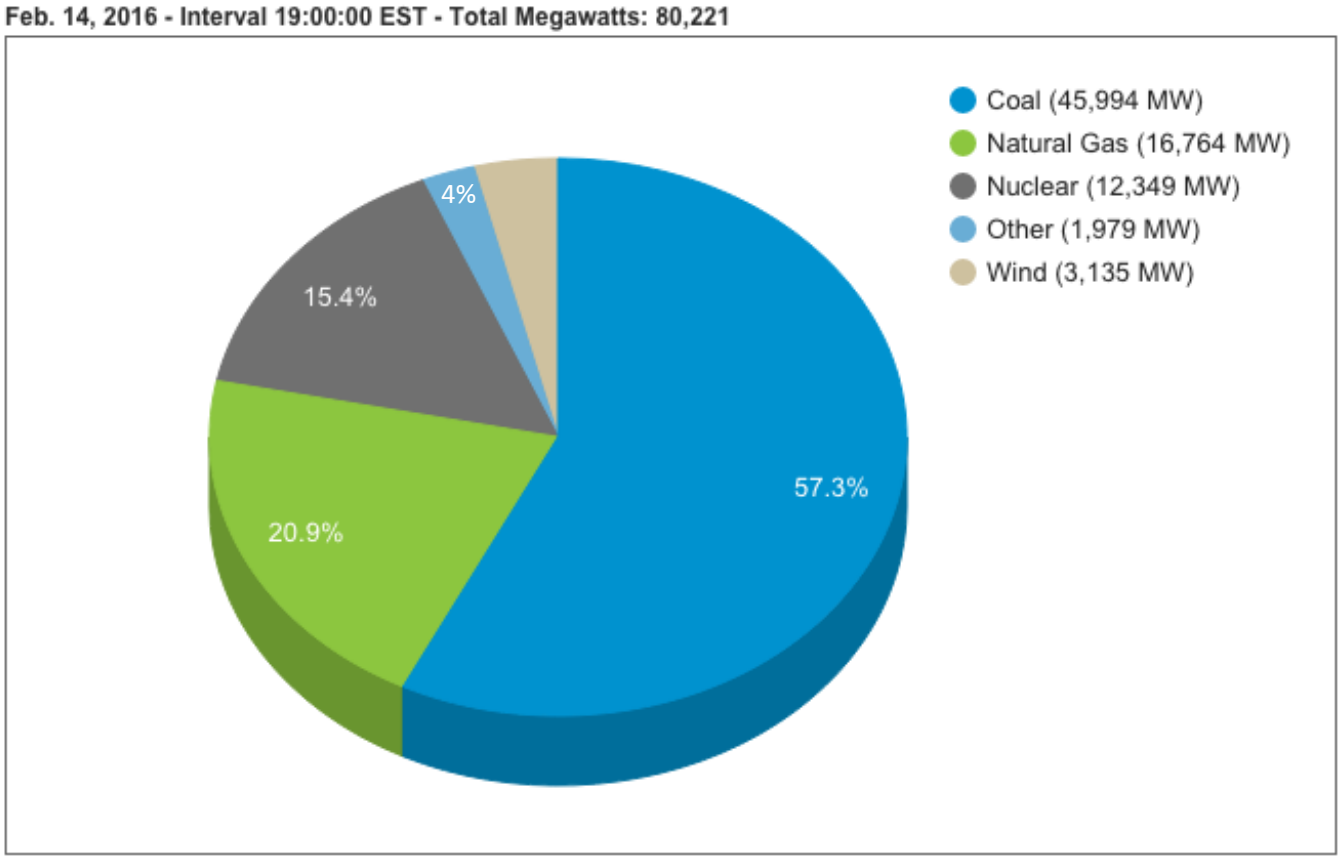
Renew WI:

"WI's current mix includes: 63% coal, 21% nuclear, 9% natural gas, 7% hydro, wind, biomass, and petroleum. Renew's goal is to reduce the use of coal as rapidly as possible"

SOUL:

The fuel "mix" that matters is that carried by wholesale transmission lines like the proposed Cardinal Hickory Creek. Billions have already been in invested in carbon-based power plants that competitively bid to sell their power through the wholesale market on a daily basis.

