

Docket No. 2010-0311
ATTACHMENT C

Joint Comments of Wind on the Wires and Wind Coalition

FORECASTED RENEWABLE RESOURCE CAPACITY for MISSOURI BASED ON EIA SALES DATA from 2008 to 2020

Years:	2008-2015	2016-2020	2021-2025	2026-2030
Annual Escalation in Energy Consumption/Residential/Electricity	0.21%	1.00%	1.12%	1.06%
Annual Escalation in Energy Consumption/Commercial/Electricity	1.21%	1.48%	1.45%	1.39%
Annual Escalation in Energy Consumption/Industrial/Electricity	0.21%	0.65%	-0.11%	-0.11%
Weighted Avg of Annual Escalation in Retail Sales	0.462%	0.93%	0.54%	0.51%

NOTES: 1. The Annual Escalation in Energy Consumption for Residential, Commercial and Industrial sectors is from EIA *Annual Energy Outlook 2010*, Table A2.
2. The factors used for escalating the Weighted Average of Annual Escalation in Retail Sales are based on EIA *Annual Energy Outlook 2010*, Figure 3 data from 2008 to 2035: the ratios are 21% residential, 25% commercial and 54% industrial.

Year	Sales (MWh)	Weighted Average of Annual Escalation in Retail Sales	Sales Adjusted for Wtd Avg Escalation Rate (MWh)	RES Requirement	Amount of Renewable Energy Resources (MWh)	RES Solar Energy Requirements Carve Out	Amount of Renewable Energy Resources Adjusted that are non-Solar (MWh)	Estimated Capacity -- if RES met with out-of-state Wind (MW)	Estimated Capacity -- if RES met with in-state Wind (MW)
2008	59,084,266								
2009		0.46%	59,357,154	NA					
2010		0.46%	59,631,303	NA					
2011		0.46%	59,906,718	2%	1,198,134	0.04%	1,174,171	447	357
2012		0.46%	60,183,404	2%	1,203,668	0.04%	1,179,595	449	359
2013		0.46%	60,461,369	2%	1,209,227	0.04%	1,185,042	451	361
2014		0.46%	60,740,618	5%	3,037,031	0.10%	2,976,290	1,133	906
2015		0.46%	61,021,156	5%	3,051,058	0.10%	2,990,037	1,138	910
2016		0.93%	61,588,830	5%	3,079,442	0.10%	3,017,853	1,148	919
2017		0.93%	62,161,785	5%	3,108,089	0.10%	3,045,927	1,159	927
2018		0.93%	62,740,070	10%	6,274,007	0.20%	6,148,527	2,340	1,872
2019		0.93%	63,323,735	10%	6,332,374	0.20%	6,205,727	2,361	1,889
2020		0.93%	63,912,830	10%	6,391,283	0.20%	6,263,457	2,383	1,907
2021		0.54%	64,255,309	15%	9,638,296	0.30%	9,445,530	3,594	2,875

\$ 9,445,530
\$ 37,782,120
\$ 207,801,660

TOTAL RECs needed from 2011 through 2021: 44,522,609

Table A: Estimated Capacity to Meet the RES Inside and Outside of the State with Wind Resources

Year	Sales (MWh)	Sales Adjusted for Wtd Avg Escalation Rate (MWh)	Amount of Renewable Energy Resources Adjusted that are non-Solar (MWh)	Estimated Capacity -- if RES met with out-of-state Wind (MW)	Estimated Capacity -- if RES met with in-state Wind (MW)
2008	59,084,266				
2009		59,357,154			
2010		59,631,303			
2011		59,906,718	1,174,171	447	357
2012		60,183,404	1,179,595	449	359
2013		60,461,369	1,185,042	451	361
2014		60,740,618	2,976,290	1,133	906
2015		61,021,156	2,990,037	1,138	910
2016		61,588,830	3,017,853	1,148	919
2017		62,161,785	3,045,927	1,159	927
2018		62,740,070	6,148,527	2,340	1,872
2019		63,323,735	6,205,727	2,361	1,889
2020		63,912,830	6,263,457	2,383	1,907
2021		64,255,309	9,445,530	3,594	2,875

Docket No. 2010-0311
ATTACHMENT C

Joint Comments of Wind on the Wires and Wind Coalition

Table B: Results of JEDI Model for Missouri -- 2011 to 2041

Direct Impacts	Indirect Impacts	Jobs Impact	Total (2011 to 2041)
Construction Phase:			
1,594 new jobs	11,073 new jobs	Construction: 12,667 new jobs with a payroll of \$618.67 million	
\$105.13 million to local economy	\$1,548.9 million to local economy		\$1,654.8 million
Operational Phase:			
150 new jobs	337 new jobs	Long-Term: 487 new jobs with a payroll of \$23.41 million/yr	
\$8.28 million/yr to local economy	\$64.05 million/yr to local economy		\$72.33 million/yr to local economy
	Payments for Land Leases:		\$509.3 million
	Local Property Tax Revenue:		\$474.2 million
Total Economic Benefit:			\$4,807.43 million

4807.43

Economic Benefit 2011-2021:	\$	2,527
Economic Benefit per REC for 2011-2021:	\$	56.76

