

Towns of Tomorrow – Vision for the Future



MINNESOTA IS RICH IN THE RENEWABLE ENERGY RESOURCES especially wind and biomass that will allow us to build a sustainable energy future. Using local, renewable energy will bring cleaner air and water, local economic development opportunities, and will help revitalize our rural and urban communities. This workbook has explored many of the energy technologies available to communities interested in diversifying their energy supply to include locally generated, clean, renewable energy. With wind, biomass, solar energy, and increased efficiency through conservation and cogeneration, the community energy system of tomorrow could be very different from the one we have today.

Using local, renewable energy will bring cleaner air and water, local economic development opportunities, and will help revitalize our rural and urban communities.

But could it really? After all, each community is part of a larger system. Our electric system is owned by multi-state, investor-owned utilities and large cooperatives. It is shaped and regulated by state policy. Our state system is interconnected with the regional electricity system and with the national system. National policy and regulation affect what happens in each city here. The way that we produce and use energy in the United States affects people and the environment all over the planet.

Sure, good ideas implemented on a local level make one community a better place to live and work. But does it really make a difference in the bigger picture?

SMALL CHANGES ADD UP

In fact it does. Creative vision for real change often comes from people at the local level. Think about the change in the national understanding of smoking, of campaigns against drunk driving, of recycling. Recycling programs started with a few scout troops collecting aluminum cans and newspapers. Today, everyone has a recycling bin out back. Successful vision and change at the local level inspires and drives changes at the state level. Success at the state level can drive national policy.

Vision from community energy projects is already impacting thinking within Minnesota state government. State legislators have gotten interested in a number of energy ideas

pioneered at the local level including on-farm anaerobic digesters and farmer-owned wind developments. Legislators got interested in the idea of moving toward a hydrogen-based economy in Minnesota, in part, because of the vision and initiative of a citizen leader in Lake City.

Citizens in Lake City are looking at the feasibility of adding wind energy to the local municipal electric system. One of them came across information about the hydrogen fuel cell initiative in Iceland, and began a correspondence with officials there. Through this relationship, an Icelandic delegation visited Minnesota in the spring of 2002 to talk about their hydrogen initiative.

State officials, business leaders, and University researchers were inspired and have convened a working group to examine the potential role of hydrogen in Minnesota's future. State legislators are interested in positioning the state for the future and a number of hydrogen initiatives were passed during the 2003 legislative session.



Change begins with a vision of what might be possible for our state and for our communities.

IT STARTS WITH VISION

Minnesota is well positioned to lead the nation in supplying our industries, farms, homes and government with renewable energy that protects the environment for future generations while creating economic opportunity today. Minnesota has the renewable resources to take the next bold step. It begins with a vision of what might be possible for our state and for our communities.

Consider the following real examples illustrating bold visions of dramatically different energy futures that led to a cleaner environment and cutting edge business development. The first describes energy efficiency in Sweden, the second wind development in Denmark and the third the Icelandic hydrogen initiative. All are countries very like Minnesota in size, population, and heritage. Imagine what could happen if Minnesota did the same.

EFFICIENCY FOR THE FUTURE

Imagine a country where the government, businesses, and citizens all agreed that creating energy efficiency in all sectors, from residential, to commercial, to industrial, would be their primary energy focus. Efficiency would guide all their future energy planning. This country, not unlike Minnesota today, had a growing population and was faced with projected energy shortfalls within the decade. To make matters worse, it was almost completely dependent upon imported fossil fuels.

With government taking the lead, partnering with utilities and businesses, policies were enacted that transformed engineering and manufacturing practices. They built more efficient homes and buildings and produced goods more efficiently. Citizens supported these efforts by buying more efficient homes and autos, and by supporting legislation that encouraged continued efficiency improvements.

