



# REPOWERING THE MIDWEST: THE CLEAN ENERGY DEVELOPMENT PLAN FOR THE HEARTLAND

## THE 21<sup>ST</sup> CENTURY OPPORTUNITIES FOR CLEAN ENERGY

Minnesota needs a strategic clean energy development plan that implements smart policies and practices to capture readily achievable environmental, public health and economic development benefits. This sustainable development strategy is good for the environment and the economy. The Clean Energy Development Plan proposes policies to implement underutilized energy efficiency technologies and to aggressively develop renewable energy resources. By diversifying its power supply, Minnesota will reduce pollution, improve electricity reliability, create new “green” manufacturing and installation jobs, and provide renewable energy “cash crops” for farmers. The Clean Energy Development Plan provides the strategies to achieve these goals.

## THE CLEAN ENERGY DEVELOPMENT PLAN

Minnesota should seize the opportunity to develop its clean energy resources: modern energy efficiency technologies and wind, biomass and solar power. The Clean Energy Development Plan achieves large environmental, public health and economic development benefits with only modest increases in cost. Moreover, investing in energy efficiency and renewable energy will diversify the region’s electricity portfolio, thereby improving reliability. The Clean Energy Development Plan:

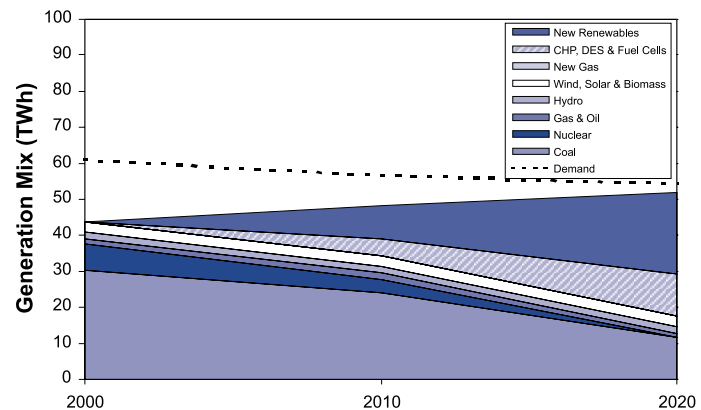
1. Aggressively implements the newest, as well as “tried and true,” energy efficiency technologies.
2. Develops and implements renewable energy technologies – wind, biomass and solar power – so that they provide eight percent of the region’s electricity generation by 2010, and 22 percent by 2020.
3. Develops and implements efficient natural gas uses in appropriate locations, especially combined heat and power (CHP), district energy systems and fuel cells, so that they provide 10 percent of the region’s electricity generation by 2010, and 25 percent by 2020.
4. Retires selected older, less-efficient and highly polluting coal plants.

5. Applies sustainable development strategies to aggressively link environmental improvement policies to economic development.

As Figure 1 shows, implementing the Clean Energy Development Plan in Minnesota means:

1. Energy efficiency measures reduce electricity demand, and therefore the need for generation.
2. Generation from renewable resources and efficient natural gas increases.
3. Generation from older, less efficient and highly polluting coal plants decreases.

**Figure 1. Sources of Electricity Generation: The Clean Energy Development Plan**



The state’s electricity demand is shown with a dashed line: when the dashed line is below generation, the state is a net exporter, and when above, the state is a net importer.

## IMPLEMENTING THE CLEAN ENERGY DEVELOPMENT PLAN IN MINNESOTA WILL ALSO PRODUCE:

1. Dramatic improvements in environmental quality by 2020, compared to business-as-usual practices, by reducing: sulfur dioxide (SO<sub>2</sub>) pollution, which causes acid rain, by 71 percent; nitrogen oxide (NO<sub>x</sub>) pollution, which causes smog, by 71 percent; and carbon dioxide (CO<sub>2</sub>) pollution, which causes global warming, by 67 percent.
2. Improved electricity reliability thanks to a diversified power portfolio.
3. Economic development and job growth through wind power “cash crops” for farmers, increased business for energy efficiency and renewable energy manufacturers, and new skilled jobs in installation and maintenance of this equipment.



