



# Updated Interactive Map Shows Clean Energy Projects Withdrawn from MISO Queue

*Grid Constraints Are Holding Back Renewable Energy and Job Creation*

<https://arcg.is/1WOODv>

An updated [interactive online map](#) created by NRDC's Sustainable FERC Project displays **active and withdrawn wind, solar, hybrid, and energy-storage projects** by county,<sup>1</sup> within areas of **North Dakota, Minnesota, Iowa, Wisconsin, Michigan, Illinois, Indiana, Missouri, Arkansas, Mississippi and Louisiana** where the electricity grid is operated by the **Midcontinent Independent System Operator (MISO)**.

Analyzing **MISO's Generator Interconnection Queue** from January 1, 2016 through October 15, 2020, the map depicts both the potential for clean energy development in the Midwest and South, as well as the bottleneck as projects drop from the pipeline, in part due to lack of grid capacity that results in high interconnection costs.

The Midcontinent Independent System Operator (MISO) is the Regional Transmission Organization that manages the electric grid and energy markets for a 15-state region in the U.S. and the province of Manitoba, Canada. Developers of electricity generation – like wind or solar farms – submit their projects to the [MISO Generator Interconnection Queue](#) for study to determine cost to reliably connect to the grid.

## Key Findings

- **278 solar, wind and battery storage or hybrid solar-storage projects** in development were *withdrawn* from the MISO Queue – more than **30 percent** of all projects included in the analysis.<sup>2</sup>
- If developed, these withdrawn projects would have supplied nearly 35,000 megawatts of 100% clean energy, enough to **power more than 8 million homes**.<sup>3</sup>
- If the withdrawn projects had been built, they would have created about **72,000 jobs** across the Midwest and South.<sup>4</sup> The median wage for jobs in clean energy today is about **\$24.50 an hour**, which is 25% more than the national median wage of \$19.14 an hour.
- **Michigan, Minnesota, Arkansas and Louisiana** topped the list of MISO states with the most withdrawn clean energy projects — 147 projects in total. See the [Summary Table](#).

<sup>1</sup> The 95 clean energy projects listed in the MISO GIQ under two or more counties were located on the map in the *first* county listed. Ten projects are not included on the map because the Queue data did not provide a location.

<sup>2</sup> Analysis includes *all* active projects but only a *subset* of withdrawn projects – those that were furthest along in the generator interconnection process, in Phase II or III or with a generator interconnection agreement (GIA).

<sup>3</sup> National average homes per megawatt multiplier for solar from [SEIA](#) and for wind from [AWEA](#).

<sup>4</sup> Utility-scale solar projects create an average of 3.3 jobs/MW according to [SEIA](#). Wind projects create an average of 0.9 jobs/MW according to NRDC analysis. Median wages according to [E2](#).

- Clean energy projects predominate in the MISO Queue overall, with more than **620 active solar, wind, storage and hybrid projects** as of October 15 – totaling nearly 90,000 megawatts, enough to power nearly 7 million homes.
- MISO states with the most active clean energy projects in the Queue include **Indiana** (123 projects/18,865 megawatts), **Michigan** (90 projects/12,212 megawatts), **Illinois** (70 projects/10,413 megawatts), **Wisconsin** (68 projects/8,498 megawatts), **Iowa** (50 projects/7,125 megawatts), and **Louisiana** (49 projects/6,714 megawatts).

## Grid Constraints Stymie New Projects

With many utilities and states in the Midwest and South ([Louisiana](#) most recently) aiming for 100 percent clean energy by 2050, the extent of active renewable projects in the MISO Queue holds promise. However, that potential is significantly diminished by the high rate of renewable energy projects being withdrawn. While projects may be pulled for a range of reasons, one clear contributor is the **lack of grid capacity across large swaths of the MISO region**.

For developers with proposed Queue projects in these areas, the **grid constraints can result in very high interconnection costs**, forcing them to shelve otherwise economic solar and wind projects. For example, earlier this year EDP Renewables **withdrew a 100 MW wind farm** in southwestern Minnesota after MISO assigned the company \$80 million in network cost upgrades – eight times higher than expected. Grid upgrade costs assigned to developers in MISO West have been raising the total costs of projects **more than 60 percent** on average.<sup>5</sup>

MISO Interconnection Queue (2016-2020) Data Table: Top States for Withdrawn Clean Energy Projects							
State	Project Type	# Active projects*	Total MW Active	# Withdrawn projects**	Total MW Withdrawn	# Projects Active + Withdrawn	Total MW Active + Withdrawn
Michigan	Solar	70	9,388.54	17	1,516.33	87	10,904.87
	Wind	10	1,714.90	23	3,652.15	33	5,367.05
	Hybrid	1	499.00	-	-	1	499.00
	Storage	9	610.00	3	90.00	12	700.00
	<b>TOTAL</b>	<b>90</b>	<b>12,212.44</b>	<b>43</b>	<b>5,258.48</b>	<b>133</b>	<b>17,470.92</b>
Minnesota	Solar	38	4,807.50	15	1,930.48	53	6,737.98
	Wind	7	1,344.00	17	2,912.00	24	4,256.00
	Hybrid	2	485.00	-	-	2	485.00
	Storage	8	360.00	4	115.00	12	475.00
	<b>TOTAL</b>	<b>55</b>	<b>6,996.50</b>	<b>36</b>	<b>4,957.48</b>	<b>91</b>	<b>11,953.98</b>
Arkansas	Solar	16	2,260.99	29	3,465.86	45	5,726.85
	Wind	3	407.00	3	430.05	6	837.05
	Hybrid	5	410.00	-	-	5	410.00
	Storage	6	110.00	5	185.00	11	295.00
	<b>TOTAL</b>	<b>30</b>	<b>3,187.99</b>	<b>37</b>	<b>4,080.91</b>	<b>67</b>	<b>7,268.90</b>
Louisiana	Solar	39	6,020.00	27	3,115.00	66	9,135.00
	Wind	-	-	1	200.00	1	200.00
	Hybrid	4	549.00	-	-	4	549.00
	Storage	6	145.00	3	125.00	9	270.00
	<b>TOTAL</b>	<b>49</b>	<b>6,714.00</b>	<b>31</b>	<b>3,440.00</b>	<b>80</b>	<b>10,154.00</b>

For more information on this data analysis or map, or to arrange interviews with experts on the grid solutions to unlock the clean energy in MISO's Queue, please contact Rachele Huennekens at [rachele@resource-media.org](mailto:rachele@resource-media.org).

<sup>5</sup> According to [AWEA, SEIA and the Clean Grid Alliance](#).