The place is Sweden, where energy efficiency has become the norm. Swedes, from government officials, to manufacturing leaders, to average citizens, decided that they would have the most efficient housing in the world. They made energy efficiency a priority. In roughly twenty years, they have been able to make housing manufacturing one of their most innovative and modern industries, and have become a model for the rest of the world.¹

Minnesota too could make huge strides just by implementing greater efficiency improvements. If all state, county and municipal buildings were retrofitted with strict requirements for energy conservation; Minnesota would make good progress in reducing energy demand. If every person in the state bought only the most efficient Energy Star appliances, the state could make more progress in reducing consumption. If communities all around the state partnered with local utilities to improve the efficiency of homes and businesses, the state could make huge strides in reducing the amount of coal it burned. There are so many options. Minnesota just needs to lay out the vision and work to make it a reality.



Stockholm, Sweden

WINDS OF TOMORROW

Imagine yet another country. This one saw the future of its economy in wind power. It had good wind resources and the potential for significant wind development, like Minnesota. It also had a strong manufacturing sector and was home to industry pioneers, much like Minnesota. Leaders of this country, including local government officials, business leaders, and community organizers, foresaw the need for renewable energy and decided to invest the country's resources in developing a new industry. The people of this country had a vision and positioned themselves to meet an inevitable future demand.

The country is Denmark. Leaders decided in the late 1980s to power the country with wind energy. Danish industries have since become the dominant manufacturers of wind turbines.² In fact, most of the wind turbines in Minnesota were manufactured and installed by Danish companies. Minnesota has the potential to duplicate the efforts of the Danes. The state is windier than Denmark, has a strong manufacturing base, and the technological know-how to become world leaders in wind manufacturing. Wind is the world's fastest growing energy source. Minnesota could take advantage of its position and capitalize on this burgeoning market.

We could decide today that at least 20% of our energy supply will come from renewable energy resources by 2020, creating a predictable market and encouraging business investment in the state. We could partner with other Midwest states to lay the groundwork for a new electricity system including wind power, so that by the end of the decade, there would be many thousands, say at least 6,500 megawatts of new wind energy in the region.



Wind turbines along the coast of Denmark

HYDROGEN: THE COMING REVOLUTION

While a world economy powered by hydrogen fuel cells is still in its infancy, what if a state or nation decided today to begin a transition in earnest? Imagine how well positioned that state would be in twenty years and what economic advantage it would have. It could begin by investing research dollars into using renewable resources to split water into hydrogen and oxygen and into developing fuel cells that could be used in automobiles and in homes. Perhaps it would start by implementing a pilot program that ran city buses on hydrogen fuel cells.

This concept is actually not far fetched. In 2001, Icelanders proclaimed their intent to become the world's first hydrogen economy – completely free of fossil fuels. Iceland plans to



Fueling up at hydrogen station in Iceland

Community level initiatives could compel a new energy vision for Minnesota. What are we waiting for?

derive all its hydrogen via electrolysis powered by renewably generated electricity, rather than from fossil fuels. Rather than waiting for someone else to take the first step, Iceland stepped into the forefront, and became the world's leader in creating a vision for a fossil fuel-free energy future.

In fact, the plan is to begin this transition by using fuel cells on city buses and expanding from there. The first public hydrogen fueling station opened in Iceland in April 2003. By taking such a step, Icelandic developers will be able to begin building a nation-wide hydrogen infrastructure system – positioning themselves well ahead of the rest of the world and primed to market their knowledge as everyone else plays catch-up.

A VISION FOR MINNESOTA

Minnesota leaders, too, could articulate and embrace a vision of a very different energy future, including greatly increased conservation, electricity generated from renewable resources like wind, biomass, and solar, and eventually, an economy running entirely on hydrogen generated using renewable power. We could, as a state, as communities, as leaders, set these goals, plot a course, enact policies, and create incentives to achieve it. Community level initiatives could compel that vision. What are we waiting for?

END NOTES

¹Noble, Michael. *Our Electricity System: Crisis of Vision*, Minnesota Journal Volume 19, Number 7 (2002): 1-2.

²ibid

PHOTOGRAPHS

page 91 – Chuck Roberts/Fokti.com (upper), National Renewable Energy Laboratory (lower); page 92– Yahoo Greetings; page 93 – Danish Wind Energy Information (upper), <http://www.athygli.is/myndir.html> (lower);