The amount of renewable energy in wholesale power within and outside of WI is very similar. One can see the fuel mix of wholesale power in real time: http://bit.ly/Midwest-Power-Mix At the time of this writing, wind power is making up 4%; coal and natural gas 77% and Nuclear 15% . These percentages are very close to the average. The Public Service Commission of Wisconsin observed in their last report that wind content from out of state power is 6.9%.

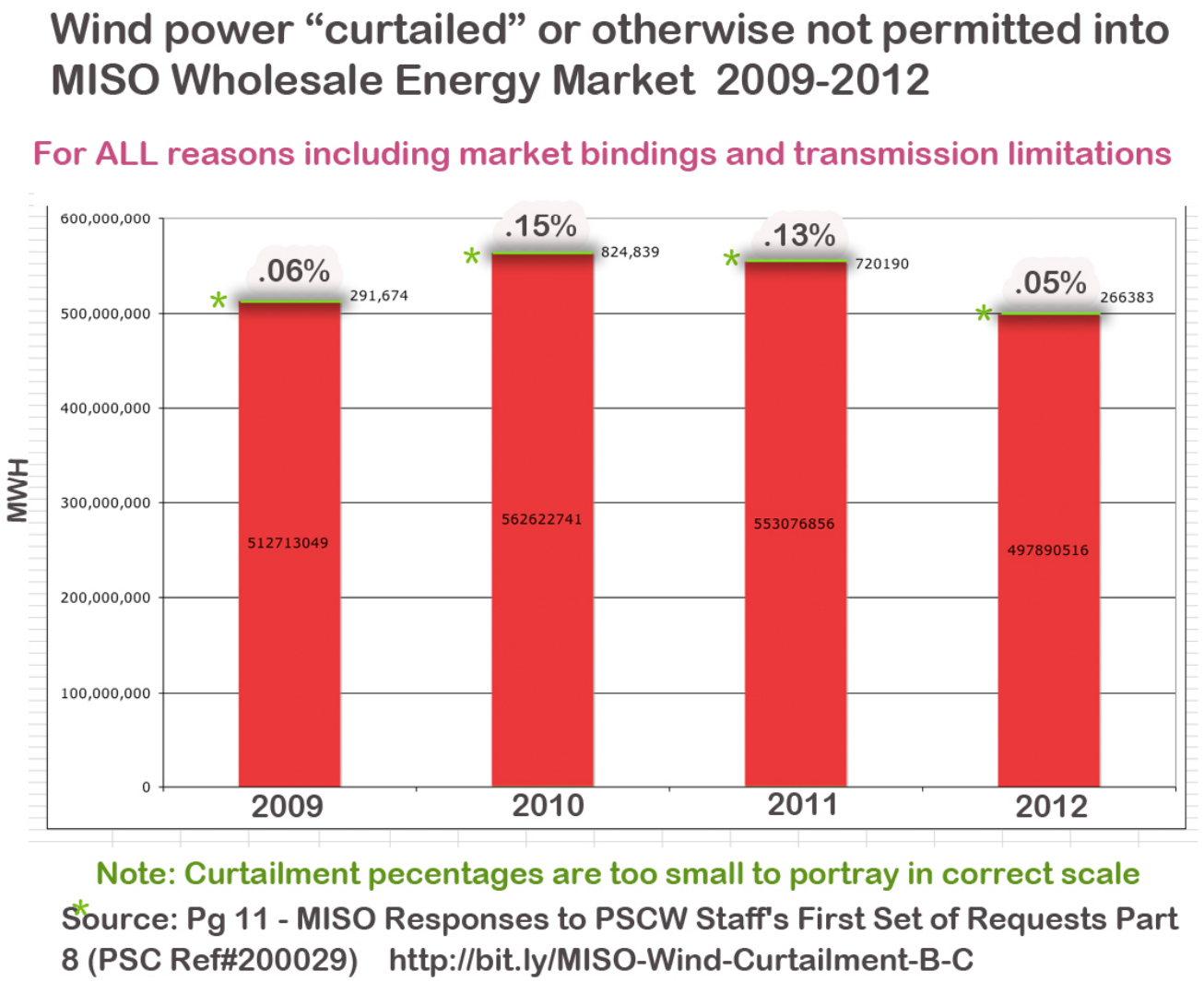


Renew WI:

