



Who Benefits as High-Voltage Electric Lines Crisscross Wisconsin?

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 (additional charts inserted by EPIC)



There's no denying it.

The high-voltage electric transmission lines going up along Madison's Beltline are big, unsightly and expensive.

Extending 32 miles from Middleton to Rockdale, the line is expected to open ahead of schedule in early 2013. With a price tag of some \$220 million, it's one of the largest public works projects ever in Dane County.

Utility executives say the line is a crucial cog in a network designed to move electricity smoothly and efficiently to serve homes, farms, factories and businesses all across Wisconsin.

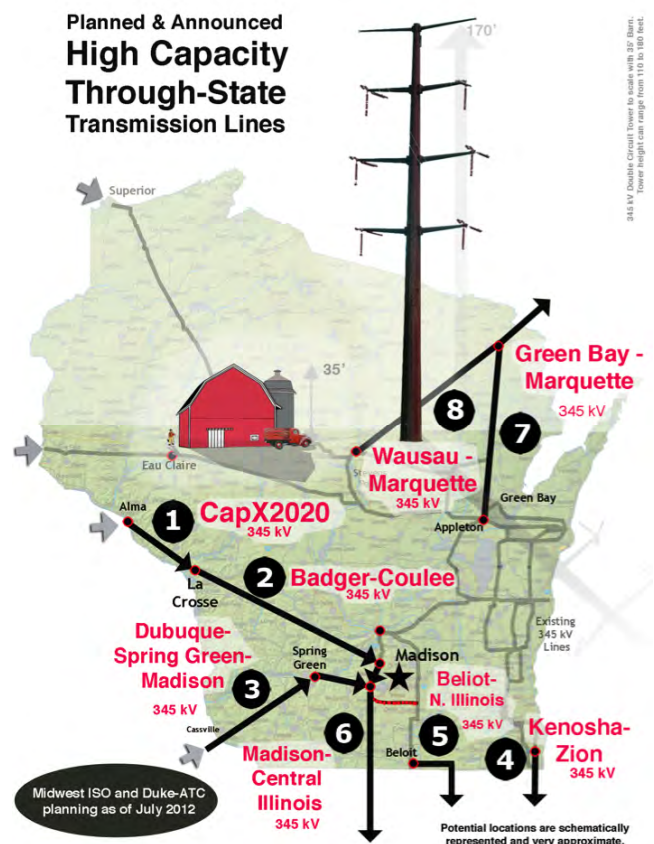
It's just one piece in a \$6.5 billion plan to add some 4,000 miles of high-voltage transmission lines in 12 Midwestern states. The idea is to facilitate the flow of power to markets throughout the region and into the eastern U.S., where prices are higher and the promise of utility profits are greater.

In Wisconsin alone, that could mean at least eight more high-capacity transmission lines crossing the forests, hills, rivers and wetlands of a state long known for its natural beauty and environmental sensibilities.

