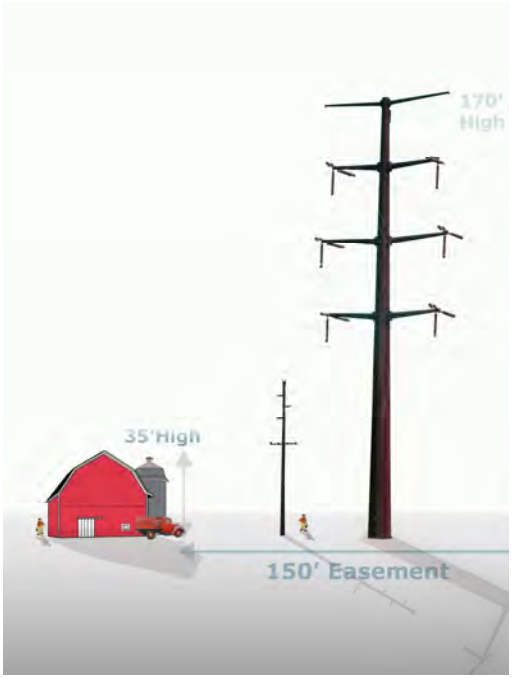
Public Response to Six High Voltage Transmission Proposals in Wisconsin

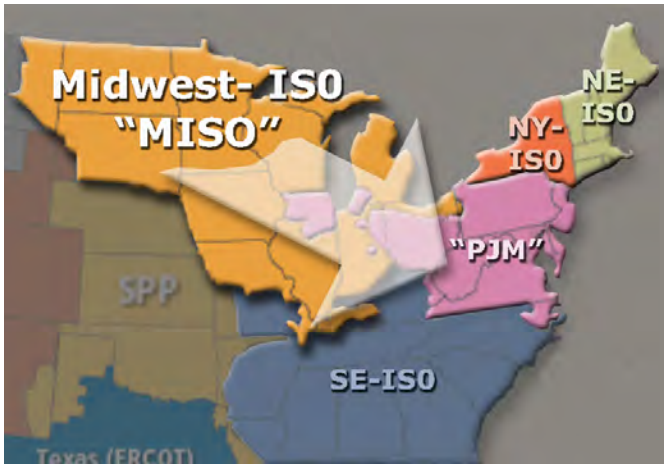
In-progress study - Town of Stark Committee on Energy Planning & Information 10.2011



Enter Wholesale Energy Markets

Wisconsin utility customers have invested more than $1 billion since 2002 in high-voltage transmission lines. There are no present or predicted weaknesses in the Wisconsin grid that can only be addressed with the addition of high-capacity transmission. According to the U.S. Department of Energy, growth in the use of electricity will remain at historically low rates for the next 25 years. If we couple these conditions with Wisconsin's capacity to produce 30% more electricity than we use, it prompts one to wonder about the origin of the interest in adding 350-400 more miles of high-capacity transmission to Southern and Southwest Wisconsin.

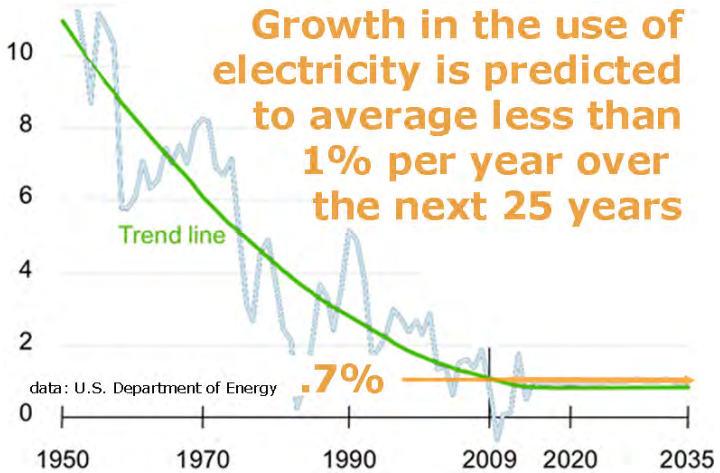
The "need" arguments can be traced to U.S, energy policy changes from 1992-2000 and FERC Order 888 which created the present day "wholesale" energy market. Before the unified market, electricity was regarded an essential local service and afterwards, a traded commodity sold at distances through transmission lines. At no surprise to engineers who opposed the scale alteration, by March 2000, the nation's transmission lines had become congested and were failing. The U.S. government responded by promoting more transmission additions and chopping-up the oversized market into regional "ISO" zones. As expected, companies with business interests in these zones formed powerful organizational alliances. In the Midwest region, the Midwest Independent Transmission System Operator or "MISO" organization oversees huge wholesale market that reaches into Canada and covers 14 states.



