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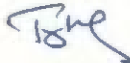
Mr. Jeff Derouen  
Executive Director  
Public Service Commission  
211 Sower Boulevard, P.O. Box 615  
Frankfort, Kentucky 40602-0615

Re: In the Matter of: 2014 Integrated Resource Plan of Big Rivers Electric Corporation, P.S.C. Case No. 2014-00166

Dear Mr. Derouen:

Enclosed for filing on behalf of Big Rivers Electric Corporation in the above-referenced matter are an original and ten (10) copies of (i) Big Rivers' response to the comments filed by the Attorney General and Sierra Club, and (ii) a petition for confidential treatment. I certify that on this date, a copy of this letter, a copy of the response, and a copy of the petition were served on each of the persons listed on the attached service list by regular mail.

Sincerely,



Tyson Kamuf

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In the Matter of:

THE 2014 INTEGRATED RESOURCE PLAN OF ) CASE NO. 2014-00166  
BIG RIVERS ELECTRIC CORPORATION )

**RESPONSE OF BIG RIVERS ELECTRIC CORPORATION TO THE COMMENTS  
FILED BY THE ATTORNEY GENERAL AND SIERRA CLUB**

Comes Big Rivers Electric Corporation (“Big Rivers”), through counsel, and for its response to the comments filed by the Attorney General and Sierra Club respecting Big Rivers’ 2014 Integrated Resource Plan (“IRP”), states as follows.

**I. Coleman is a potentially valuable resource, and it is premature to definitively plan to retire it or to sell it at a loss.**

Most of the criticisms from the Attorney General and Sierra Club relate to Big Rivers’ Coleman generating station. The Attorney General claims that Big Rivers should have performed a net present value revenue requirements analysis regarding Coleman’s value<sup>1</sup> and that Big Rivers should model scenarios for the sale of Coleman.<sup>2</sup> Sierra Club similarly argues that Big Rivers should evaluate retiring, repowering, or selling one or more units.<sup>3</sup>

Both the Attorney General and Sierra Club fail to recognize the circumstances surrounding Big Rivers’ evaluation of Coleman Station during the preparation of the 2014 IRP. When Big Rivers began preparing the 2014 IRP in late 2013 and through the time that Big Rivers filed the IRP in May 2014, Big Rivers was in the midst of two rate cases,<sup>4</sup> both of which

<sup>1</sup> See Attorney General’s comments at p. 5.

<sup>2</sup> See *id.* at p. 9.

<sup>3</sup> See Sierra Club’s comments at p. 2.

<sup>4</sup> The Public Service Commission (“Commission”) issued orders awarding a rate increase in Case No. 2012-00535 on October 29, 2013, and a rate increase in Case No. 2013-00199 on April 25, 2014. Final orders on rehearing were issued on July 24, 2014, in Case No. 2012-00535, and on June 6, 2014 in Case No. 2013-00199.

1 were needed to address the revenue shortfall resulting from the two aluminum smelters on Big  
2 Rivers' system terminating their power contracts. Those two smelters provided approximately  
3 65% of Big Rivers' revenue. In both rate cases, the Attorney General and Sierra Club were  
4 advocating positions, which if adopted by the Commission, would have inevitably led to a Big  
5 Rivers bankruptcy.

6 The rate cases were an integral part of Big Rivers' Load Concentration Analysis and  
7 Mitigation Plan ("Mitigation Plan"). The rate cases provided sufficient revenues for Big Rivers  
8 to be financially stable, while at the same time giving Big Rivers the opportunity to pursue  
9 various strategies under the Mitigation Plan for reducing rates by maximizing the value of the  
10 Wilson and Coleman Stations, which include, but are not limited to: (i) marketing all available  
11 power when the market price is greater than the marginal generation cost, through increased  
12 sales into the MISO market, economic development, long-term contracts, new members, etc.; (ii)  
13 temporarily idling Wilson and/or Coleman when market prices do not support the cost of  
14 generating; and (iii) exploring selling or leasing Wilson and Coleman.<sup>5</sup>

15 While the rate cases were pending, Big Rivers was also aggressively pursuing these  
16 strategies. The first of these strategies involves Big Rivers' efforts to secure replacement load.  
17 Big Rivers has been successful in securing sufficient market energy and capacity sales to enable  
18 Wilson Station to continue to operate through at least the end of 2015. Big Rivers has seen  
19 approximately 25 MW of internal load growth plus an announced \$350 million expansion at a  
20 large industrial facility (Aleris) that will involve additional load growth. Big Rivers has

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<sup>5</sup> See IRP Section 3.

1 negotiated agreements to supply a consortium of municipalities in Nebraska with another 67  
2 MW.<sup>6</sup> And Big Rivers is actively negotiating with other potential power purchasers.