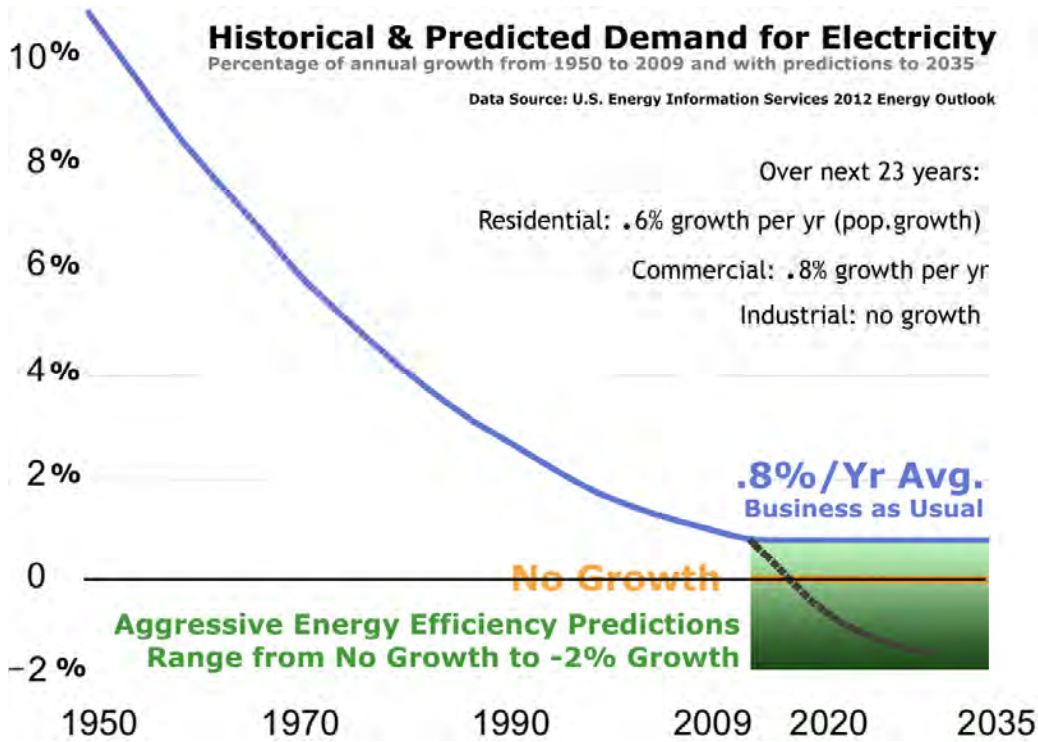
But critics say building more high-voltage transmission lines makes no sense at a time when electric demand is slowing due to increased efficiencies and a decline in energy-intensive manufacturing. The U.S. Department of Energy is now predicting a historically low 0.7 percent increase in electric use over the next 25 years.

For the utilities who own the transmission lines, though, the money is flowing. They don't have to pay to build new lines — those costs are picked up by ratepayers — but they profit by charging others to use them.

"The problem with these transmission projects is that no



one is looking at need; we're just supposed to believe what these for-profit businesses are telling us," says Cynthia Richson, a Town of Middleton Plan Commission member who has been questioning plans from American Transmission Co. (ATC) to add more high-voltage lines in Dane County.



When energy industry officials first started talking about upgrading the transmission lines more than a decade ago, Wisconsin's electric system was practically maxed out. The state experienced a series of electricity shortages in the late 1990s that sparked calls for new power plants and fatter wires to deliver more electricity where it was needed.

What followed were a series of deregulation measures designed to streamline the approval process for new electric system infrastructure. The \$11 billion build-out, however, has proven more costly than

almost anyone had predicted.

Wisconsin's electric rates – once the lowest in the Midwest – have jumped to the highest in the region as these costs have been passed along to utility customers. This comes despite promises from the electric industry that prices would eventually stabilize – as they did with telephone service – as more competition was introduced into the market.

Today, Wisconsin enjoys a surplus of electric generation, with utilities like Milwaukee-based We Energies selling power into the Chicago market. Even during the recent weeks-long heat wave state utilities had no problem meeting demand.

Residential Average Rates in the Midwest and U.S. (in cents)¹⁸

Source: Wisconsin PSC June 2012

	2002	2003	2004	2005	2006	2007	2008	2009	2010
Illinois	8.39	8.38	8.37	8.34	8.42	10.12	11.07	11.27	11.52
Indiana	6.91	7.04	7.30	7.50	8.22	8.26	8.87	9.50	9.56
Iowa	8.35	8.57	8.96	9.27	9.63	9.45	9.49	9.99	10.42
Michigan	8.28	8.35	8.33	8.40	9.77	10.21	10.75	11.60	12.46
Minnesota	7.49	7.65	7.92	8.28	8.70	9.18	9.74	10.04	10.59
Missouri	7.06	6.96	6.97	7.08	7.44	7.69	8.00	8.54	9.08
Ohio	8.24	8.26	8.45	8.51	9.34	9.57	10.06	10.67	11.32
Wisconsin	8.18	8.67	9.07	9.66	10.51	10.87	11.51	11.94	12.65
Midwest	7.82	7.90	8.04	8.19	8.78	9.24	9.78	10.29	10.78
U.S. Average	8.44	8.72	8.95	9.45	10.40	10.65	11.26	11.51	11.54

But despite the slowing demand for electricity, more transmission lines remain on the fast track.