Today, voting membership in MISO includes 35 transmission line construction companies, 49 energy brokers, 44 power generation companies and 4 industrial user groups. ISO organizations measure flow, schedule market sales and plan transmission development with the ability to sell power to other ISO's. By 2003, MISO was drafting designs for larger and larger high voltage transmission networks to move larger quantities of power eastward to markets in other ISO's. In 2004, the U.S. Government supported the effort by creating transmission tariffs that placed the burden of paying for the very costly transmission additions to the wholesale market onto electric customers.

Changing the Definition of "Need"

The MISO-designed high-capacity CapX2020, Badger-Coulee, Dubuque-Spring Green-Madison, and Pleasant Prairie-Zion, Beloit-North Illinois and Madison-Central Illinois lines slated for Wisconsin lands would all carry much more power than is needed for in-state purposes. Laws to condemn private land for transmission purposes require that a present or future need for the public infrastructure be demonstrated. Historically, predicting "demand" and peak load on the State level have been at the core of most State transmission decisions. A high voltage project on the East coast, PATH, was recently put on hold because of lack of

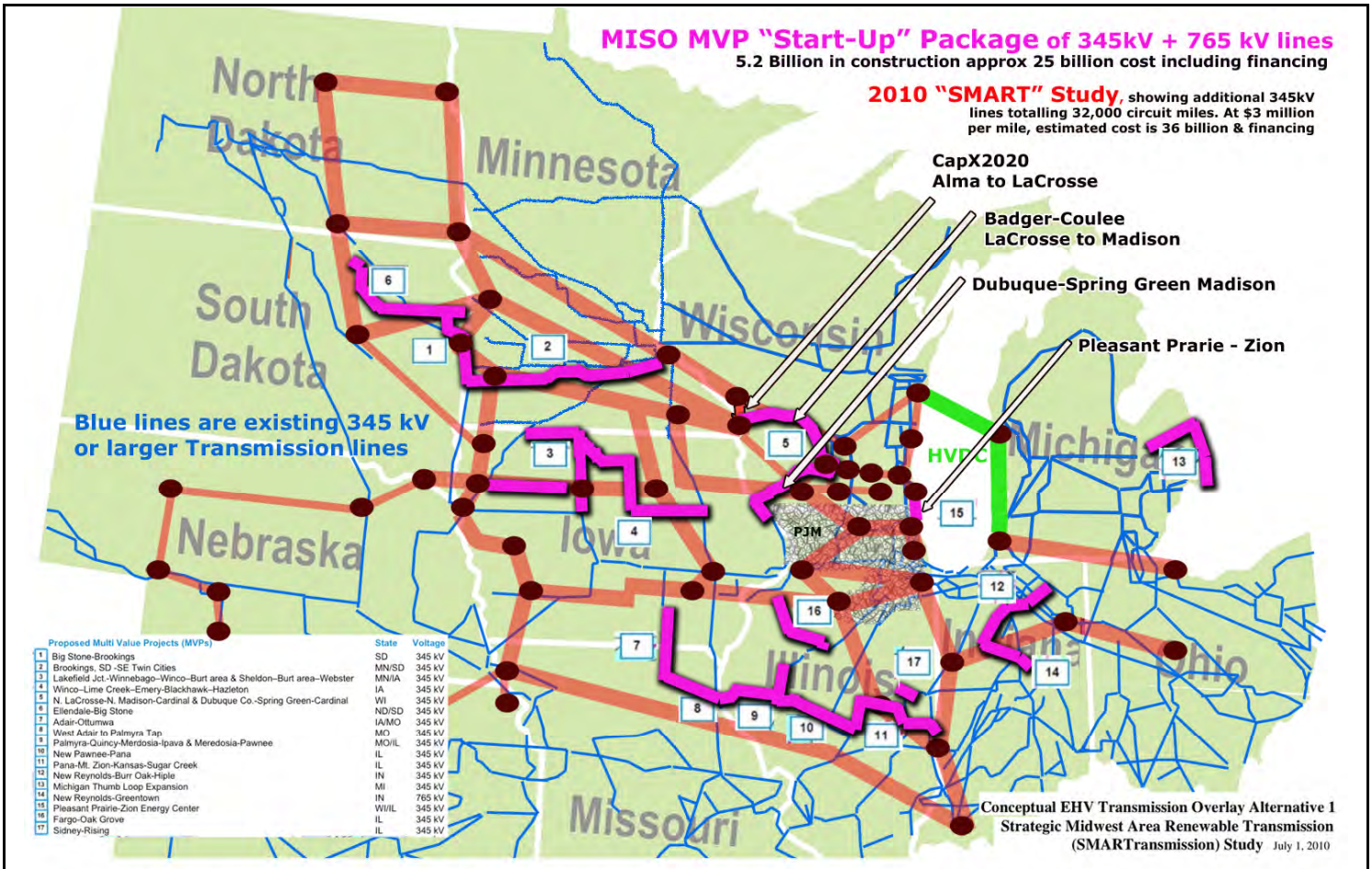


A trend of only .7% creates unprecedented energy planning options. A ***decrease*** in residential use is expected for the next ten years.

demonstrated need and because stress on grids can be effectively managed with load control equipment.

Breaking with history, MISO and transmission builders are telling the people of Wisconsin that state need must now take back seat to "regional reliability" and that electric customers across all 14 states must now assume a vested interest in the growth of the regional, wholesale electricity market no matter where the infrastructure is added. This proposal has come to ratepayers in a package of 17+ Multiple Value Project or "MVP" transmission lines.

