

**BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI**

In the Matter of a Workshop File to Explore)
Legislative and Regulatory Means to Improve)
and Clarify Missouri's Renewable Energy)
Standard Law, Mo. Rev. Stat. §§ 393.1020 to)
393.1030.)

File No. EW-2011-0031

JOINT COMMENTS of WIND ON THE WIRES and WIND COALITION

NOW COMES Wind on the Wires and Wind Coalition filing joint comments, pursuant to the Order issued by the Missouri Public Service Commission on August 5, 2010.

Wind on the Wires is a not-for-profit, collaborative organization dedicated to wind energy's fair access to the electric transmission system and market in the Midwest Region. Our Board of Directors and members are comprised of wind developers, environmental organizations, wind energy experts, tribal representatives, clean energy advocates, and businesses providing goods and services to the wind industry.

The Wind Coalition is a non-profit association designed to promote the development of wind energy as a clean, reliable, affordable and infinite resource at the regulatory and legislative levels within the Electric Reliability Council of Texas (ERCOT) and Southwest Power Pool (SPP) grid systems. The Wind Coalition is the regional partner of the American Wind Energy Association (AWEA) for this area.

STATEMENT OF POSITION

Wind on the Wires/Wind Coalition applauds the Missouri PSC for taking the initiative to focus on the legal and economic issues related to implementing provisions of the voter approved Missouri Renewable Energy Standards and following through on the need to give clear direction regarding compliance with the provisions of the act and the intention of the majority of Missourians encouraging the construction of Wind and Solar Generation in Missouri.

Wind on the Wires/Wind Coalition recommends keeping the language of the rule as it was approved by the Missouri Public Service Commission, because it brings the economic benefits of renewable businesses to Missouri, it allows the electric utilities to procure renewable energy in a manner that it is consistent with the statute and is prudent. In the alternative, the statute could be amended to clarify how renewable energy resources will be sold to Missouri customers in a way that allows the utilities to meet the 15% renewable energy standard in a cost effective manner and promotes the growth of renewable resources. Our economic analysis shows that a preference for in-state wind will bring money and jobs into the state, and that there are extensive environmental benefits to in-state facilities. Wind on the Wires/Wind Coalition further submits that some entities espouse a position that, in effect, would allow renewable energy resources from anywhere in the world should be counted as a renewable energy credit. Such a proposal will frustrate the clear intention of the statute and result in no incentive for development in Missouri. Such an approach will add costs but provide little benefit to Missouri consumers, it will channel Missourians money outside of Missouri for the construction of facilities in other states and fails to ensure that the goals of the renewable energy standard is fully realized by the citizens of Missouri.

Table of Contents

I.	COMMENTS	1
a.	Purpose of a RES.....	1
i.	Diversity of Energy Portfolio	1
ii.	Reduce Carbon Emissions.....	2
iii.	Portfolio Certainty – Offsetting Volatility of Fossil Fuels	3
b.	Legal Analysis	5
i.	Overview.....	5
ii.	Rules of Statutory Interpretation.....	7
iii.	The Language of the Initiative is Clear and Unambiguous	7
iv.	Application of Voter Initiative Language Would Not be Burdensome	9
v.	The Intent of the Voters is Clear.....	9
c.	Economic Analysis	10
i.	Economic Impact of Wind Facilities Located in Missouri	10
ii.	Estimate of Cost of In State Wind v. Out of State Wind.....	15
iii.	REC-only procurements fail to Sustain Growth of Renewable Energy Resources.....	17
d.	Operation of the 1% Retail Rate Impact.....	18
e.	Summary of Legal and Economic Analyses.....	18
II.	CONCLUSION.....	21

I. COMMENTS

a. Purpose of a RES

i. Diversity of Energy Portfolio

A renewable energy standard (“RES”) is a mechanism to increase renewable energy generation through an administrative process that will ensure it is cost-effective. While each state will tailor an RES to meet specific state objectives and needs, the typical goals of an RES is to stimulate growth of renewable energy resources and technology development, and increase energy portfolio diversity. States also seek to capitalize on the energy, environmental, and economic benefits of renewable energy. The procurement of renewable energy resources needs to be managed in a way that the environmental consequences of fossil fuels are consistently reduced or offset through better management, better technology and an increased amount of renewable energy resources. Another benefit of renewable energy resources is the low to no fuel cost, which allows the utilities to hedge their overall exposure to variability in fuel prices.

The Missouri Public Service Commission (“Commission” or “MPSC”) has been tasked to develop rules that conserve energy resources in a fiscally responsible manner. Thus the utilities should be considering environmental impacts, fuel supply availability and price volatility, resource diversity, and the capabilities of different kinds of resources when choosing how it will reliably meet demand. A resource portfolio with the best combination of cost and risk is the best approach for Missouri customers. That combination comes through the strength of diversity of the resources.

Each type of generating resource has advantages and disadvantages; if a utility that relies too heavily on any one resource increases costs, risks and reliability problems that are passed along to ratepayers. That’s true for conventional resources like coal, natural gas and hydropower. It is also true for new resources like wind and solar. Putting all of a utility’s eggs in

one basket is not prudent for Missouri customers – and developing a RES that builds a mix of renewable resources will take advantage of the strengths of each while minimizing their disadvantages.