Earlier this year, regulators in Wisconsin approved the CapX2020 345-kilovolt line running across the Mississippi River from Minnesota to Alma and south to La Crosse. It is designed to connect to the proposed 150-mile Badger-Coulee line that would run from La Crosse to Madison across the ridges and valleys of Wisconsin's Driftless Area, ultimately connecting with the line along Madison's Beltline.

Industry officials acknowledge that electric use is slowing and the threats of blackouts are low but say more power lines can deliver clean, wind-generated electricity from Minnesota and the Dakotas, helping to reduce carbon emissions and air pollution.

"Things aren't as straightforward as they were 10 years ago when the main goal was to keep the lights on," says Anne Spalholz, ATC communications manager. "It's still about reliability but it's also about getting access to lower-cost power and connecting renewables into the system."

In fact, where environmentalists were once the most dogged opponents of utility projects, wind energy advocates have emerged as a key ally in the push to expand the number of high-voltage lines in the Midwest.

"If you want cleaner energy, we need a way to move it," says Natalie McIntire, a Viroqua-based consultant with Wind on the Wires, a Minneapolis nonprofit group focused on getting more wind power into the transmission grid.

That leaves average citizens as the only apparent bastion against the proliferation of giant electric towers and miles of wires across the state's landscape. But because the electric system is so complicated and technical, citizen opponents have been mostly powerless in trying to slow the train.

"Coal and nuclear resources are generally baseloaded and produce 74 and 13 percent of the energy in the Midwest-ISO respectively."

- Midwest-ISO 2011 Annual Report

For those living along a proposed transmission line route, the issue isn't just rising electric rates but a process they say leaves the public largely shut out. While citizens are allowed to speak at public hearings, their comments don't carry the weight of experts working for the utility companies.

And like highways, pipelines or railroads, transmission line projects fall under the realm of eminent domain, meaning government can use its powers of condemnation to take private property as long as the owners are compensated.

Mike Shelton lives in Madison, where he owned and operated Bob's Copy Shop on the UW campus for nearly a quarter century. He's also an owner of 250 acres of farmland in Juneau County, property that has been in his family since 1873.

"I think it's the most beautiful part of the state," says Shelton, referring to the hills and valleys of southwestern Wisconsin left untouched by the last advance of the glaciers 10,000 years ago.

Shelton took an interest in transmission lines when his family's farm was included in a preliminary route for the Badger-Coulee project, which could come before state regulators in 2013.

Shelton would receive a payment from American Transmission Co. for allowing 150-foot-tall poles on his property but he says his bigger concern is for the unique geology of the region.

He notes that the state took steps to protect the vertical cliffs of Paleozoic sedimentary rock of the Upper Dells on the Wisconsin River. "The only other place you see those kinds of formations are at the edge of the Driftless Area," he says.

Shelton also notes both the Milwaukee Road railroad in the 1800s and the Interstate Highway System in the 1960s chose to bypass the Driftless Area during their construction.

If the Badger-Coulee line must be built, Shelton hopes planners will use the existing Interstate corridor rather than going across the hills.

Rob Danielson lives in the town of Stark in Vernon County, where a vocal citizens group called SOUL (Save Our Unique Lands) has been fighting the Badger-Coulee line proposed for the Kickapoo Valley region. A retired UW-Milwaukee professor with a background in engineering, Danielson says the utilities are pushing an expensive plan that fails to acknowledge a slowing demand for electricity and the impact of improvements in energy efficiency.

For his own part, Danielson has installed an 8-kilowatt solar system on his rural home and is producing enough electricity to sell some excess back into the grid.

"The first thing we did was reduce our home electric use by half simply by finding out which devices were using the most power," he says.

