reduce expenditure of tax dollars over time, and set an example for the private sector. These initiatives also represent opportunities for testing innovative energy-management programs, shared savings contracts, and other technical and programmatic plans that show the private sector how these programs work in an applied setting. These programs often make good business sense for governments to pursue because they reduce energy costs for state and provincial governments. Furthermore, monitoring and tracking those savings in new and retrofitted public buildings is an effective way to demonstrate the payback to the private sector. It also helps to build capacity within the industry to deliver those services long-term.

<sup>5</sup> Zing Communications, 2007. [http://www.aboutlightingcontrols.org/education/pdfs/2007\\_percent20Commercial\\_percent20Energy\\_percent20Code\\_percent20Compliance\\_percent20Study.pdf](http://www.aboutlightingcontrols.org/education/pdfs/2007_percent20Commercial_percent20Energy_percent20Code_percent20Compliance_percent20Study.pdf)

## RENEWABLE ELECTRICITY

While readily available energy efficiency measures represent a cost-effective foundation for the Midwest's lower-carbon energy economy, additional steps will be required to move the region's remaining energy supply away from its historical reliance on GHG-intensive technologies. These steps will be especially critical in the region's two largest carbon-emitting sectors: electricity generation and transportation. Although these sectors rely on distinctly different fuel sources and supply frameworks, they face remarkably similar barriers to adoption of new technologies, including policy, institutional, and marketing obstacles.

The Energy Platform calls for 30 percent of the electricity consumed in the region in 2030 to come from renewable sources. Achieving this ambitious increase over the 2.4 percent renewable electricity generated in 2005 will require the MGA jurisdictions to develop and implement a coordinated regionwide planning process for renewable energy build-out that addresses the wide range of obstacles described above and includes significant commitment to developing the regional electricity transmission necessary to support such renewable energy goals.<sup>6</sup> The objective of the process will be to establish a stable regulatory environment for electricity generation from wind, biomass, hydropower, solar and other renewable sources at the state and provincial level, and to promote similar stability in the federal renewable regulatory structure and in federal incentive programs.

### **E. Priority Recommendation: Enact/Enhance Renewable Energy Standards/Objectives**

**Enact or enhance existing renewable energy standards or objectives so that they are sufficient to ensure that 10 percent of electricity consumed in the region comes from renewable sources by 2015 and 30 percent by 2030.**

Renewable energy standards and objectives already exist in most MGA jurisdictions and are being considered at the federal level as well. Strengthened state-level efforts will likely be required, however, to ensure that the MGA objectives are met. Planning at the regional level will facilitate cooperative achievement of those objectives through improved use of high-potential wind areas and other parts of the Midwest rich in potential for other renewable resources, as well as integrated regional transmission planning that supports a good local/regional plan for renewable electricity generation in the Midwest.

### **F. Priority Recommendation: Support Key Midwest ISO Transmission**

**Support the Midwest ISO's Phase I and II Regional Generator Outlet Study, which outlines the transmission investments needed to meet the Energy Platform goal of 10 percent renewable energy by 2015 and estimates the transmission investment needed for achieving subsequent targets in a coordinated fashion.**

To effectively stimulate development of renewable electricity markets, regulations such as renewable energy standards (RESs) and objectives (REOs) must be accompanied by a host of additional policies and programs designed to overcome existing cost, technical, and infrastructure obstacles to widespread deployment of new electricity technologies. Such requirements include comprehensive siting principles and policies for wind farms, workforce development programs, and streamlined permitting and approval processes for multi-state regional transmission improvements to accommodate energy from nontraditional renewable sources.

In the Midwest, collaborative regional transmission planning and routing will be particularly important for enabling the widespread, near-term development of the region's extensive wind power resource and other opportunities for distributed generation alternatives. The MGA states are estimated to possess wind capacity in excess of 5.7 million MWh, or roughly 53 percent of the nation's onshore wind capacity.<sup>7</sup> Development of that wind resource has been hampered by the fact that existing transmission capacity does not extend into areas of high wind capacity. To address this issue, the Midwest Independent System Operator (Midwest ISO) is conducting a Phase I and II Regional Generator Outlet Study (RGOS) to explore options and costs associated with modifications to the existing transmission grid that will be necessary to enable the Midwest states to meet their total RES and REO targets and potentially provide renewable energy outside the Midwest market as well. This project is working with several of the MGA states to formally recognize high-wind-capacity areas as "renewable energy zones" and to identify the best local and regional options for linking those zones with an integrated regional transmission plan approved by Midwest ISO members.