This requires a long term vision. Part of that vision is set by statute – procure renewable energy resources (accounted for through renewable energy credits (“RECs”)) for at least 15% of the eligible customer load by 2021. In addition, the Missouri Initiative¹ has given a preference for in-state sources by counting each kilowatt-hour of eligible energy generated in Missouri as 1.25 kilowatt-hours.

ii. Reduce Carbon Emissions

Fossil fuel based power plants contribute more than 70% of the United States’ electricity needs today.² Missouri’s electricity is primarily from coal generation: coal 81%, natural gas 4%, nuclear 12%, renewable <3% and other sources <1%.³ Missouri’s fossil fuel consumption in 2010 is up 9.4% over its 2009 demand for the first six months of the year.⁴ With the increase in energy demand the level of environmental pollution is expected to increase. In contrast, wind energy doesn’t pollute the air or water with harmful gases and materials.

If 10% of the wind potential in the United States is effectively utilized it would be enough to offset more than a third of the total carbon dioxide emission in the nation can be reduced by 33%. Similarly, by meeting 20% of the country’s energy demand from wind, the emission from

¹ Proposition C, Missouri’s Renewable Energy Standard, was adopted on November 4, 2008 by the voters of Missouri through an initiative petition. The approval margin was 66% to 34%.

² Energy Information Administration, *Electric Power Annual 2008*, Table 1.1 Existing Net Summer Capacity by Energy Source and Producer Type. The fossil fuel production in 2008 is the quotient of the sum of the coal, petroleum and natural gas capacities for both utilities and independent power producers divided by the total capacity of utilities and independent power producers in 2008 – yielding fossil fuel production in 2008 at about 75.6% of the total electricity production.

³ American Coalition for Clean Coal Electricity (<http://www.americaspower.org/The-Facts/>) (Sept., 2010); See also *Electric Power Monthly*, Energy Information Administration, data through June 2010, tables 1.6B, 1.7B, 1.8B, 1.9B and 1.12B. Coal, Petroleum Liquid and Petroleum Coke contributed to 84.7% of electricity generated in Missouri in the first six months of 2010.

⁴ Fossil fuel consumption is up 9.4% in year to date consumption for 2010 over 2009. Energy Information Administration, *Electric Power Monthly - September*, Tables 2.5B, 2.6B, 2.7B and 2.8B.

the nation's coal power plants can be reduced by one third.⁵ This was corroborated by the Eastern Wind Integration and Transmission Study that found that carbon dioxide emissions would decrease by more than 25% in the 20% wind energy scenario and decrease by approximately 37% in the 30% wind energy scenario, compared to a scenario in which our current generation mix was used to meet increasing electricity demand. The study also found that wind energy will drastically reduce coal generation, which declined by around 23% from the business-as-usual case to the 20% wind cases, and by 35% in the 30% wind case.⁶ These results were corroborated by the DOE's 2008 technical report, "20% Wind Energy by 2030," which also found that obtaining 20% of the nation's electricity from wind energy would reduce carbon dioxide emissions by 25%.⁷ Good stewardship would seek to reduce output of harmful emissions in a measured and cost effective manner.

iii. Portfolio Certainty – Offsetting Volatility of Fossil Fuels

While most experts forecast the U.S. as being long on natural gas and coal reserves there are some indications that reserves may not be as plentiful as once thought. An ongoing U.S. EPA study of the impacts of hydraulic fracturing and a recent report issued by the University of Texas demonstrate that the U.S. could experience fossil fuel volatility sooner than once thought. In the event fossil fuel prices become volatile, renewable energy resources (with zero or little fuel costs), act as a hedge for that volatility.

As discussed above, Missouri's generation portfolio is predominately coal and natural gas.⁸ Natural gas price history indicates it is more volatile than coal. Advances in technology have enabled natural gas producers to retrieve natural gas embedded in shale, and that capability has greatly increased forecasted reserves.⁹ Some natural gas organizations estimate

⁵ AWEA "What are environmental benefits of wind power?" (http://www.awea.org/faq/wwt_environment.html, (9/22/2010)).

⁶ <http://www.nrel.gov/wind/systemsintegration/ewits.html>.

⁷ http://www1.eere.energy.gov/windandhydro/wind_2030.html.

⁸ See Energy Information Monthly Outlook Report, Tables 1.6B, 1.7B, 1.8B, 1.9B, 1.10B and 1.12B.

⁹ See Natural Gas website (<http://www.naturalgas.org/overview/resources.asp> (9/22/2010)).

that there will be enough supply to last 100 years under current usage.¹⁰ However, the hydraulic fracturing methodology is relatively new, uses vast amounts of water and chemical additives to open or enlarge existing fractures near the well so that oil or natural gas can be obtained. Some locations throughout the U.S. have complained about the chemical additives seeping into groundwater. The U.S. EPA is conducting a study over the next few years, looking at the potential impact on drinking water, human health and the environment.¹¹ While these are isolated instances they do indicate a slight chance of a curtailment in the amount of shale gas and reduction of the overall forecasted reserves.