Rather than continuing to build transmission lines across miles of countryside, Danielson would like to see Wisconsin adopt a policy similar to one passed in Massachusetts in 2008. Called the Green Communities Act, the groundbreaking piece of legislation requires investor-owned utilities to tap into all energy-efficiency measures before buying electricity from power plants.

Massachusetts has since reduced its statewide electric use by over 250 megawatts, more power than is produced at MGE's Blount Street plant.

MASSACHUSETTS ENERGY EFFICIENCY PROGRAM BENEFITS AT A GLANCE

Total customer savings:	\$6 billion	\$150/yr/customer
Total lifetime energy savings, GWh:	30,000 gigawatt hours (GWh)	-15%
Total lifetime energy savings, therms:	897 million therms	
Total lifetime GHG reductions, tons:	15 million tons	-17% in 4 years
Total local green jobs:	4,000	41 job years/million
Total on-site solar power installed.....	131 MW - 250 MW by 2017	

MassSave SERVICES INCLUDE:
Free Home, Farm and Business Energy Efficiency Assessment
Up to \$1500 credit towards \$2000 of home insulation improvements
Significant rebate savings on appliances found to be inefficient.

"Before Wisconsin approves any more high-voltage lines, we really need to step back and take a longer view," says Danielson.

But fighting plans already in the works can prove difficult for those without deep pockets.

The PSC does provide some intervenor money to citizen groups to hire experts – for the CapX2020 case, for example, Clean Wisconsin received \$36,830 and the Citizens Utility Board received \$56,030 – but that pales in comparison to what a utility with its legion of lawyers and technical experts can bring to the table.

"All the modeling today is done by the utilities so it's really difficult to analyze whether these projects are needed or not," says Charlie Higley, executive director of CUB, which fights for reliable and affordable electricity service on behalf of Wisconsin customers.

ATC's Spaltholz doesn't deny that the issues are complicated. But she says plans are studied for several years by technical experts and interest groups, including CUB.

"There is nothing shutting people out of the advanced study process but I acknowledge it's very technical," she says. "When we do propose a project, we launch a very public outreach effort engaging the public through direct mail, public open houses, web resources and advertising to share information about the need and to encourage stakeholders to ask questions and provide comments that help us determine the best route options. We go to great lengths to discuss the need for projects; our transmission planners run computer models, show videos and discuss the system needs with folks attending our open houses."

Spaltholz notes that with the Badger-Coulee project, ATC has already hosted 22 public open houses throughout the project study area, with more than 5,700 people attending.

"Ultimately it's the PSC that evaluates and determines the need," she says. "If the PSC determines that a project is needed, then the PSC will select the route."

So far, the current PSC appears willing to go along with what the utilities want. During recent testimony over the CapX2020 line, commission Chairman Phil Montgomery, a former Republican lawmaker from Green Bay appointed by Gov. Scott Walker in 2011 to lead the regulatory agency, said building the line will "facilitate commerce and promote competition in electric markets in Wisconsin."

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Still, with so much transmission line planning now taking place at the regional or national level it's getting even harder for local citizens to get involved.

In 1998, the Federal Energy Regulatory Commission ordered the utilities to open up their transmission lines to other users, building on the model of the country's natural gas pipelines. The Federal Energy Regulatory Commission (FERC) also urged creation of independent system operators to oversee traffic on the lines.