There is no pressing need for electricty in big cities or in other regional markets. Slow growth is predicted everywhere. The large network of 345 kV lines built in the Midwest since the mid 90's is able to carry sufficient power to everyone for many years. Compared to paying for state reliability needs as they become necessary, this new, regional transmission standard appears to place MISO's ability to sell electricity to other markets above providing affordable, reliability to electric customers in the Midwest. The proposal opens doors for hidden costs and pressures states and local communities to meet out of state for-profit interests.



The magenta-colored lines on this map are the first "starter" package of 345kV and 500 kV high voltage corridors that MISO wants to build called, "Multi-Value Projects," or "MVP." The red lines show potential high voltage lines from an earlier, complete network to provide an idea of potential next stages. The CapX2020 and Badger-Coulee lines are the first "MVP" lines before public consideration. There are currently four lines in Wisconsin in the same MVP group. Two more MVP lines that would connect to Illinois were announced in September, 2011.

The blue-colored lines in the map are ***existing*** 345 kV or larger lines in our grid. The reliability of our grid was tested with record-breaking peak load conditions in Summer 2011. Analysts observed that the system withstood this demand without significant incident because of the expanded use of Demand Side Management (DSM) technology. DSM uses transmitters to turn non-critical loads on and off during peak period decreasing the overall load. Many planners consider the wider implementation of DSM technology across the nation's grid to be the most prudent way to accommodate the anticipated, slow growth in the foreseeable future.

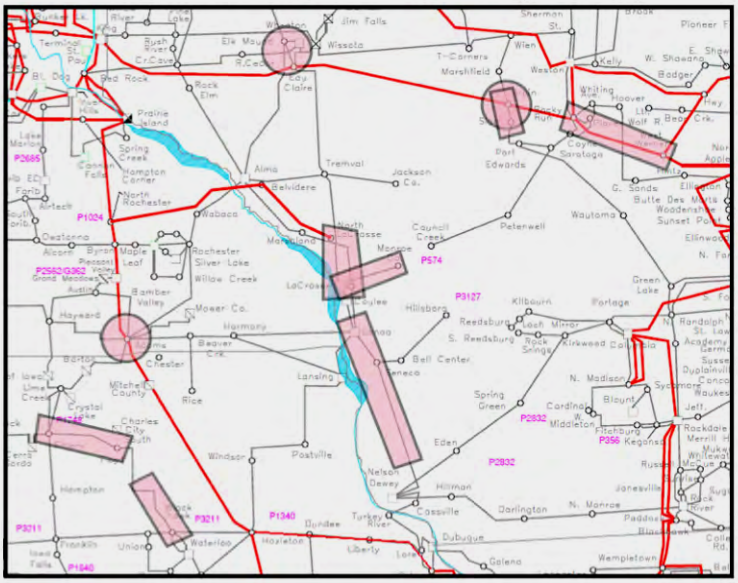
Ignoring Improvements to Existing Lines

Compared to the very large high voltage lines being proposed, transmission lines from 69 kV to 161 kV are referred to as "low voltage" lines. These are the smaller to midsized lines that have been slowly added and upgraded through the years to move power from community to community and between smaller cities like La Crosse and Eau Claire.