> *"Expanding high-capacity power lines allows wind-generated electricity that is already in place to flow into Wisconsin and beyond. It would also give the green light for further wind turbine expansion by making it clear that wind generated electricity can be delivered to the market. "*

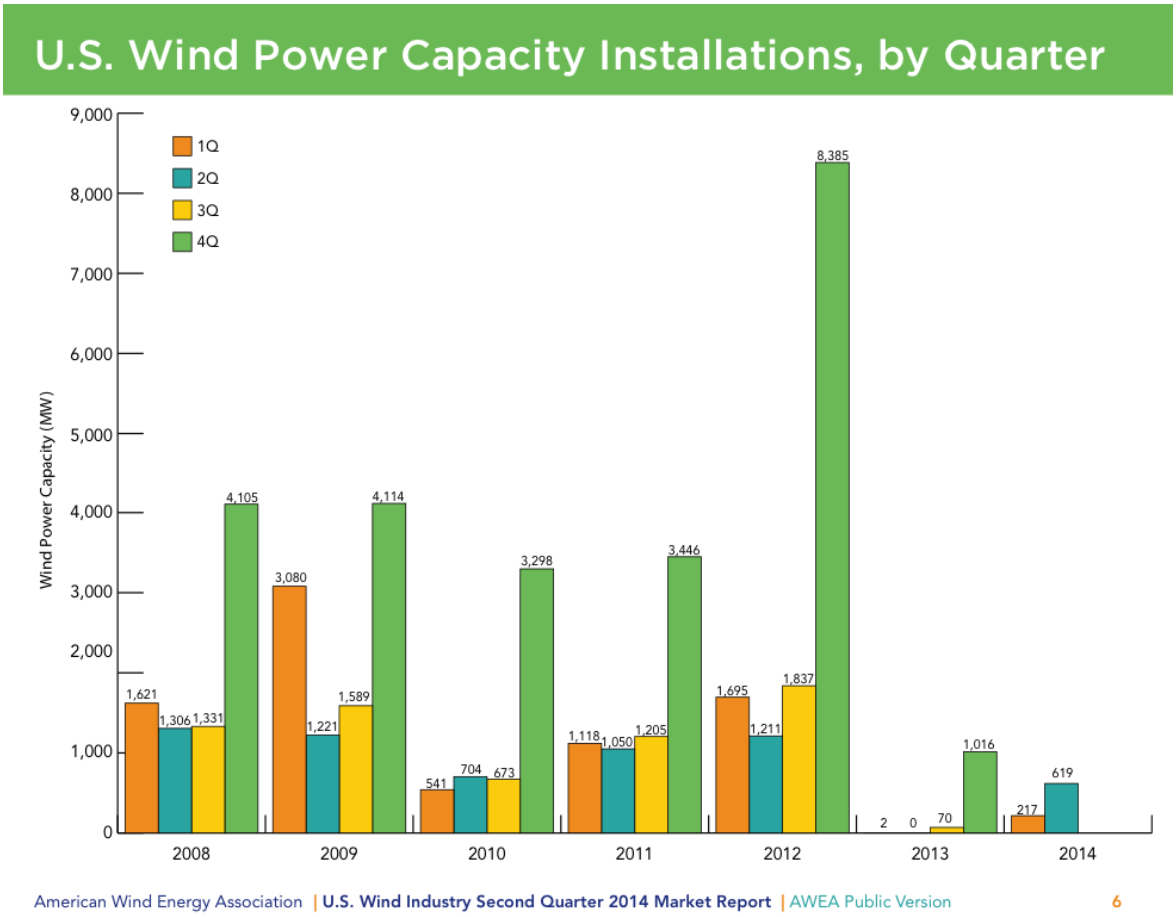
SOUL:

Utilities have not documented a need in formal proceedings to add high capacity transmission lines to facilitate existing wind resources. The below chart from MISO data shows that less than 1/6th of 1 percent of supplied wholesale energy was not marketed due to market conflicts, manual shut-downs and other disruptions to wind energy. The part of this very small percentage due to insufficient high capacity transmission is not specified.