Adopted Information Request Resolutions

Burnett County	Town of Roosevelt	P
Columbia County	Town of Arlington	P
	Village of Poynette	P
Dane County	Town of Springfield	P
	Village of Dane	A**
Grant County	Town of Wingville	P
	Town of Ellenboro	P
Jackson County	Town of Manchester	P
	Town of North Bend	P*
	Town of Irving	P*
	Jackson County	P
Juneau County	Town of Wonewoc	P
	Town of Lemonwier	P
La Crosse County	La Crosse County	A
Monroe County	Town of Wellington	P
	Town of Jefferson	A, P
	Town of Wells	P
	Town of Sheldon	P
	Town of Portland	P
	Town of Leon	P*
	Town of Sparta	P*
	Town of Ridgeville	A
	City of Sparta	A
	Monroe County	A
Price County	Town of Prentice	P
	Town of Knox	P
	Town of Catawba	P
Richland County	Town of Ithaca	P
	Town of Buena-Vista	P
	Town of Eagle	P
	Town of Forest	A, P
	Town of Bloom	A*
	Richland County	A
Rusk County	Town of Murry-	P
	Town of Hawkins	P
Sauk County	Town of Woodland	A**
	Town of Dellona	A
	Sauk County	A*
	City of Reedsburg	A**
	City of Baraboo	A**
	Town of Troy	P
	Town of La Valle	A, P
Sawyer County	Town of Meteor	P
Vernon County	Town of Stark	A, P
	Town of Liberty	A, P
	Town of Hamburg	P
	Town of Viroqua	A, P
	Town of Bergen	A, P
	Town of Kickapoo	P
	Town of Whitestown	A, P
	Town of Dayton	P
	Town of Webster	A, P
	Vernon County	A
	Town of Clinton	A
	Town of Hillsboro	A**
	Town of Greenwood	A
	Town of Union	A*
	Town of Christiana	A
	Town of Coon	A
	Town of Forest	A, P
	Town of Sterling	P

More than 70 municipalities across Wisconsin have formally asked ATC and the WI PSC to provide traditional cost-benefit studies comparing non high-voltage transmission solutions such as aggressive energy efficiency and distributed generation during the "Public Information Phase" of the Badger Coulee proposal. ATC responded that the analysis is "beyond the scope of the project." PSC has not yet officially responded to the requests.

The Midwest Independent System Operator (MISO) was soon approved as the nation's first regional transmission operator, with headquarters in Carmel, Ind., and an operations control center in St. Paul, Minn. It controls 93,600 miles of transmission lines in 12 states and parts of Canada.

In 2005, MISO implemented a wholesale market structure to allow utilities to buy and sell power outside their normal service territory, with the goal of bringing the least expensive electricity to customers. To make that happen, MISO laid out a proposed network of dozens of new high-voltage lines.

Midwest Transmission Expansion Plan 11 Appendixes A,B, & C						
TO Member	Expected ISD	From Sub	To Sub	Facility Description	Estimated Cost	
ATC LLC	4/8/2011	Spring Green	Arena	Uprate Spring Green-Arena 69kV line	\$3,402,521	
ATC LLC	12/31/2018	North Madison	Cardinal	Construct a North Madison - Cardinal 345-kV line	\$45,300,000	
ATC LLC	12/31/2020	Black Earth	Stage Coach	Convert Black Earth-Stage Coach from 69-kV to 120 kV	\$10,800,000	Partial
ATC LLC	12/31/2020	Mazomanie	Black Earth	Convert Mazomanie-Black Earth from 69-kV to 120 kV	\$2,700,000	
ATC LLC	12/31/2020	Spring Green	Substation	Spring Green substation modifications	\$23,100,000	
ATC LLC	12/31/2020	Cardinal	Substation	Cardinal substation modifications	\$9,700,000	
ATC LLC	12/31/2020	Spring Green	Cardinal	new line	\$59,900,000	
ATC LLC, ITCM	12/31/2020	Spring Green	Dubuque Co	new line	\$159,300,000	
ATC LLC, XEL	12/31/2018	North LaCrosse	North Madison	Construct a North LaCrosse - North Madison 345-	\$301,800,000	
ATC LLC, XEL	12/31/2018	North LaCrosse (Briggs Road)	Substation	Terminate North Madison - North LaCrosse 345	\$17,460,000	
ATC LLC	6/1/2013	Cardinal (West Middleton)	Rockdale/Albion		\$174,094,863	
ATC LLC	1/1/2025	North Madison	upgrade existing substation	Add 3 new 765 bay(s) at New station.	\$84,300,000	
DPC	1/1/2025	Genoa	new substation	Add 4 new 345 bay(s) at New station.	\$23,600,000	
DPC	1/1/2025	North LaCrosse	Genoa		\$46,368,000	
DPC, ATC LLC	1/1/2025	North La Crosse	North Madison		\$476,650,560	
ATC LLC	6/1/2020	Cardinal	Blount	Construct a West Middleton-Blount 138 kV line	\$60,810,250	
ATC LLC, XEL	8/1/2018	Longwood	Greenwood	new line	\$200,000,000	
ATC LLC	6/1/2020	Point Beach	Ludington	Construct a HVDC line under Lake Michigan from Point Beach to Ludington	\$828,000,000	
ATC LLC	6/1/2020	Elm Rd	DC Cook	Construct a HVDC line under Lake Michigan from Elm Rd to DC Cook	\$1,071,000,000	
Wisconsin Total					\$9,405,101,468	