A recent report, from the University of Texas at Austin (written by Patzek and Croft), projects coal production to peak next year and reach 1990 levels by 2037 and 50% of peak production by 2047.¹² This is contrary to a number of experts, such as the National Academy of Sciences 2007 assessment, that coal will continue to meet a major portion of the U.S. energy requirements for several decades and probably 100 years at the current rate of consumption.¹³ If Patzek and Croft are right, the U.S. is in the beginning part of a major restructuring of energy generation.¹⁴ The distinguishing factor in Patzek's analysis is that he places no weight on the reserve estimates. His analysis is based on the Hubbert method – looking at historical production rates and assuming total production capacity will follow a bell curve shape.

Fossil fuels are limited, the question is when will reserves decrease and what situations may occur that could cause a price spike. As discussed above, a majority of forecasts indicate plenty of reserves but there are indicators that price spikes are not a foregone instance. As such, the zero to low cost of wind and renewable energy resources make them a perfect hedge against the risk of that price volatility.

¹⁰ Id.

¹¹ U.S. EA website (<http://water.epa.gov/type/groundwater/uic/class2/hydraulicfracturing/index.cfm> (9/22/2010)).

¹² Patzek, Tadeusz; Croft, Gregory, "A global coal production forecast with multi-Hubbert cycle analysis", *Energy*, vol.35:8 pp. 3109-3122 (Aug. 2010).

¹³ "Coal: Research and Development to Support National Energy Policy", National Research Council (2007).

¹⁴ Id.

Hedging against policy change is another important reason that Missouri needs to diversify its generation resources. It has become clear that change in environmental regulation of fossil fuel plants in the country is on the horizon. Additional regulation of emissions including carbon, mercury and other pollutants is currently under serious consideration. With Missouri's heavy dependence on coal it is of particular importance that diversification be encouraged.

b. Legal Analysis

i. Overview

A number of interpretations regarding geographic sourcing, which is the focus of the current docket before the MPSC, were set forth by intervenors to the rulemaking. Most intervenors who addressed this issue seemed to start their analysis from a viewpoint of how an RES operates and what other states are doing, rather than looking at the language of the statute. The first look needs to be the plain language of the statute. In doing so, there are some easy identifiers of the intent of the Initiative.

The last sentence of section 393.1030(a) clearly indicates that renewable energy generated within the state receives a weighted preference over energy generated outside of the state. By implication, this sentence clarifies that renewable energy facilities can be located either within Missouri or outside of Missouri, the question is whether the renewable energy resource produced outside of Missouri need to have some tie to Missouri or not. And if it is to have a tie to Missouri – in what form?

The sentence that everyone seems to trip over is: "The portfolio requirements shall apply to all power sold to Missouri consumers whether such power is self-generated or purchased from another source in or outside of this state." The clear intent in the Initiative is to require that certain percentages of energy sales to Missouri consumers be from Missouri qualified renewable energy resources. What has been the subject of debate is whether Missouri RECs could represent anything outside of those resources. If so, then the intention of the statute,

which is to encourage the construction of Missouri wind and solar generation would be rendered ineffective. This is because RECs from anywhere in the world would then qualify. The market price for such unlimited RECs is so low that no new construction would ever occur. It would always be cheaper to just buy these unlimited RECs rather than invest in new capital. But this is clearly not what was intended in the Missouri RES. The statute contemplates a percentage of sales to Missouri consumers being from renewable energy and gives extra credit if the energy is from generation that is located in Missouri.

The intent of the statute is easily satisfied by acknowledging what is the usual understanding of a REC. RECs are defined by the jurisdiction that counts them. They are the accounting mechanism to determine compliance. Thus, each state defines what will qualify in its jurisdiction. Some states only count RECs or require a certain portion of RECs that represent energy from in state resources. Requiring that the generation be located in a particular area for the REC to qualify is sometimes called “geographic sourcing.” Some states have other kinds of restrictions that govern the measure of benefits to the state. In Missouri, the limitation is found in the compliance language that requires a percentage of energy sales to Missouri consumers to come from renewable resources. Thus, in order for a Missouri REC to be certified it must represent the sale of one MWh of energy from a renewable energy resource as defined in the Initiative. Energy from Missouri based renewable generators are counted as 1.25 MWh for every MWh produced. This is completely consistent with the requirements of the Initiative.

Some entities have attempted to confuse the issue by suggesting that the either RECs or renewable energy can be used to demonstrate compliance with Missouri’s RES. In fact, the RECs are the accounting mechanism to determine compliance with the standard. Every qualified renewable energy resource that is sold to Missouri consumers can qualify as a REC. RECs are severable from the energy it represents. After the utility has demonstrated it has a sufficient number of RECs to comply with the RES, it can sell any remaining or excess RECs.

The argument that some parties made that this position made the RECs and the energy not severable is inaccurate.

ii. Rules of Statutory Interpretation

Ultimately, the issue of geographic sourcing boils down to a question of statutory interpretation. In interpreting a statute, the overriding purpose is to ascertain the intent of the legislature. The primary rule of statutory construction to give effect to legislative intent is by examining the plain language of the statute.¹⁵ Each word or phrase in a statute must be given meaning if possible.¹⁶ In examining the plain language of the statute, one must first look to the language used, giving it its plain and ordinary meaning.¹⁷ If the plain language is ambiguous or unclear, Missouri courts can then, and only then, look to other factors that demonstrate legislative intent. Missouri courts have held that in ascertaining legislative intent it is proper that provisions of an entire act be construed together and, if reasonably possible, all provisions should be harmonized. Related clauses are to be considered when construing a particular portion of a statute.¹⁸ Finally, in matters of statutory construction, effect must be given to the legislative intent from what the legislature said, not from what the legislature might have intended to say.¹⁹

iii. The Language of the Initiative is Clear and Unambiguous

Section 393.1030.1 of the Renewable Energy Standard statute specifically addresses geographic sourcing:

¹⁵ State v. Blocker, 133 S.W.3d 502, 504 (Mo. banc 2004).