# HELP REPOWER MINNESOTA!

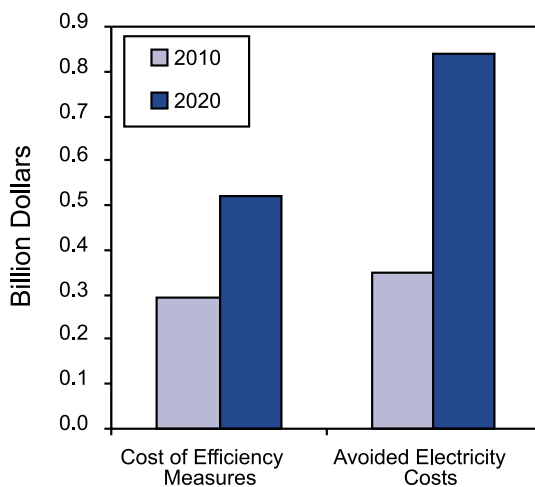
For more information and resources to develop Minnesota's clean energy options, visit [www.repowermidwest.org](http://www.repowermidwest.org) or contact Environmental Law & Policy Center of the Midwest, 35 East Wacker Drive, Suite 1300, Chicago, IL 60601; tel: 312-673-6500.

Harnessing clean energy improves the environment and spurs economic growth

## REAPING ENERGY EFFICIENCY OPPORTUNITIES

Minnesota has an opportunity to use energy in smarter, more efficient ways, thereby reducing pollution, saving money, and creating jobs. This will produce the benefits summarized below.

**Figure 2. Benefits from Energy Efficiency Investments: The Clean Energy Development Plan**



1. Reduces net electricity costs by \$321 million by 2020.
2. Saves 21,152 GWh of electricity – equal to about 7 large power plants – by 2020.
3. Reduces electricity demand 17 percent by 2010, and 28 percent by 2020.
4. Costs less – at an average cost of 2.6¢/kWh – than generating, transmitting and distributing electricity.

## DEPLOYING RENEWABLE RESOURCES AND EFFICIENT GENERATION

Minnesota has the opportunity to harness abundant renewable resources – especially wind – that provide environmental benefits, improved reliability, and economic development in the growing renewable energy business sector. Minnesota can also develop efficient generators, such as CHP, using natural gas. Together, the opportunities shown in Figure 3 could supply 24 percent of Minnesota's generation capacity by 2010, and 48 percent by 2020.

The Clean Energy Development Plan can be realized at a modest cost, as energy efficiency savings offset the cost of new generation. In Minnesota, it would increase overall electricity costs by only 1.5 percent in 2010, and 3.4 percent in 2020.

## 21<sup>ST</sup> CENTURY POLICIES FOR MODERN TECHNOLOGIES

Smart policies can overcome the many market and regulatory barriers that energy efficiency and renewable resources face. Minnesota has already adopted some policies to promote clean power options, but more must be done to succeed. The key policies for achieving the Clean Energy Development Plan are to:

1. Increase Minnesota's Energy Efficiency Investment Fund by investing 0.3¢/kWh.
2. Manage the Energy Efficiency Investment Fund by an independent third-party administrator overseen by a board composed of regulators, state energy offices, and consumer, efficiency and environmental advocates.
3. Evaluate and update Minnesota's efficiency standards and building codes. Establish or reinforce monitoring and enforcement practices.
4. Increase Minnesota's Renewables Portfolio Standard, so that the percentage requirement reaches 8 percent by 2010, and 20 percent by 2020. Policymakers in Minnesota may wish to adopt an RPS requirement that is higher than those in neighboring states, due to Minnesota's abundance of wind resources. If the Minnesota RPS requirement were to be set at 11.5 percent for new renewables by 2010 (instead of 8 percent), the costs of the Clean Energy Development Plan in 2010 would increase from \$61 million to roughly \$83 million.
5. Establish a Renewable Energy Investment Fund to support emerging renewable technologies, with a non-bypassable charge of at least 0.1¢/kWh.
6. Ensure that transmission pricing policies and power pooling practices treat renewable resources fairly, and account for their intermittent nature, remote locations, or smaller scale.
7. Remove barriers to clean distributed generation by: (1) establishing standard business and interconnection terms; (2) establishing uniform safety and power quality standards to facilitate safe and economic interconnection to the electricity system; and (3) applying clean air standards to small distributed generation sources, thereby promoting clean power technologies, and discouraging highly polluting diesel generators.

**Figure 3: New Generation Resources in the Clean Energy Development Plan**

Generator Type	2010 New Capacity (MW)	2020 Cumulative New Capacity (MW)
Wind Turbines	1,586	4,474
CHP – Biomass	412	729
Biomass - Co-Firing	15	282
Photovoltaics	8	29
Biomass Gasification	75	175
Eff. Natural Gas Gen.*	603	1,471
<b>Total</b>	<b>2,699</b>	<b>7,160</b>

\*Includes CHP (natural gas), district energy systems, and fuel cells.