#### **G. Priority Recommendation: Complete Regional Transmission Cost Allocation Formula**

**Support efforts to deliver a recommended formula for equitable and effective cost allocation in financing regional transmission by December 2009. MGA should continue to coordinate these efforts with Midwest ISO, the Organization of Midwest ISO States' Cost Allocation Recovery Program and the Upper Midwest Transmission Development Initiative.**

#### **H. Priority Recommendation: Increase Capacity to Integrate Wind Energy on the Grid**

**Work with Midwest ISO and other regional transmission operators to ensure further development of additional grid-integration capacity for the region's wind resources through design, demonstration and deployment of engineering and operating strategies for grid management, energy storage and advancement of new-technology demonstration.**

Collaborative regional transmission planning can provide long-term relative cost savings and more-efficient delivery of electricity than jurisdiction-by-jurisdiction approaches by more effectively anticipating needs and avoiding duplication or absence of services. Nevertheless, individual jurisdictions are typically resistant to supporting regional planning and transmission projects beyond those that provide direct benefit to their customers and utilities. An equitable cost-allocation framework is therefore a critical component in developing support, and funding, for regional transmission

<sup>7</sup> Climate Analysis Indicators Tool (CAIT US) Version 3.0. (Washington, DC: World Resources Institute, 2009).<sup>8</sup>

projects. The MGA, together with other regional transmission efforts, is working to develop a proposed cost-allocation formula that equitably distributes some percentage of total costs among Midwest ISO electricity customers, generators and transmission operators.

While transmission capacity is a near-term obstacle to the cost-effective establishment of wind farms and other forms of renewable electricity generation located far from load centers, additional grid issues associated with the variability of wind power arise as wind generation is scaled up. Unless linked to a storage technology, wind energy is generated, and enters the grid, on a variable basis determined by wind conditions. Accommodating this flux in supply requires a sophisticated ability to balance the sources of electricity that are entering the grid and to regulate the response of other energy sources as the wind energy production changes with wind speed. These “grid integration” challenges become increasingly difficult as the size and scale of wind generation in a concentrated geographic area increase. Absorbing the levels of wind power called for by the Energy Platform will require advancements in and innovative approaches to next-generation grid management, wind forecasting, electricity and potential energy storage, and alternative applications of wind-generated electricity such as hydrogen or fertilizer production. Support is also needed for further development and integration of distributed wind and smaller-scale projects that do not require bulk transmission over long distances.

## ADVANCED COAL WITH CARBON CAPTURE AND STORAGE

Renewable electricity policies will be critical for stimulating innovation in the renewable technologies of the future, but a practical, comprehensive strategy for the transformation of the Midwest’s energy system also requires large-scale deployment of advanced coal technologies with carbon capture and storage (CCS) in order to address adequately both climate and energy security concerns. The development of advanced coal technologies combined with CCS could significantly lower the emissions associated with utilizing the region’s abundant coal resources. CCS also can be deployed with natural-gas processing, biomass fermentation and gasification, and other industrial activities. The Energy Platform calls for demonstration of a wide range of CCS technologies in the region by 2015, integration of CCS into all new coal power plants by 2020, and a long-term goal to transition the region’s entire fleet of coal plants to CCS by 2050.