3 The second strategy involves reducing costs by temporarily idling generating units when  
4 market prices do not support the cost of generating. When it filed the two rate cases, Big Rivers  
5 anticipated idling both the Wilson and Coleman Stations (one on August 20, 2013, and the other  
6 on January 31, 2014)<sup>7</sup> because of continued weakness in the market at that time. As noted  
7 above, Big Rivers' plans to idle Wilson Station were postponed because of an increase in market  
8 prices that enabled Big Rivers to continue operating Wilson, and market prices are now  
9 anticipated to be sufficient for Big Rivers to continue operating the Wilson Station for the  
10 foreseeable future. The continued operation of the Wilson plant has protected 93 direct jobs,  
11 provided \$126 million of economic benefit to the local economy and provided significant benefit  
12 to Big Rivers' Members. Big Rivers' plans to idle Coleman Station were delayed because  
13 Midcontinent Independent System Operator, Inc. ("MISO") required Big Rivers to continue  
14 operating that station for reliability reasons until May 2014.

15 The third strategy involves efforts to sell or lease generating units. Big Rivers has  
16 offered and continues to offer both Wilson and Coleman for sale, and it continues to evaluate this  
17 opportunity.

18 Also during this time, Big Rivers was negotiating new contracts with the smelters that  
19 would allow the smelters to purchase power at market-based rates, in an effort to allow the  
20 smelters to continue operating and to avoid the negative economic impacts to the region that

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<sup>6</sup> Big Rivers' application seeking approval of these contracts is pending before the Commission in *In the Matter of: Big Rivers Electric Corporation's Filing of Wholesale Contracts pursuant to KRS 278.180 and 807 KAR 5:011 § 13*, Case No. 2014-00134.

<sup>7</sup> See IRP Section 3; Mitigation Plan, filed under a petition for confidential treatment as an attachment to Big Rivers' response to Item 44b of Kentucky Industrial Utility Customers, Inc.'s Second Request for Information in *In the Matter of: Application of Big Rivers Electric Corporation for Approval of its 2012 Environmental Compliance Plan, for Approval of its Amended Environmental cost Recovery Surcharge Tariff, for Certificates of Public Convenience and Necessity, and for Authority to Establish a Regulatory Account*, Case No. 2012-00063.

1 would have resulted from the loss of nearly 1,200 direct jobs and other indirect economic  
2 benefits that would result from a cessation of their operations.<sup>8</sup> Big Rivers' goal in the new  
3 smelter agreements was to impose no costs on the remaining customers on Big Rivers' system  
4 that they would not have been exposed to if the smelters had terminated operations.

5 So, while preparing the IRP, Big Rivers was dealing with tremendous uncertainties,  
6 including (i) trying to secure the rate relief needed to remain viable, (ii) evaluating whether  
7 market conditions justified and would continue to justify operating Coleman and Wilson in the  
8 short term, (iii) trying to idle Coleman, (iv) pursuing market opportunities in which Big Rivers  
9 was able to secure sales that enabled Wilson Station to continue operating, (v) negotiating  
10 agreements with the Nebraska consortium, (vi) pursuing numerous other opportunities for  
11 obtaining replacement load, and (vii) pursuing opportunities to sell or lease Coleman and  
12 Wilson. There was also much uncertainty surrounding critical environmental regulations,  
13 especially since the U.S. Supreme Court was reviewing the Cross State Air Pollution Rule  
14 ("CSAPR") (which it later upheld), and the EPA was expected to (and did on June 2, 2014),  
15 issue its proposed Clean Power Plan to address carbon emissions.

16 In light of all this uncertainty, Big Rivers' management prudently did not discard its  
17 Wilson and Coleman Stations in a knee-jerk reaction to the smelter contract terminations, and  
18 instead appropriately investigated the Mitigation Plan strategies for maximizing the value of the  
19 Wilson and Coleman Stations for the benefit of Big Rivers' Members and their retail customers.  
20 This has allowed Big Rivers to sell energy and capacity from Wilson, which is expected to  
21 reduce Big Rivers' FAC charges to its Members by approximately \$5.8 million in 2014 and \$7.1  
22 million in 2015,<sup>9</sup> in addition to providing margins to Big Rivers beyond the variable operating

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<sup>8</sup> See IRP Section 3.

<sup>9</sup> See Big Rivers' response to Item 7 of the Commission Staff's Second Request for Information.

1 costs and the roughly \$26 million in fixed operating costs for Wilson that Big Rivers does not  
2 recover from its Members through base rates. These margins have a positive impact on the  
3 Members' equity and Big Rivers' credit rating evaluations and borrowing costs. By not simply  
4 throwing away valuable generating assets, Big Rivers is able to keep Coleman on its system for  
5 only the cost of maintaining it in an idled state while more certainty is achieved regarding market  
6 prices and environmental regulations. This also preserves Coleman for potentially satisfying Big  
7 Rivers' carbon reduction requirements as well as contributing to the State's carbon reduction  
8 requirements.