¹⁶ Id.

¹⁷ Director, Missouri Department of Public Safety v. Murr, 2000 W.C. 134731 (Mo. App. W.D. 2000).

¹⁸ See State v. Haskins, 950 S.W.2d 615 (Mo.App.S.D. 1997); Ferrell Mobile Homes, Inc. v. Holloway, 954 S.W.2d 712, 715 (Mo.App.S.D. 1997); Hagely v. Board of Education, 841 S.W. 663, 667 (Mo.banc 1992).

¹⁹ State ex rel. Competitive Telecommunications v. Missouri Public Service Com'm., 886 S.W.2d 34, 39 (Mo. App. 1994).

The portfolio requirements shall apply to all power sold to Missouri consumers whether such power is self-generated or purchased from another source in or outside of this state.

This language clearly and unambiguously requires that the renewable energy be sold to Missouri consumers in order for a REC associated with that energy to count towards meeting the standard.²⁰ This is consistent with the fact that the statute allows RECs to be used to comply with the standard (therefore allowing unbundling) and the fact that the statutory scheme also contemplates energy generated outside the state to be counted —otherwise the 1.25 multiplier for in-state generation would be rendered meaningless.²¹

The statute separately addresses what the “base” is for determining the portfolio percentage —§393.1030.1 states, “Such portfolio requirement shall provide that electricity from renewable energy resources shall constitute the following portions of each electric utility's sales:” and goes on to the 2%, 5%, 10% and 15% milestones. To interpret the “sold to Missouri consumers” language found after subdivisions (1) through (4) in subsection 1 to be about calculating the portfolio portions would render some of the language as meaningless and redundant, which is contrary to the rules of statutory construction.²²

As such, the language that was approved by the MPSC in subsection (2)(A) carries out this mandate of the statute that the portfolio standards be met from electricity sold to Missouri consumers, in the form of the associated RECs (bundled or unbundled). Wind on the Wires/Wind Coalition completely agrees with the MPSC's finding on this point, which stated:

Given the statute's objective of encouraging the sale of renewable energy from any source to Missouri customers, and the preference for Missouri generation, it is not unreasonable or inconsistent with the statute that the rule defines a REC as representing Missouri generation or Missouri delivery. The only type of REC that is restricted by the proposed rule is

²⁰ The primary rule of statutory construction, whether the statute is enacted by the general assembly or by the people, is to ascertain the intent of the respective lawmakers based upon the plain language of the statute as enacted. Missourians for Honest Elections v. Missouri Elections Comm'n, 536 S.W.2d 766, 775 (Mo. App. 1976).

²¹ Id. at 773.

²² Id.

where the renewable energy is generated outside of Missouri and delivered outside of Missouri. Under the rule, such a REC will not qualify to satisfy the portfolio standards. Since RECs are defined by the statute simply as one megawatt-hour (1 MWH) generated from a renewable energy source, and the statute itself encourages Missouri generation and delivery to Missouri, the rule as proposed is a reasonable implementation of the objectives of the statute.

iv. Application of Voter Initiative Language Would Not be Burdensome

The Wind Coalition, in its comments during the development of the RES regulations, stated that compliance with the current geographic sourcing requirement is not burdensome and does not require "tracking electrons." In fact, numerous other states require an in-state or in-region sourcing of renewable energy. Wind on the Wires/Wind Coalition agrees with this analysis, as well as the analysis of the MPSC on this point, which stated:

Consistent with the statute, a utility can still comply with the portfolio requirements by purchasing RECs. But valid RECs exclude those arising from generation coupled with delivery outside Missouri. The market for RECs may be restricted but that is not inconsistent with the view of the market for RECs taken by the FERC and other states.

v. The Intent of the Voters is Clear

Wind on the Wires/Wind Coalition submits that the language of the statute clearly and unambiguously requires the energy associated with a REC to be generated in or sold into Missouri in order to be counted towards compliance with the RES. However, even if the language of the statute is determined to be unclear on this point, the rules of statutory interpretation require one to next look to the intent of the lawmakers in drafting the statute. In the MPSC's Order, it set out a clear interpretation of the intent of the lawmaker, in this instance the voters of the state of Missouri.

Missouri voters passed a statute which specified that a renewable portfolio standard would apply to power sold to Missouri customers whether generated inside the state or outside. They did that because they wanted cleaner energy delivered to their homes and they wanted the economic advantages renewable energy generation will bring to the state. In order to achieve these goals, it is necessary to develop an in-state renewable energy industry. This rule recognizes that fact and sets its geographic sourcing in order to encourage and develop a wide-range of

renewable energy resources in the state in conjunction with the requirements of the statute. Therefore, the commission makes no changes as a result of these comments.