### **I. Priority Recommendation: Develop Legal and Regulatory Framework for CCS**

**Develop, or enhance as needed, statutes and rules to have a comprehensive statutory and regulatory framework for CO<sub>2</sub> transport and storage in place by 2010.**

### **J. Priority Recommendation: Lay the Groundwork for a Geologic Storage Utility**

**Cooperatively develop design recommendations to allow for the establishment of geologic carbon-sequestration utilities operating on a state and provincial, or inter-jurisdictional, geologic basin-wide scale.**



To achieve this objective, the MGA jurisdictions must take the lead in developing the foundations for the CCS industry in the United States and Canada. Development and wide-scale deployment of CCS technologies will require jurisdiction-by-jurisdiction establishment of a consistent commercial, legal and regulatory framework for the transport and storage of CO<sub>2</sub> (including requirements for monitoring, mitigation, and verification of storage) that provides clear direction about ultimate liability for stored CO<sub>2</sub>. This framework should address issues related to regulatory oversight, siting and permitting processes, property ownership structures, environmental protection, and long-term liability associated with CO<sub>2</sub> transportation and storage. Federal programs regulating components of the CCS process are also being developed or existing programs are being adapted. However, many of the issues associated with regulation of transporting and storing CO<sub>2</sub> are within the jurisdiction of state and provincial governments, and federal programs regulating CCS should not pre-empt the regulatory programs developed at the state or provincial level.

This effort should include development of comprehensive regulatory programs for CO<sub>2</sub> transport and storage as well as creation of the legal and regulatory framework necessary to allow development of state and provincial or inter-jurisdictional geologic storage utilities. Such a utility could facilitate the development of the commercial CCS industry in the region by taking responsibility for the planning, development, financing, management and long-term site stewardship associated with multiple projects developed in storage formations such as deep saline formations that may cross jurisdictional boundaries. Centralized coordination of such projects would reduce the complexity of managing multiple geologic storage projects in the same geologic formation and provide certainty and transparency to accelerate scale-up of the industry.

MGA jurisdictions can play a critical role in laying the foundation of the CCS industry in the Midwest by encouraging scaled-up deployment of those CCS technologies that are already demonstrated and commercially available. Such technologies include CO<sub>2</sub> capture from coal gasification to produce substitute natural gas or capture from natural-gas processing plants, followed by storage of that CO<sub>2</sub> in depleted oil and gas formations or in deep saline formations. Additional deployment milestones include the successful integration of integrated gasification combined-cycle (IGCC) technology for electric power production with CCS in a commercial setting. An IGCC plant under development by Duke Energy in Indiana is expected to be the first such facility in North America, but CCS projects with IGCC are also under development in Australia, China and Europe.

#### **K. Priority Recommendation: Incent CO<sub>2</sub> Storage in Enhanced Oil Recovery**

**Allow for tax credits per ton of CO<sub>2</sub> captured for commercial enhanced oil recovery (EOR) operations and enhanced coal bed methane operations using anthropogenic CO<sub>2</sub> that result in net storage of CO<sub>2</sub>. These credits should supplement expected federal per-ton payments for CO<sub>2</sub> stored in EOR and deep saline operations, if deemed necessary for a project to be commercially viable.**

Once CO<sub>2</sub> is captured from an industrial source, the transport and injection of such CO<sub>2</sub> for the purposes of enhanced oil recovery (EOR) is an established commercial practice in the United States. Since the 1970s, millions of tons of CO<sub>2</sub> have been captured, transported and injected for this purpose annually. The U.S. Department of Energy estimates that with conventional EOR practices, current storage capacity in oil and gas formations in the United States and Canada is

sufficient to store approximately 21 years' worth of U.S. stationary-source emissions, while simultaneously extending oil production from depleted domestic oil reserves at a significant net CO<sub>2</sub> emissions reduction over imported oil.<sup>8</sup> Further analysis, commissioned by MGA for the Midwest specifically, suggests the potential to use 530 million metric tons of captured CO<sub>2</sub> to produce 2.2 billion barrels of otherwise unrecoverable domestic oil in the region. Industry experts are also commercially deploying next-generation EOR practices and reservoir management strategies that will significantly increase that potential.<sup>9</sup>

Within the Midwest, the greatest potential for EOR is concentrated in oil and gas formations in Illinois, Kansas and North Dakota, while other MGA states such as Michigan, Indiana and Ohio have significant potential for developing CO<sub>2</sub> EOR projects as well. Deep saline formations also provide a storage option with a larger geographic range and much greater storage capacity over the long term. Commercial-scale CCS in deep saline formations has been demonstrated for years in the North Sea.<sup>10</sup> While early Midwestern demonstrations of CO<sub>2</sub> storage in deep saline formations show promise, these porous rock formations still need to be thoroughly mapped and studied.