Transmission proposals made to the Wisconsin PSC require that "low voltage" solutions meeting local and state reliability be studied and included along with the high voltage solutions. The "Badger-Coulee" project, for example, is only the high voltage solution of ATC's proposal. Low voltage improvements have several budget advantages. They cost much less and because the improvements are made only as needed, the lifespan of existing equipment is extended and planning becomes more efficient.

If low voltage improvements are made in lieu of an MVP project like Badger-Coulee, the savings passed a long to customers all over the Midwest are likely to be quite profound. Of great concern is that low voltage solutions have not been included in the information presented to the public by the transmission line builder during the required, "Public Information Meetings" phase.

Local governments in the Badger-Coulee study area are now asking the developer to provide the low voltage options by December 31, 2011, to evaluate for a year before the developer's application is expected at the PSC. This creates opportunities to ask informed follow-up questions and make recommendations to ATC, the DNR, and the PSC that are comprehensive. All counties, towns, and municipalities can request this information and make formal recommendations.



A MISO map arguing that an 345 kV line (not shown) would address a predicted need to eventually upgrade lower voltage lines (rectangles) and transformers (circles) in an area that spans several hundred miles across Wisconsin, Minnesota and Iowa. If the project did not rely on public funds, a private concern would have a hard time justifying such a speculative investment for a period of slow growth.

Low Voltage Solution Compatibilities

Making prudent, lower-cost, low voltage upgrades only as needed allows electric customers to stretch their dollars and consider investments that would reduce dependency on electricity. On average, Wisconsin households spend about $1500 a year on electric service but businesses spend over six times this amount even at reduced rates.

A promising solution with this goal is called, "aggressive" energy efficiency. For a monthly fee of about $3, "Efficiency Vermont," has been keeping electricity use at a steady level or reducing it for the past several years. The program seeks and eliminates sources of glaring waste by addressing more costly fixes like refrigeration, air conditioning, fans, water heating and insufficient insulation. It introduces novel measures like three-phase power into agricultural, business and commercial uses. More than one-half of the growth in electricity use is expected in the commercial sector unless incentives are created for these businesses. Upgrading the single phase motors in a moderately-sized dairy operation with three phase motors, as one example, could save thousands of dollars a year.

No matter what investments electric customers make, the price of electricity will continue its rapid rise. Rather than buying and maintaining a larger and larger regional grid, investing in equipment that resides in our communities helping individuals and businesses makes good sense. States with Aggressive Efficiency programs are more attractive to new business.

Reducing use, while lowering utility bills and carbon emissions and strengthening local economies, is a win-win-win-win. The skilled-trade and manufacturing jobs created around efficiency-related business are unquestionably more sustainable than the highly specialized transmission jobs with boom-bust impacts. Greater self-sufficiency in both managing and producing electricity on-site is the direction that our homes, businesses and economies are headed in coming decades. This direction is in direct conflict with increasing our dependency on wholesale power imported from other communities and states. Energy expenditures make-up about 1/10th of the economy so keeping those dollars close to home is a priority for all communities.