As can be seen in a graphic in the 2014 American Wind Energy Report 2014 report submitted by Powers Engineering in the Badger-Coulee case, the rate of added wind capacity in the U.S. declined precipitously in

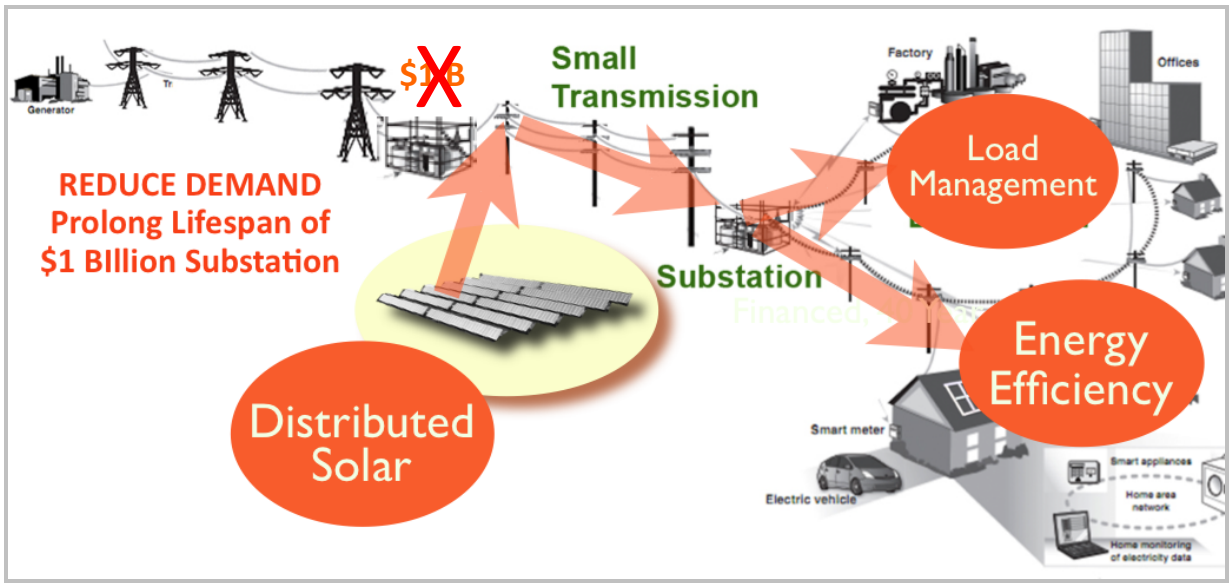
2013-2014. Powers Engineering observed that 100 MW solar project in Minnesota contributed double the capacity of the 48 MW of wind power installed in the state in 2013-2014.



Even if the amount of wind energy added over the next 10 years increased many time, it would not result in significant CO2 emission reductions. When we spend billions on transmission to deliver slivers of renewable energy from afar, we are effectively locking-in a long-term order for more CO2 emissions.

As with Badger-Coulee, utilities will claim that Cardinal Hickory Creek could avoid spending many millions re-building lower voltage transmission lines in SW Wisconsin. For Badger-Coulee, Powers Engineering demonstrated that instead of the proposed $1+ billion dollar high voltage transmission line, the longevity of the lower voltage facilities can be met with only $20 million spent on community solar installations, targeted energy efficiency and load management.

The same emphasis on local improvements to dramatically cut emissions and lower use of wholesale power while saving on energy bills is the revolutionary direction adopted by the Reforming Energy Vision (REV) decision in New York State [http://bit.ly/NYPSC_REV_Implications]. As diagrammed below, utilities wanted to spend a $1 billion to upgrade a substation but the NY Public Service Commission opted for $200 million towards locally distributed solar, energy efficiency and load management innovations like facilitating home and business owners to monitor and control energy use remotely with phone applications.