While considerable additional geological assessments are needed to get a full picture of the Midwest's CO<sub>2</sub> storage potential, all but three MGA jurisdictions — Iowa, Minnesota and Wisconsin — are endowed with oil and gas formations or deep saline formations, or both, that are suitable for commercial geologic storage. Given the excellent geographic distribution of potential CO<sub>2</sub> storage formations in the Midwest, and that transporting CO<sub>2</sub> through pipelines is the best understood and least costly aspect of industrial-scale CCS systems, all MGA jurisdictions should be able to participate in and benefit from regionwide deployment of a CCS infrastructure.

#### **L. Priority Recommendation: Reduce Capital Costs of CCS Projects and CO<sub>2</sub> Pipelines**

**Allow for tax credits or tax abatement for new or expanded carbon capture and storage project development to reduce the capital costs of investments in capture and compression components and in the build-out of the transportation infrastructure.**

Although the pipeline transport phase is often cited as the biggest hurdle to CCS deployment, the major cost of operating an advanced coal plant with CCS is actually incurred during the capture and compression phases of a project. To assist with such capital costs, several states, including Illinois, Indiana, Kansas, Michigan, Minnesota, North Dakota and Ohio, are in the process of developing or have passed legislation that provides a range of financial incentives for deployment of advanced coal with CCS in their jurisdictions. Financial incentives support the capital investment in capture and compression components and in the build-out of the transportation infrastructure.

<sup>8</sup> National Energy Technology Lab, 2007. "Carbon Sequestration Atlas of the United States," [http://www.netl.doe.gov/technologies/carbon\\_seq/refshelf/atlas/](http://www.netl.doe.gov/technologies/carbon_seq/refshelf/atlas/).

<sup>9</sup> U.S. DOE, NETL (January 9, 2009), "Storing CO<sub>2</sub> and Producing Domestic Crude Oil with Next Generation CO<sub>2</sub>-EOR Technology. Prepared by Vello Kuuskra et al. for the U.S. DOE, NETL.

<sup>10</sup> Bellona Foundation, "Security of CO<sub>2</sub> Storage in Norway," available at <http://www.bellona.org/factsheets/1191928198.67> [accessed August 17, 2009]

## BIOECONOMY AND TRANSPORTATION

The task of reducing emissions and energy use in the transportation sector has been described as a three-legged stool: 1) reducing the carbon intensity of fuels, 2) increasing the fuel efficiency of vehicles, and 3) creating conditions that reduce the need to drive. The Energy Platform focused on the first of these strategies, emphasizing the need for accelerated development and regional deployment of sustainable biomass-based fuels such as ethanol. BTAG broadened the transportation objectives with recommendations to achieve better fuel mileage, mileage-based insurance pricing, more-efficient driving, improved freight efficiency and expanded transportation choices, including passenger rail, transit, bicycling and walking.

The Energy Platform commits to “create a uniform, regional low-carbon fuels policy —implemented at the state or provincial level as a standard, objective or incentive.” Deployment of low-carbon fuels in the region will require a coordinated strategy for addressing multiple issues related to production and supply, distribution infrastructure, vehicle technology, and consumer vehicle and fuel choice. Regional jurisdictions should therefore rely on a mix of “market pull” strategies that create demand for pulling new fuels into the market, and “market push” strategies that support the development of the supply infrastructure required to ensure that demand is met smoothly and without radical price or supply disruption.

### **M. Priority Recommendation: Develop Model Regional Low Carbon Fuel Standard**

**Work with affected stakeholders to develop a model regional low-carbon fuel standard that will decrease the greenhouse gas (GHG) intensity of transportation fuels by 10 percent in 10 years from the start of the program.**

Market-pull strategies that are existing or proposed at the federal level, such as the Renewable Fuel Standard and potentially a low-carbon fuel standard (LCFS), operate within regional markets to increase demand for fuels qualifying as “low carbon” under the federal definitions. Similar policies, such as Minnesota’s biofuel blend requirements, exist or have been proposed at the state level in several MGA jurisdictions. Whether or not individual MGA jurisdictions choose to implement an LCFS or similar policy, biofuels producers, farm organizations, environmental and conservation groups, and other participating MGA stakeholders support developing a regional consensus around appropriate LCFS design considerations, so that the Midwest can more effectively shape the federal LCFS debate going forward.