9         The Attorney General and Sierra Club complain that Big Rivers should have included  
10 more definitive analyses and action plans surrounding the retirement or sale of generating plants  
11 in its IRP.<sup>10</sup> Given the uncertainty that existed at the time and the need to pursue the Mitigation  
12 Plan strategies to determine the value of the available opportunities, including more definitive  
13 analyses in the IRP was just not a reasonable possibility. But the IRP is just a snapshot of plans  
14 as of a point in time. Big Rivers' planning does not stop when it files the IRP. Big Rivers  
15 continues to evaluate the future of Wilson and Coleman and the potential to retire or sell those  
16 units, and as Big Rivers is able to gain more clarity with regard to future market prices and  
17 environmental regulations, it is able to perform additional modeling that was not possible to  
18 include in the IRP. And contrary to Sierra Club's claim, Big Rivers does have an action plan.  
19 The action plan is to continue to implement the Mitigation Plan.<sup>11</sup> As Big Rivers does that, it  
20 will be able to gain more certainty and to have more definitive plans about the future of Wilson  
21 and Coleman. Making definitive plans to retire plants or to sell them at a loss without additional

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<sup>10</sup> See, e.g., report of Synapse Energy Economics, Inc., attached to Sierra Club's comments ("Synapse Report") at pp. 18-19.

<sup>11</sup> See IRP Section 12.

1 certainty would not maximize the value of the plants, and it would not be in the best interests of  
2 Big Rivers' Members or their retail customers.

3 **II. Big Rivers' replacement load assumptions and assumptions relating to the operation**  
4 **of plants are reasonable.**  
5

6 Sierra Club argues that Big Rivers was wrong to assume in every scenario that Big Rivers  
7 would secure 800 MW of replacement load and retain all of its existing coal units.<sup>12</sup> But Sierra  
8 Club either misunderstands or misrepresents the impact of these assumptions.

9 In modeling the scenarios included in the IRP, Big Rivers' management used informed  
10 judgment to develop the assumption that Big Rivers would secure 800 MW of firm-contract  
11 replacement load over a five-year period. Sierra Club implies that Big Rivers created this  
12 assumption to justify retaining all of the generating plants.<sup>13</sup> Sierra Club has it backwards.

13 Big Rivers has made no permanent decisions on its plans for Wilson and Coleman, and  
14 so, in the IRP, Big Rivers modeled possibilities surrounding the future of Wilson and Coleman  
15 that it considered reasonable. It is clearly not in Big Rivers' Members best interest to retire  
16 Coleman or Wilson Station or to sell them at a significant loss while Big Rivers is in the process  
17 of achieving more clarity on future environmental regulations and energy and capacity market  
18 prices. By deciding to retain Wilson and Coleman at least in the short term, Big Rivers  
19 maintains the flexibility it needs to provide its Members and their retail customers safe and  
20 reliable power at the lowest reasonable cost.

21 Given the decision to maintain this flexibility, it was reasonable for Big Rivers to model  
22 running those plants when the model determined it was economically justified to do so. Market

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<sup>12</sup> See Sierra Club's comments at pp. 2, 10-11.

<sup>13</sup> See Synapse Report at p. 11 ("But Big Rivers has tried this approach before, forecasting a favorable future as a way of validating its decision to retain all of its existing capacity, which has resulted in significant and unexpected rate increases and an idled coal plant"). It should be noted that the rate increases were the result of the smelter contract terminations, not Big Rivers' forecasting.



1 prices already justify running Wilson, and market prices (energy and capacity) could justify  
2 returning Coleman to service in 2016 or 2017. If market prices are sufficient, even if Big Rivers  
3 is unable to secure firm-contract replacement load, Coleman could be dispatched sufficiently  
4 enough in the MISO markets to justify returning it to service as early as 2016 or 2017. However,  
5 instead of relying entirely on the day-ahead and real-time markets, Big Rivers anticipates that it  
6 will hedge the market risk by entering into longer-term contracts.

7 In other words, Wilson's favorable position compared to current and projected market  
8 prices justifies continuing to run Wilson, and Coleman's favorable position compared to market  
9 prices may justify running Coleman as early as 2016 or 2017. Thus, Wilson is expected to  
10 continue to run throughout the planning period and can serve over 400 MW of firm-contract  
11 replacement load. If Big Rivers does not secure 400 MW of firm-contract replacement load,  
12 Wilson will still likely run; it will just be used for sales into MISO. Coleman would be used to  
13 serve the next 400 MW of firm-contract replacement load. But if Big Rivers secures less than  
14 800 MW of firm-contract replacement load, Coleman could instead be used for sales into MISO  
15 beginning in 2016 or 2017, or when market prices justify returning it to service. The  
16 replacement load assumptions are thus a function of Coleman's and Wilson's relative market  
17 positions. Securing less replacement load would not change whether Wilson and Coleman are  
18 economic to run but would instead only increase MISO market sales.