The MPSC also cited to the Missouri Laborers' Legislative Committee's comments that it supports the voters' intent to have renewable energy delivered to Missouri utility customers and to support the development of new industry in the state. Wind on the Wires/Wind Coalition agrees with this analysis.

Based on the above analysis, Wind on the Wires/Wind Coalition submits that the only legally-permissible reading of the Initiative would require that any regulations restrict the use of RECs for compliance to come from energy produced in-state, or if from out-of-state, such energy must be sold to Missouri customers for the energy's associated RECs to be utilized for compliance with the Missouri RES.

c. Economic Analysis

i. Economic Impact of Wind Facilities Located in Missouri

A. Direct and Indirect Economic Impacts

Cities and states look to attract new businesses to help create jobs and infuse capital into the state economy. Wind farm facilities create jobs during construction as well as the operation and maintenance of the wind farm. Growth in the number of wind farms also creates jobs within the state and region within disciplines needed to build and operate such facilities – such as manufacturing, accounting, legal and engineering. Beyond that, a wind farm pays property owners to lease land and pays taxes.

To estimate the economic impact a renewable energy facility has on the state Wind on the Wires/Wind Coalition used a model developed by the National Renewable Energy Laboratories --- the Jobs and Economic Development Impacts model (“JEDI”). The JEDI model is an industry accepted methodology for estimating the economic impacts of constructing and

operating power generation at the local and state levels.²³ The JEDI model default factors are based on actual data collected from interviews with industry experts and project developers. Economic multipliers contained within the model are derived from Minnesota IMPLAN Group's IMPLAN Professional. The model estimates the project costs (i.e., specific expenditures), and the economic impacts in terms of jobs, earnings (i.e., wages and salary), and output (i.e., value of production) resulting from the project. In calculating an estimated impact, the JEDI model considers 14 aggregated industries that are impacted by the construction and operation of a wind farm: agriculture, construction, electrical equipment, fabricated metals, finance/insurance/real estate, government, machinery, mining, other manufacturing, other services, professional service, retail trade, transportation/communication/ public utilities, and wholesale trade.²⁴

Capacity Needed to Meet Missouri RES

Before an impact analysis is run, an estimate of the capacity of renewable energy resources needed to meet the Missouri RES needs to be calculated. Starting with the 2008 sales data from the Missouri PSC we then forecast an adjusted sales amount over the next ten years using data from the Energy Information Administration's Annual Energy outlook 2010, table A2 and figure 3. The column second from the right estimates the number of MWs of capacity if met with out-of-state wind resources. The far right column is the estimated capacity needed to meet the RES with in-state wind resources.

²³ See U.S. DOE website (http://www.windpoweringamerica.gov/filter_detail.asp?itemid=707) (9/29/2010)).

²⁴ See National Renewable Energy Laboratories website (http://www.nrel.gov/analysis/jedi/about_jedi.html) (9/29/2010).

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

See Attachment C for calculations of the numbers in the table above.

Wind on the Wires/Wind Coalition analysis used version 1.10.2 of the JEDI model and assumed that the renewable energy standard requirement was met with in-state wind resources.

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

Missouri Property Taxes and Land Leases for Windfarms

Some of the difference between the two states would be property tax rate and value of land for purpose of leasing. Illinois has one of the highest property taxes on wind farms.²⁵ A recently approved windfarm in Northern Missouri is expected to yield a property tax payment of \$5,900 per MW.²⁶ This rate is expected to increase to \$7,000 by 2015.

Landowners benefit from a steady source of income. Lease payments vary based on a number of factors: land value, turbine size, price of energy and landowner knowledge base. While there is no single factor that drives the landowner compensation, the estimated annual

²⁵ *Economic Impact Report of Wind Development on Illinois*, at 13; see also, DSIRE:Illinois:Commercial Wind Energy Property Valuation (9-22-2010) The website address is http://www.dsireusa.org/incentives/incentive.cfm?Incentive_Code=IL25F&state=IL&CurrentPageID=1&RE=1&EE=1.

²⁶ *Full Steam Ahead on Wind Farm Development*, Kirksville Daily Express.com (March 10, 2010).

average is \$7,500 per MW installed. The \$7,500 average is taking into account other payments for substations, overhead transmission, access roads, buffer area, construction area, operations buildings, and in some cases a sharing of gross revenue. In some instances, the lease can be greater than revenue the farmer can earn from farming or ranching.²⁷

To estimate the benefits from land leases and property taxes we calculated the annual payments from 2011 to 2041. 2011 is the beginning of the RES and we assume that construction will continue out to 2021 and that the windfarms have a life of 20 years. The total amounts for the land lease payment are \$509.3 million and the total property tax payments are projected to be \$474.2 million. These amounts are included in Table B above.

Calculation of Environmental Benefits from reduced emissions and Water Conservation

In addition to job creation the renewable energy resources offset or avoid energy from fossil fuel facilities. Emissions from a typical power plant, based on pulverized coal, is: 1,826lbs/MWh of CO₂, 4.6 lbs/MWh of NO_x, 1.3lbs/MWh of SO₂ and .13lbs/MWh of nitrous oxide.²⁸ Coal and nuclear, oil and combined cycle gas plants also use water in their production cycle. Wind turbines do not, so water is conserved by increasing the use of wind energy.²⁹

Using the data regarding emissions and water conservation we estimate the environmental benefits of reduced emission and water conservation. The emissions' offset is compared to coal since that is the fuel predominantly on the margin in the Midwest ISO.³⁰ and which would be displaced by the addition of renewable energy resources.