To expedite market penetration of low-carbon fuels and development of new lower-carbon fuel technologies, a set of push policies may also be required to overcome logistical and technical obstacles related to available vehicle technology and fuel-distribution infrastructure. The range of potential push policies includes, but is not limited to: tax incentives and technical standards for refueling infrastructure for a range of low-carbon fuels, including electricity and hydrogen; funds for public education efforts on definitions of, and availability of, low-carbon fuel options; and consumer vehicle choice incentives.

Many advanced transportation technologies are not yet “shovel ready,” and additional support policies are required to expedite passage over the remaining scientific, technical and cost hurdles to commercialization. Policies such as technical assistance, financial support and workforce training should be designed to expedite development and commercialization of low-carbon fuels (e.g., advanced biofuels, electricity and hydrogen), advanced energy-storage technologies for vehicles (e.g., batteries), and advanced drivetrains (e.g., plug-in and fuel-cell electric). Complementary policies that attract advanced-technology entrepreneurs and facilitate the development of funding and investment sources for new technologies should be pursued to encourage regional supply-chain development so that as much as possible of the emerging industries’ value stays within the region.

**N. Priority Recommendation: Support Biomass Feedstock Demonstration Projects**

**Identify and support regional demonstration projects for the production, harvest, transport and storage of biomass feedstocks for utilization by a variety of low carbon bioenergy technologies.**

The Midwest’s extensive agricultural base has already allowed it to emerge as the heart of the nation’s biofuel industry, and the region can build on its market advantage as new biofuel and biopower technologies come online. The Midwest leads the nation in biomass production potential, but a strategic effort will be required to cost-effectively and sustainably develop a supply chain for the new feedstocks required to support these energy industries, including perennial biomass, agricultural residues and forestry residues. The MGA can be instrumental in identifying and addressing obstacles related to production, harvest, transportation and storage of new biomass feedstocks. It can also expedite the development of the demonstration projects, technical assistance and regulatory frameworks necessary to support this emerging industry.

**O. Priority Recommendation: Implement Transportation System Efficiency Strategies and Investments**

**Implement a range of strategies including investment in transit, bicycle and pedestrian infrastructure, building and expanding the Midwest Regional Rail network and enabling development that promotes transportation system efficiency.**

Reductions in vehicle miles driven are possible simply by allowing the market to provide compact, mixed-use development in response to consumer choice, and by building complete streets suitable for driving, walking, bicycling and transit. Jurisdictions should adopt goals to reduce per-capita vehicle miles driven, as an indicator of increased efficiency, and direct their agencies to incorporate that goal in transportation planning. While emphasizing consumer choices, jurisdictions should make resources available to cities and regions that choose to create compact new development that complements investments in intercity rail, transit, and bike and pedestrian infrastructure.

Another way to reduce energy use and emissions from the transportation sector is to provide people with greater access to more-efficient transportation modes, such as passenger rail, van pools, local transit, walking and bicycling. A mix of transportation modes, together with transit-oriented development that capitalizes on the proximity to transportation infrastructure, help to make bicycling and walking attractive travel options, particularly for nearby destinations. To increase access to such alternative modes, the MGA jurisdictions should commit to increasing the share of travel in non-single-occupancy vehicle modes by building improved passenger rail as articulated by the Midwest Regional Rail Initiative; resolving the existing regulatory obstacles to ensuring adequate funding for local transit systems; and adopting strong “complete streets” policies to ensure that streets are suitably designed for pedestrian and bicycle use.

**P. Priority Recommendation: Enable the Offering of Mileage-Based Insurance to Drivers**

**Eliminate regulatory barriers that prevent insurers from offering mileage-based insurance.**

When transportation costs vary by use, they provide individuals and businesses with opportunities to save. Because insurance is a major cost of vehicle operation, and because accident risk varies with mileage, mileage-based insurance can be very powerful in fostering transportation efficiency. MGA states should eliminate regulatory hurdles where they exist to insurance companies offering mileage-based insurance as an option in the marketplace for drivers to choose.