Renew WI

> *" [Transmission builders and other utilities in the] Midwest Independent System Operator (MISO)'s cost benefit analysis for the Midwest indicates that their comprehensive 17–line plan will reduce costs and emissions for the entire Midwest"*

SOUL:

Potential savings from Badger-Coulee and Cardinal Hickory Creek are dependent on wasteful increases in our energy use which has been essentially flat in Wisconsin since 2007.

After analyzing the economic forecasting submitted by ATC (MISO has not provided cost and benefit analysis of any individual lines) SOUL's transmission engineer, Peter Lanzalotta concluded, "For the slow growth scenario over 40 years and for the approximately 3 million Wisconsin retail electric customers, this reflects an average benefit of $1.10 per customer per year or about 9 cents per customer per month... If [ATC's] study had been done with a 0% growth rate, or the current projected growth rate of 0.03% between 2012 and 2020 [as projected by Wisconsin utilities]… I would expect the energy savings attributed to Badger-Coulee to be even lower,.."

Note that a tiny, *net* return is hoped to materialize over 40 years as the large amount of debt is being paid-off. Lanzalotta points out that a reasonable person would look at this potential, low rate of return and question if the large sum would be better spent on energy efficiency and incentives for solar with good track records for savings and guaranteed reductions in CO2.

At the request of more than 100 municipal resolutions, staff of the Public Service Commission of Wisconsin asked MISO to provide a CO2 impacts assessment for Badger-Coulee. The document they submitted shows that in all the "futures" they studied, ***carbon emissions in the region would continue to rise***. Emissions are shown to continue increasing in the Regional Wind scenario with Badger-Coulee in place, a five fold increase in MISO wind resources and a regional 20% renewable energy requirement in effect.

Badger-Coulee Carbon Emission Impacts Under Six Futures from 2020 - 2026

Future	Assumptions	CO2 Tons 2020	CO2 Tons 2026	CO2 Emission Change
Robust Economy	Energy use 13% greater than WI utilities predict **20%** Renewable Energy Requirement in WI,IA,IL No New Coal Retired 1200 MW Coal Added 4200 MW Natural Gas Added **$50 Per Ton Carbon Tax** Increase Existing Wind **3X** 150 MW Solar; 200 MW Biogas	611,29,642	679,062,431	Increases **+1.7%** Per Year
"Green" Economy	Energy use 13% greater than WI utilities predict **25%** Renewable Energy Requirement in Midwest 900 MW Coal Retired 1200 MW Natural Gas Added Increase Existing Wind **5X**	551,093,620	590,817,405	Increases **+1.16%** Per Year
Slow Growth	Energy use 2% greater than WI utilities predict **No Change** in Renewable Energy Requirements 450 MW Coal Retired 800 MW Coal Added Increase Existing Wind **1.5X**	473,563,243	486,686,208	Increases **+1.45%** Per Year
Regional Wind	Energy use 8% greater than WI utilities predict **20%** Renewable Energy Requirement in Midwest 900 MW Coal Retired 600 MW Coal Added $25 Per Ton Carbon Tax 1800 MW Natural Gas Added Increase Existing Wind **5X**	546,468,922	588,656,408	Increases **+1.24%** Per Year
Limited Investment	Energy use 5% greater than WI utilities predict **No Change** in Renewable Energy Requirements 450 MW Coal Retired $25 Per Ton Carbon Tax Increase Existing Wind **1.8X**	526,929,955	550,496,165	Increases **+.73%** Per Year
Carbon Constrained	Energy use 2% greater than WI utilities predict **Major Increase in Energy Efficiency** **25%** Renewable Energy Requirement in Midwest 67 MW Solar and Biogas 1700 MW Coal Retired **$50 Per Ton Carbon Tax** Increase Existing Wind **2X**	484,555,106	385,310,866	Decreases **-3.4%** Per Year