²⁷ *Wind Energy Easements and Leases: Compensation Packages*, Windustry at 5 (2005).

²⁸ 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).

²⁹ AWEA "How much water do wind turbines use compared with conventional power plants?" (http://www.awea.org/faq/wwt_environment.html, (9/22/2010)). The approximate usage by type of power plant is as follows: Nuclear 0.62 gal/kWh, Coal 0.49 gal/kWh, Oil 0.43 gal/kWh, Combined Cycle Gas 0.25 gal/kWh.

³⁰ Federal Energy Regulatory Commission website – "Electric Power Markets: Midwest (MISO)" (<http://www.ferc.gov/market-oversight/mkt-electric/midwest.asp> (9/24/2010)).

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

- Notes: 1. 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. [see footnote 23]
2. Water: the approximate usage by type of power plant is as follows: Coal 0.49 gal/kWh. [see footnote 24]

ii. Estimate of Cost of In State Wind v. Out of State Wind

The difference in cost between an in-state REC and an out-of-state REC would basically be driven by supply and demand. The supply is dictated by the breadth of the geographic source requirement.

Table D: Approximate REC prices based on Geographic Location

Geographic Location	Approximate Cost
Anywhere outside Missouri irrespective of delivery location	\$1 to \$4.50 ³¹
Outside of Missouri Sold to retail customers in MISO	\$1 to \$4.50 ³²
Outside of Missouri Sold to Missouri Customers	\$4 to \$22 ^{33,25,26}
Inside Missouri	\$4 to \$22 ^{24,25,26}

REC markets across the U.S. vary, so it is hard to estimate REC prices that Missouri would pay between now and 2021. REC prices for procurements on behalf of Ameren Illinois Utilities from 2008 to 2010 would be the best bet of market prices in the region. The first procurement for the Ameren Illinois Utilities, in 2008, yielded the high-water mark in REC prices of \$22. Average prices dropped in 2009 to \$16.66 from wind resources in Illinois and \$13.46 from non-wind resources in Illinois. No out-of-state resources were procured.³⁴ Prices again dropped in the 2010 procurement: \$4.06 from wind resources in Illinois and \$3.90 from non-wind resources in Illinois.³⁵ As discussed infra, as renewable portfolio standards start to outpace renewable generation the REC prices will increase.

Missouri has contact with a number of states with large wind capacities – Iowa 3,670 MW, Kansas 1,206 MW, Oklahoma 1,130 MW, and Illinois 1,848 MW. Therefore, we predict that Missouri’s REC procurements would follow the path that Illinois followed – high and then falling off.

³¹ Pennsylvania Public Utility Commission, *2008-2009 Annual Reports Annual Energy Portfolio Standards*, at 5.

³² Pennsylvania Public Utility Commission, *2008-2009 Annual Reports Annual Energy Portfolio Standards*, at 5.

³³ ICC Public Notice of Winning Bidders and Average Prices for procurement on behalf of Ameren Illinois Utilities --2008. In this procurement RECs were procured on behalf of Ameren Illinois from adjacent states at a rate of \$21.20. Illinois non-wind renewable energy resource clearing price was \$17.50. (<http://www.icc.illinois.gov/electricity/procurementprocess.aspx>)

³⁴ ICC Public Notice of Winning Bidders and Average Prices Illinois Power Agency 2009 Procurement for Ameren Illinois Utilities, Renewable Energy Credits RFP Procurement (5/18/2009). (<http://www.icc.illinois.gov/electricity/procurementprocess.aspx>).

³⁵ ICC Public Notice of Winning Bidders and Average Prices Concerning the Illinois Power Agency’s 2010 Procurement of Renewable Energy Credits for Ameren Illinois Utilities (5/24/2010). (<http://www.icc.illinois.gov/electricity/procurementprocess.aspx>)

iii. REC-only procurements fail to Sustain Growth of Renewable Energy Resources

The statute allows the utility to comply with the renewable energy standard requirements, in whole or in part, by procuring RECs.³⁶ Interpreting this to mean that there are in effect two forms of qualified Missouri RECs those that represent sales to Missouri consumers and unrestricted RECs representing renewable energy resources from anywhere in the world. This would have a detrimental effect on the impact of the RES and in fact could easily render the Initiative meaningless or worse discourage the construction of Missouri renewable generation. RECs yield a fraction of the revenue that a developer obtains from the sale of energy. Development of wind resources is usually done by independent power producers who do not have a captured rate base to rely upon as a revenue stream. Typically, they rely on longer-term contracts to encourage cost-effective development. Without a long-term contract the developer has to choose between operating as a merchant project – which is next to impossible to receive financing for at this time – or postponing development until a long-term contract is available. Projects financed with multi-year contracts have lower risk for lenders, reducing the cost of capital. Also, longer contracts can be entered into directly with an windfarm owner or operator, thereby reducing the mark-up and marketing costs of third party REC traders (third party REC traders do play a helpful role in facilitating markets, this comment is not critical of their existence *per se* but rather of the exclusive reliance on short term REC markets).