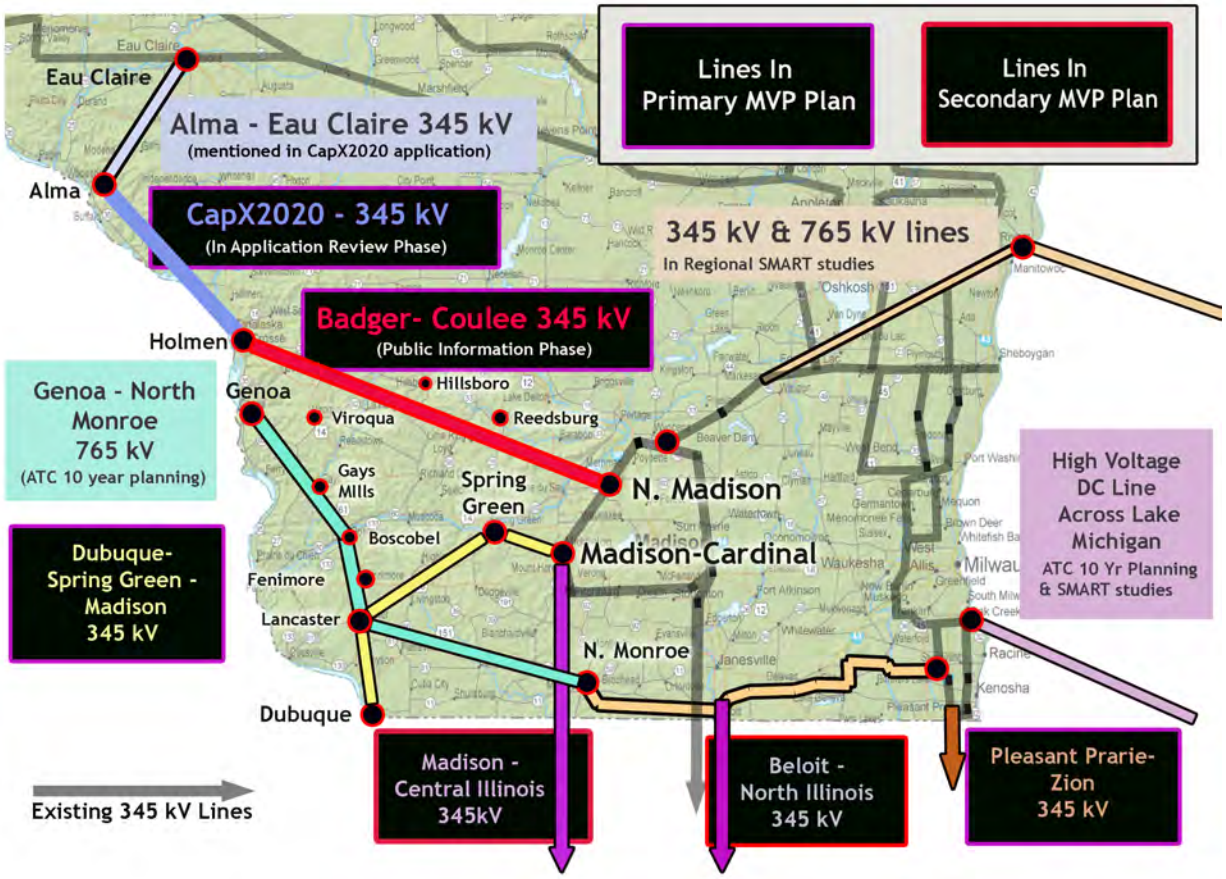
The True Costs of Wholesale Power and Non-Transmission Investment Options

But electric customer pockets are only so deep. Customers in Wisconsin now invest about $1/month on a traditional energy efficiency program. Where could we each of us get the additional $2/month to fund an Aggressive efficiency program? Transmission dollars are one, good place to look.

Transmission costs and associated financing are added to our bills by increases in the rate or per kilowatt amount we pay. We pay these additions until the transmission lines are paid for—usually over 40 years. Based on a 24.9 billion dollar price for the first MVP "starter" package of 17+ lines, the approximate 22 million customers in the MISO region would spend over $2 per month, on average, for the next 40 years [1] .

Wisconsin ratepayers are already spending an average of $10 per month for transmission lines previously constructed and these charges will remain on our bills for the next 30-40 years. Due in large part to transmission additions, our electric rates since 2005 have risen from below the national average to above national average and are now the highest in the Midwest. This is contrary to what MISO interests argued when Wisconsin began participating in the MISO wholesale market in 2005.

There are clearly alternatives that need to be evaluated before making these very costly and policy-determining transmission investments. This is why local governments in the Badger-Coulee study area are also asking for cost-benefit comparisons. Would the choice come down to spending $3 per month to boost transmission traffic or shrinking overall use with aggressive efficiency? The impacts on our economies and lands would be profoundly different.