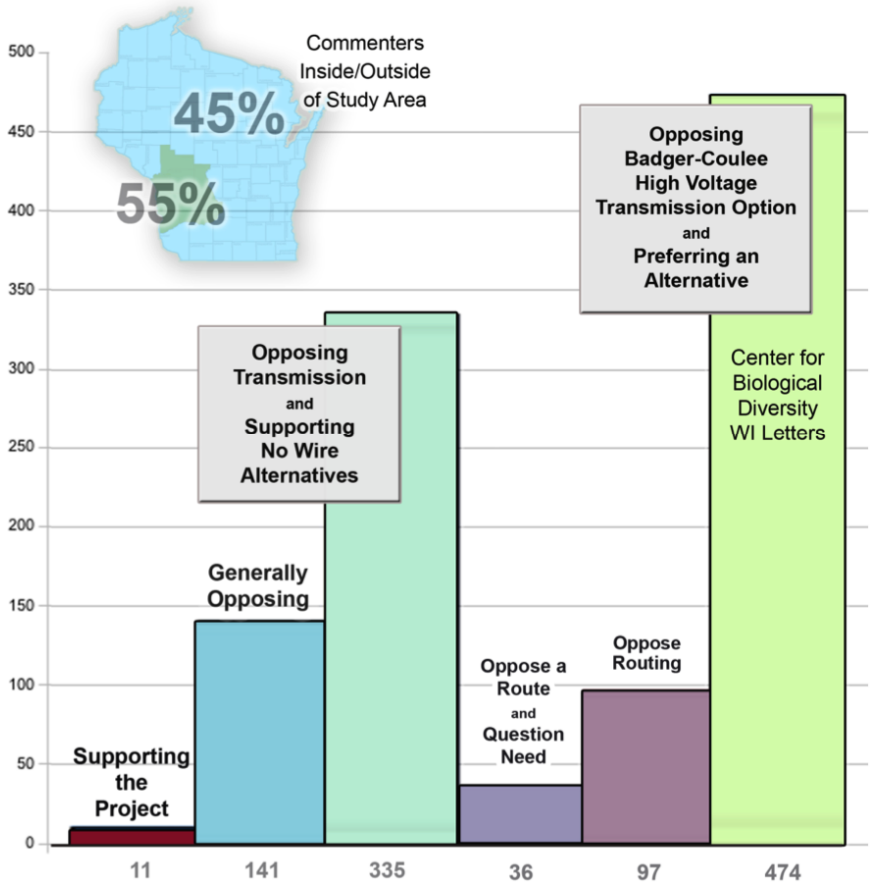
Above data from Tables 12 and 13 on pages 38 and 39 of "ATC's Planning Analysis of the Badger Coulee Transmission Project, Revised Appendix D, Exhibit 1,"(PSC REF#:204739); MISO emission accounting is from pages 4-6, "Part 3 of the Applicants' Responses to PSCW Staff's Fifth Set of Data Requests." (PSC REF# 210501) http://bit.ly/MISO-CO2-Increases . Note chart on page 6 displays *net* changes with and without the MVP 17 transmission lines which does not account for emissions increasing regionally over time.

The only planning scenario that MISO imagines where CO2 emissions decrease relies heavily on limiting energy growth from accelerated investments in energy efficiency, load management and a carbon tax to offset carbon additions from transmission expansion they still deem would be necessary.

A Citizen's Assessment Transmission Expansion

Ms. Sara Martinez of Viroqua, WI, a strong supporter of sustainability and the role of renewable energy, had these comments after four years of studying and participating in the Badger-Coulee proposal process,

> "It seems to me that this critical decision involves whether or not to commit ratepayer dollars like mine to a transmission plan for multiple decades... The applicant has failed to convince me that this massive, expensive project is a good investment. It repeatedly tries to silence the public condescending energy is really complicated, we are simply supposed to leave energy planning unto ATC." (Cashton public hearing transcript 12-10-15, pg 55-56, PSC REF#:226337)



In the record response of more than 1500 suggestions and comments, 1,094 were made on-line and mailed-in. 45% of these came from ratepayers outside of the Badger-Coulee study area. Only 9 percent foregrounded routing concerns without questioning need. Of the 335 letters and comments supporting No Wire Alternatives, more than two-thirds cited the engineered solution by name. Only 1 percent of those who commented on Badger-Coulee supported the high voltage transmssion option.