In contrast, continued use of one year unlimited RECs with no ties to Missouri to fulfill the RPS results in developers sitting on the sidelines while the RPS requirements increase. The result is that renewable resource development will not keep pace with the increasing

³⁶ It should be noted that this provision does not infer that compliance with the Missouri renewable energy standard is done by adding MWh of energy that has been sold to its Missouri consumers to RECs that it may purchase from other utilities to determine compliance. Rather it allows the procurement of Missouri qualified RECs from other utilities to be added to the RECs it already possesses that account for the energy it has sold to its consumers. In other words, RECs are the accounting mechanism to fulfill and determine compliance of a Missouri utility and it must have sufficient Missouri RECs to meet the Missouri RES.

demand and the costs of renewable resources will increase over time.³⁷ Eleven of the thirteen states in the Midwest ISO have an RPS requirement. If Missouri utilities only procure unlimited RECs owners and developers are likely experience an insufficient revenue stream to support construction of renewable resources at a pace equal to the RPS.

An argument can be made that a utility that does anything other than purchase the lowest cost unlimited RECs is being imprudent, since it is likely that such RECs will always be cheaper somewhere than actual investment in new capital. Such a policy will do little if anything to diversify Missouri' utilities generation resources- one of the important benefits of a RES. If there is no tie required between the Missouri RES and Missouri, as has been suggested by some intervenors, only unlimited RECs will be purchased and no new renewable energy will be made available to Missourians. Neither will the economic and environmental benefits be focused in Missouri. Missourians money will flow to the utilities and then to other states.

d. Operation of the 1% Retail Rate Impact

Wind on the Wires/Wind Coalition continue to support the Retail Rate Impact language of Section 5 of the Rule and its ability to calculate the impacts of renewable energy resources on a straightforward and transparent basis. At this time, Wind on the Wires and Wind Coalition do not identify any substantive issues the Retail Rate Impact will have on the geographic sourcing positions, however, we reserve the right to respond to information parties submit for discussion in the workshops as this docket progresses.

e. Summary of Legal and Economic Analyses

- The purpose of a renewable energy standard is to encourage and develop renewable energy facilities. The language in the Initiative clearly requires a certain percentage of energy sales to Missouri consumers come from Missouri qualified renewable energy

³⁷ See, Peter Toomey and Eric Thumma, *Wanted: Stability in Restructured Electricity Markets*, North American Windpower (Feb. 2010).

resources. What has been the subject of debate is whether Missouri RECs could represent anything outside of those resources. If such an interpretation is adopted then the intention of the statute to encourage the construction of Missouri wind and solar generation would be rendered ineffective. This is because RECs from anywhere in the world would then qualify. The market price for such unlimited RECs is so low that no new construction would ever occur. It would always be cheaper to just buy these unlimited RECs rather than invest in new capital. This is clearly not what was intended in the Missouri RES. Thus, Wind on the Wires/Wind Coalition recommends reading the Initiative as imposing a geographic sourcing requirement.

- Wind on the Wires/Wind Coalition used the JEDI model to analyze the state and local economic impacts of wind development in Missouri. Assuming 2,875 MW of renewable energy resources came from in-state wind, the JEDI model estimates that approximately 12,667 construction and manufacturing related jobs would be created and approximately 487 permanent jobs would be created. The permanent jobs are expected to garner a payroll of approximately \$23.4 million per year. In addition, Missouri would receive approximately \$4.8 billion in economic benefits between 2011 and 2041. In addition, Missouri landowners could receive approximately \$21.2 million per year in compensation for use of their land and local government would receive approximately \$16.3 million per year in property tax revenue.
- Construction of 2,875 MW of wind energy would offset the production of coal plants and bring significant environmental benefits: reducing carbon output by 6.9 million tons of CO₂, which is the equivalent of removing 1,144,279 cars from the road³⁸. The reduction of SO₂ and NO_x reduces the occurrence of acid rain and smog and improves general air

³⁸ A medium size car that averages 21 MPG and driven 12,000 miles per year will emit 6.6 U.S. tons of CO₂ in a year. This is from the carbon dioxide emissions calculator at Carbonify.com (<http://www.carbonify.com/carbon-calculator.htm> (9/28/2010)); The U.S. EPA estimates a similar passenger vehicle emits something in the range of 5.5 to 6 U.S. tons of CO₂ per year. (<http://www.epa.gov/oms/climate/420f05004.htm> (9/28/2010)).

quality for people with respiratory problems.³⁹ Smog and respiratory benefits tend to be more local in nature whereas the acid rain benefits are more regional to national in scope. In addition, the benefits are dependent on the location of the fossil generator whose output is curtailed.

- In addition, significant amounts of ground water would be conserved by reducing the amount of fossil fuels relied upon by Missouri utilities. The location of groundwater conservation would be local to the fossil-fuel facilities that would be curtailed.
- REC Prices are difficult to predict, since there are no clear trends beyond the impact of supply and demand. Missouri is located in a wind rich area and if it chose to procure RECs from outside the state it could probably do so at lower REC prices than it would receive from in-state resources. The average price of an in-state REC will probably be higher than the average price of an out-of-state REC. From 2011 to 2021, 44,522,609 MWh of renewable energy resources will need to be procured. If that requirement was met with 2,875 MWs of in-state wind resources, the benefit per MWh from 2011 to 2021 would be approximately \$57.79⁴⁰. Thus Missourians would benefit if they were able to procure in-state RECs at less than approximately \$56.76 per MWh. If wind facilities were built out-of-state, using the mean of the value range for out-of-state REC prices (from Table E) Missourians would pay approximately \$122,437,170 from 2011 to 2021 and receive little to no direct benefit.