Connecting Wind to an Expanded Wholesale Transmission Network

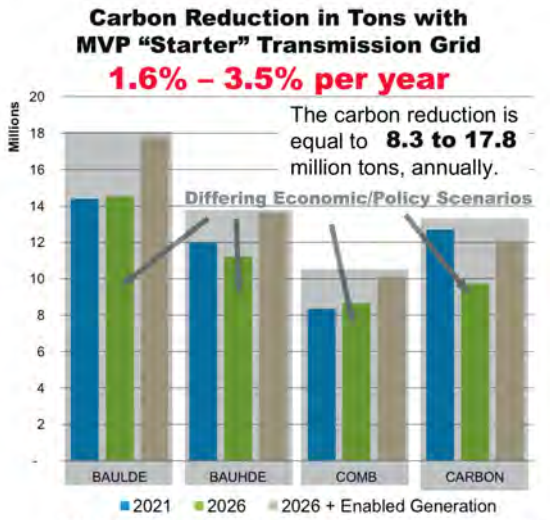
A potential environmental benefit of adding wind generation to an enlarged wholesale transmission system comes only if coal generation is slowed-down or taken off a grid. Significant carbon emission reduction, the only way to achieve environmental benefits, requires scheduling the retirement of coal-generation plants and the MVP plan has no samples or estimates of retirements.

Anyone who has experienced the impact of a 150 feet high 345,000 volt transmission tower knows there are very significant environmental negatives to be offset with the construction about 1700 miles of proposed high voltage lines across the Midwest— just the initial "starter" lines.

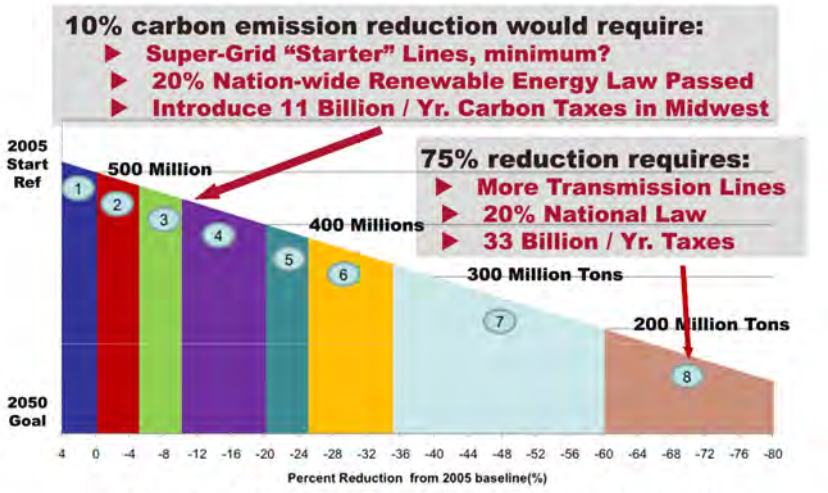
To evaluate the starter MVP package of which Badger-Coulee and CapX2020 are included, the proposal needs to address these three basic questions: (1) Would there be *guaranteed* carbon emission reductions? (2) Would new, federal and state laws with high carbon fuel taxes also be required to make the amount of emission reduction significant? (3) Where is the schedule for regional coal power plant retirements?

A September 2011 study of the MVP lines, including an approximate tripling of wind generation in the MISO footprint, forecasts disappointingly small reductions in carbon emissions. MISO's "Proposed Multi Value Project Portfolio" study suggests that under varied economic and political conditions, reductions range from 8.3 to 17.8 million tons per year. Another study places the annual emissions for the MISO footprint at 500 million metric tons per. These figures compute to a reduction in carbon emissions of only 1.6% to 3.5% per year.

To date, neither MISO nor the transmission line developers are guaranteeing any emission reduction percentages-- even these very small percentages.



Anotated graphic/date from, "Proposed Multi Value Project Portfolio" MISO Workshop August 2011



Annotated graphic/data from "Carbon Investigation – Impacts on Midwest ISO" by MISO Market Sub Committee, May, 2010

The Midwest-ISO study agrees with other studies that conclude that significant carbon emission reductions would depend on the United States passing a minimal, nationwide 20% Renewable Energy Requirement and supporting this law with substantial, new, taxes on coal-generated power. Another MISO investigation of emission reductions using a related transmission/wind build-out, suggests that a 10% reduction in emissions would additionally require around 11 billion in carbon taxes in the Midwest region alone. A consistent theme in the studies is that transmission and wind build-out would not be effective in producing significant reductions in carbon emissions without very significant taxes placed on coal-generated power.