Docket No. 2010-0311
ATTACHMENT C

Joint Comments of Wind on the Wires and Wind Coalition

ESTIMATED ANNUAL LAND LEASE PAYMENTS AND PROPERTY TAXES from 2011 to 2041

Year	Estimated Capacity -- if RES met with in-state Wind (MW)	Rate for Land Lease (\$ per MW)	Annual Land Lease Payments	Rate for Property Taxes (\$ per MW)	Annual Property Tax Payments	Land Lease Payments 2011 - 2021	Property Tax Payments 2011 - 2021
2008							
2009							
2010							
2011	357	\$ 7,500.00	\$ 2,677,500	\$ 5,900	\$ 2,106,300		
2012	359	\$ 7,500.00	\$ 2,692,500	\$ 6,175	\$ 2,216,825		
2013	361	\$ 7,500.00	\$ 2,707,500	\$ 6,450	\$ 2,328,450		
2014	906	\$ 7,500.00	\$ 6,795,000	\$ 6,725	\$ 6,092,850		
2015	910	\$ 7,500.00	\$ 6,825,000	\$ 7,000	\$ 6,370,000		
2016	919	\$ 7,500.00	\$ 6,892,500	\$ 7,000	\$ 6,433,000		
2017	927	\$ 7,500.00	\$ 6,952,500	\$ 7,000	\$ 6,489,000		
2018	1,872	\$ 7,500.00	\$ 14,040,000	\$ 7,000	\$ 13,104,000		
2019	1,889	\$ 7,500.00	\$ 14,167,500	\$ 7,000	\$ 13,223,000		
2020	1,907	\$ 7,500.00	\$ 14,302,500	\$ 7,000	\$ 13,349,000		
2021	2,875	\$ 7,500.00	\$ 21,562,500	\$ 7,000	\$ 20,125,000	\$ 78	\$ 72
2022	2,875	\$ 7,500.00	\$ 21,562,500	\$ 7,000	\$ 20,125,000		
2023	2,875	\$ 7,500.00	\$ 21,562,500	\$ 7,000	\$ 20,125,000		
2024	2,875	\$ 7,500.00	\$ 21,562,500	\$ 7,000	\$ 20,125,000		
2025	2,875	\$ 7,500.00	\$ 21,562,500	\$ 7,000	\$ 20,125,000		
2026	2,875	\$ 7,500.00	\$ 21,562,500	\$ 7,000	\$ 20,125,000		
2027	2,875	\$ 7,500.00	\$ 21,562,500	\$ 7,000	\$ 20,125,000		
2028	2,875	\$ 7,500.00	\$ 21,562,500	\$ 7,000	\$ 20,125,000		
2029	2,875	\$ 7,500.00	\$ 21,562,500	\$ 7,000	\$ 20,125,000		
2030	2,875	\$ 7,500.00	\$ 21,562,500	\$ 7,000	\$ 20,125,000		
2031	2,875	\$ 7,500.00	\$ 21,562,500	\$ 7,000	\$ 20,125,000		
2032	2,875	\$ 7,500.00	\$ 21,562,500	\$ 7,000	\$ 20,125,000		
2033	2,875	\$ 7,500.00	\$ 21,562,500	\$ 7,000	\$ 20,125,000		
2034	2,875	\$ 7,500.00	\$ 21,562,500	\$ 7,000	\$ 20,125,000		
2035	2,875	\$ 7,500.00	\$ 21,562,500	\$ 7,000	\$ 20,125,000		
2036	2,875	\$ 7,500.00	\$ 21,562,500	\$ 7,000	\$ 20,125,000		
2037	2,875	\$ 7,500.00	\$ 21,562,500	\$ 7,000	\$ 20,125,000		
2038	2,875	\$ 7,500.00	\$ 21,562,500	\$ 7,000	\$ 20,125,000		
2039	2,875	\$ 7,500.00	\$ 21,562,500	\$ 7,000	\$ 20,125,000		
2040	2,875	\$ 7,500.00	\$ 21,562,500	\$ 7,000	\$ 20,125,000		
2041	2,875	\$ 7,500.00		\$ 7,000			
			\$ 509,302,500	TOTALS:	\$ 474,212,425		

Joint Comments of Wind on the Wires and Wind Coalition

Table C: Estimated Emission Reductions and Water Conservation

	Estimated Capacity -- if RES met with in-state Wind (MW)	Coal
	2,875	
Energy Avoided by Wind Energy Resources (MWh)		7,555,500
Emissions Savings:		
CO2 (lbs)		13,796,343,000
NOX (lbs)		34,755,300
SO2 (lbs)		9,822,150
Nitrous Oxide (lbs)		982,215
Water Conservation (gallons):		3,702,195,000

DATA:

Emissions from a typical power plant based on pulverized coal is: 1,826lbs/MWh of CO2, 4.6 lbs/MWh of NOx, 1.3lbs/MWh of SO2 and .13lbs/MWh of nitrous oxide.[1]

Water: the approximate usage by type of power plant is as follows: Nuclear 0.62 gal/kWh, Coal 0.49 gal/kWh, and Combined Cycle Gas 0.25 gal/kWh.

[2]

[1] Mathew, Sathyajith, Wind Energy Fundamentals, Resource Analysis and Economics, at 180, 182 (2006) citing Allam RJ, Spilsbury CG A study of the extraction of CO2 from the flue gas of a 500 MW pulverized coal fire boiler (1992).

[2] AWEA "How much water do wind turbines use compared with conventional power plants?" (http://www.awea.org/faq/wwt_environment.html, (9/22/2010)).