³⁹ *Wind Energy Fundamentals, Resource Analysis and Economics*, at 180-81.

⁴⁰ The benefits are calculated for the 10 year period from 2011 to 2021 and includes the \$72.33 million per year benefits related to the Operational Phase, plus the construction benefits of \$1,654.8 million, plus the land lease payments and property tax payments. See Table B.

II. CONCLUSION

The rule should stay as approved by the Commission because it will increase the amount of renewable energy resources in a manner that benefits Missouri citizens, brings financial benefits to the state, furthers the environmental integrity of Missouri and its neighboring states, provides energy resource diversity and hedges against the risk of fossil-fuel price volatility. Our comments demonstrate how the rule accomplishes all of the above.

In the alternative, if it is found that statutory revisions are needed in order to accomplish the goals of Proposition C, then Wind on the Wires/Wind Coalition suggest that consideration be given to adopting a pure geographic sourcing requirement. Such a proposal has to be consistent with the intent of Proposition C that the energy come from qualified renewable energy resources located within Missouri. If qualified renewable energy resources located within the Midwest ISO or SPP were to be considered part of that amendment, then there needs to be a connection between those renewable energy resources and Missouri customers. Failure to provide that connection moves the RES in the direction of an open-ended REC provision. Such a provision would eliminate most *if not all* hedging, environmental and economic benefits the renewable energy resources can provide to Missourians. If such a revision is made it should improve the balance between rate impacts and the economic and environmental benefits.

We appreciate the opportunity to comment on the renewable energy standard in an effort to ensure it operates in a way that best represents the intent and interests of Missourians.

Respectfully submitted,

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Dated: October 1, 2010

Mo. Rev. Stat. § 393.1030:

393.1030. The [Missouri Public Service] commission shall, in consultation with the department [of Natural Resources], prescribe by rule a portfolio requirement for all electric utilities to generate or purchase electricity generated from renewable energy resources. Such portfolio requirement shall provide that electricity from renewable energy resources shall constitute the following portions of each electric utility's sales:

- (1) No less than two percent for calendar years 2011 through 2013;
- (2) No less than five percent for calendar years 2014 through 2017;
- (3) No less than ten percent for calendar years 2018 through 2020;
- and
- (4) No less than fifteen percent in each calendar year beginning in 2021.

At least two percent of each portfolio requirement shall be derived from solar energy. The portfolio requirements shall apply to all power sold to Missouri consumers whether such power is self-generated or purchased from another source in or outside of this state. A utility may comply with the standard in whole or in part by purchasing RECs. Each kilowatt-hour of eligible energy generated in Missouri shall count as 1.25 kilowatt-hours for purposes of compliance.

4 CSR 240-20.100(A) & (B):

(2) Requirements. Pursuant to the provisions of this rule and sections 393.1025 and 393.1030, RSMo, all electric utilities must generate or purchase RECs and S-RECs associated with electricity from renewable energy resources in sufficient quantity to meet both the RES requirements and RES solar energy requirements respectively on a calendar year basis. Utility renewable energy resources utilized for compliance with this rule must include the RECs or S-RECs associated with the generation. The RES requirements and the RES solar energy requirements are based on total retail electric sales of the electric utility. The requirements set forth in this rule shall not preclude an electric utility from being able to prudently invest and recover all prudently incurred costs in renewable energy resources that exceed the requirements or limits of this rule and are consistent with the prudent implementation of any resource acquisition strategy developed in compliance with 4 CSR 240-22, Electric Utility Resource Planning. RECs or S-RECs produced from these additional renewable energy resources shall be eligible to be counted toward the RES requirements.

(A) Electric energy or RECs associated with electric energy are eligible to be counted towards the RES requirements only if the generation facility for the renewable energy resource is either located in Missouri or, if located outside of Missouri, the renewable energy resource is sold to Missouri electric energy retail customers. For renewable energy resources generated at facilities located outside Missouri, an electric utility shall provide proof that the electric energy was sold to Missouri customers.⁴¹

(B) The amount of renewable energy resources or RECs associated with renewable energy resources that can be counted towards meeting the RES requirements are as follows:

1. If the facility generating the renewable energy resources is located in Missouri, the allowed amount is the amount of megawatt-hours generated by the applicable generating facility, further subject to the additional twenty-five hundredths (0.25) credit pursuant to subsection (3)(G) of this rule; and
2. If the facility generating the renewable energy resources is located outside Missouri, the allowed amount is the amount of megawatt-hours generated by the applicable generating facility that is sold to Missouri customers. For the purposes of subsections (A) and (B) of this section, Missouri electric energy retail customers shall include retail customers of regulated Missouri utilities as well as customers of Missouri municipal utilities and Missouri rural electric Cooperatives.

⁴¹ The provisions stricken by Missouri JCAR (7/1/2010) are underscored.