It does not matter ***where*** renewable energy is consumed; in fact, it is more efficient to use it close by. The U.S. Energy Information Administration predicted that Minnesota, a key renewable energy state in the MVP plan, will be pressed to meet its own renewable energy requirements by 2030. According to the PSC, Wisconsin is very close to meeting its 10% goal renewable energy goals with in-state means by 2015. *Wisconsin does not need large transmission add-ons to systematically replace coal generation with wind*

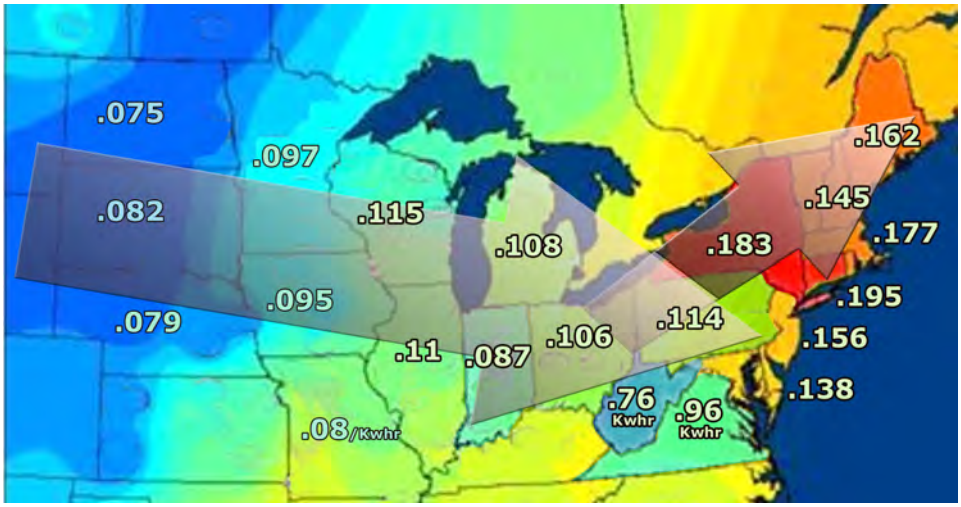
generation when it is affordable. In fact, retaining the regional grid's current size would insure that MISO would have to start scheduling the retirement of coal plants, something the current MVP plan does not do.

If Wisconsinites were to level-off electricity use at today's amount by investing in an aggressive efficiency program, it would effectively reduce carbon emissions at over twice the rate of the MVP plan-- around 9% in 25 years based on anticipated growth rate of .7% per year with half of the regional generation over that period coming from coal.

Likely this goal could be achieved through extending the life span of existing lines with upgrades while maintaining reliability standards.

Preserving Our Local Economies & Energy Options

Self-sufficiency is the way of rural communities. Local generation projects like currently operating diary farm digesters and co-generation biomass plants are realistic for communities if employed with aggressive energy efforts. Some electric engineers argue that smaller scale "smart grids" supported from numerous generation points is *the* electric delivery system of the *future*. Making Wisconsin communities more dependent on imported power from other states undercuts Wisconsin Jobs. The State must recognize that restoring local, sustained jobs and self-reliance around energy production must be a top priority in energy planning.



The advantage to the Midwest ISO companies of having a "super-grid" transmission system for selling energy from West to East can be seen in the average prices of electricity. Blue areas represent areas where electricity is produced at lower costs and orange to red areas with higher costs. The presence of coal-generation plays a significant role in lower production costs in the dark blue areas. Above prices are per kilowatt-hour, annual averages in 2010 from U.S. Energy Information Administration.

[1] MISO is asking for costs of 17+ lines they have defined as "Multi-Value Projects" to be assumed by electric customers over the 14 State MISO region. Using MISO's estimated average annual cost of $624 million/year and dividing this by approximately 22 million customers, this averages to $2.36 per month for the amortization period of 40 years. The Town Committee is working with MISO to better our understanding of the complex assumptions in the MVP business study. In most, if not all States, the cost to residential customers would be higher per KWhr than for industrial and commercial customers.

Town of Stark Committee on Energy Planning and Information:
http://fieldpost.org/StarkEnergy/Resources.htm
Rob Danielson: type@mwt.net
Local Government Information Request Resolutions:
http://tinyurl.com/42z5bod

Midwest-ISO MVP Proposed Portfolio Business Case Study September 29, 2011:
http://tinyurl.com/3tfd6yo Additional data: http://tinyurl.com/3cdx9vn

ATC's project website for Badger-Coulee:
http://www.atc-projects.com/BadgerCoulee.shtml