The big question, of course, is who will pay to build the new lines.

MISO is now designating some of the proposed transmission lines as "multi-value projects" meaning they would be used to move power within the entire 12-state region. Under this scenario, the cost would be spread among ratepayers in several states instead of just where the line runs.

Howard Learner of the Environmental Law and Policy Center in Chicago says the cost-sharing sounds good in theory but claims it doesn't go far enough in making those who use the line pay for it.

For example, MISO on its maps shows a transmission line running from Green Bay into Michigan's Upper Peninsula where the only large electric users are a pair of mining operations. But Wisconsin customers could end up paying most of the construction cost under the current scenarios.

"Everybody wants to use other people's money to pay for the transmission they want for their own purposes," says Learner.

Even the promise to deliver more wind power to help states meet their clean energy targets – some states have a goal of 25 percent of electricity from renewable sources by 2025 – is a bit of a ruse, says

Danielson. He notes that most of the generation in the Midwest is from coal or nuclear plants, with wind providing just a fraction of the available megawatts.

"Any reason MISO can float today to bring power through a Madison hub to sell out of state has little to do with Wisconsin's immediate or long-term needs," says Danielson. "The lines they are talking about would lock up billions of Wisconsin ratepayer dollars over the next 40 years, which is ignoring the heart of our energy challenges."

Learn the utility alphabet

Electric system issues are confusing enough without the alphabet soup of MWs and MISOs mixing into the discussion. Here are some basics:

PSC – Public Service Commission of Wisconsin is an independent regulatory agency formed in 1907. It's responsible for the regulation of Wisconsin public utilities, including electric, natural gas, water, combined water and sewer utilities and certain aspects of local telephone service. Regulatory decisions – including setting electric rates – are made by three commissioners appointed by the governor.

ATC – American Transmission Co. is the for-profit entity that owns and operates Wisconsin's high-voltage electric transmission system. ATC was formed in 2001 when the state's four investor-owned utilities combined their transmission assets into one separate company.

MISO – Midwest Independent System Operator is the utility member-based organization that oversees planning and operation of the electric transmission system in 12 states, including Wisconsin. It was approved in 2001 as the nation's first regional transmission operator.

FERC – Federal Energy Regulatory Commission is the government agency that oversees interstate electricity sales, wholesale electric rates, hydroelectric licensing, natural gas pricing and oil pipeline rates. It was formed in 1935 and operates today as part of the U.S. Department of Energy.

MW – Megawatt is a measure of a unit of electric power, equal to one million watts. It is often used to express the generating capacity of a power plant, such as the 1,114-megawatt Columbia Energy Center near Portage. One megawatt is enough power to supply about 1,000 typical homes.

kV – Kilovolts is the measure of how much electricity is flowing between two points, with a kilovolt representing one thousands volts. High transmission lines are often described by their carrying capacity, such as 161kV or 345kV line.

ROE – Return on equity is the amount of net income expressed as a percentage of money invested. For electric utilities, the return on equity measures how much profit a company generates from the money their ratepayers have invested in the system.

kWh – Kilowatt hour is the most common unit, for billing purposes, of determining how much electricity is delivered to a consumer. Using a 60-watt lightbulb for one hour consumes 0.06 kilowatt hours of energy.