19 Further, since the replacement load assumptions are a function of market position,  
20 running sensitivities around market prices provides more value as to the range of possible  
21 outcomes than just assuming that Big Rivers only secures a different number of MWs of firm-  
22 contract replacement load. In its IRP, Big Rivers did just that by including a scenario that  
23 assumed a 20% reduction in market energy prices, a scenario that assumed a 20% increase in

1 market energy prices, a scenario than assumed a 20% reduction in market capacity prices, and a  
2 scenario that assumed a 20% increase in market capacity prices.<sup>14</sup>

3 Sierra Club contends that Big Rivers' September financial forecast run, which includes  
4 only 400 MW of replacement load, shows that Big Rivers does not believe in its replacement  
5 load assumptions in the IRP, that Big Rivers has deviated from its Mitigation Plan, and that its  
6 "current plans do not match up with the IRP results."<sup>15</sup> But these comments assume that Big  
7 Rivers would arbitrarily elect to run Coleman, achieve only 400 MW of replacement load, and  
8 have no corresponding increase in market sales. However, the 400 MW of replacement load is a  
9 result of the decision to leave Coleman idled in the September model run, which Big Rivers  
10 might do as a carbon regulation compliance strategy. The Mitigation Plan supports the use of the  
11 generating stations that provides the most benefit to Big Rivers' Members and their retail  
12 customers, and so, leaving Coleman idled as a possible carbon compliance strategy is perfectly  
13 consistent with the Mitigation Plan.

14 Sierra Club argues that Big Rivers' replacement load projections run counter to Big  
15 Rivers' experience.<sup>16</sup> This claim is false. Big Rivers has already obtained more replacement  
16 load much earlier than projected, including the market sales that have enabled Wilson to  
17 continue to operate and the 25 MW of native load growth. Big Rivers has also secured  
18 additional load in future years, including the sales to the Nebraska consortium and the planned  
19 expansion at Aleris.

20 Sierra Club argues that Big Rivers' replacement load projections are counter to current  
21 market trends because nine municipals terminated their contracts with Kentucky Utilities  
22 Company ("KU") to "get a more flexible electricity contract and save money on the open

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<sup>14</sup> See IRP Section 1.7.

<sup>15</sup> See Sierra Club's comments at pp. 1-2, 19.

<sup>16</sup> See Synapse Report at p. 5.

1 market” and because “some customers are vanishing entirely, including the large industrial load  
2 from the USEC uranium enrichment facility in Paducah, KY.”<sup>17</sup> To use the closure of a single  
3 industrial customer that is not even in Big Rivers’ service territory as the basis for concluding  
4 that Big Rivers cannot attract load is intellectually dishonest, especially since Big Rivers has  
5 already secured 25 MW of native load growth and expects significant additional load growth  
6 from the Aleris expansion. Moreover, the contract termination by the KU municipals does not  
7 run counter to Big Rivers’ projections; in fact, it supports them. It shows there are significant  
8 potential opportunities, even in Kentucky, for Big Rivers to market its power and secure long-  
9 term contracts.

### 10 **III. The forecasts Big Rivers relied on are reasonable.**

11  
12 Sierra Club argues that Big Rivers’ forecasts of energy prices and capacity prices are  
13 unrealistic.<sup>18</sup> It complains, for example, that energy prices change from forecast to forecast.<sup>19</sup>  
14 But Sierra Club offers no alternative forecast that it believes is reasonable for a comparison with  
15 Big Rivers’ forecasts, nor does Sierra Club point to any forecast that does not change when  
16 updated.

17 Sierra Club claims that the capacity price forecast relied on by Big Rivers is unreasonable  
18 when compared to the cost of new entry (“CONE”) in MISO Zone 4.<sup>20</sup> Big Rivers is located in  
19 MISO Zone 6, and projections for Zone 4 are not applicable. Also, the capacity forecast relied  
20 on by Big Rivers is supported by MISO’s estimation of increasing capacity shortfalls continuing  
21 through 2023-2024, as shown on the attached presentation.

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<sup>17</sup> *Id.*

<sup>18</sup> *See, e.g., id.* at p. 1 (“capacity prices in the IRP are forecast to jump quickly and unrealistically”).

<sup>19</sup> *See id.* (“energy prices appear to vary widely with each updated BREC calculation”).

<sup>20</sup> *See id.* at pp. 7-9.

1 Sierra Club claims that the energy price forecast may result in a double counting of  
2 capacity price revenues.<sup>21</sup> This is not true. Big Rivers provided a response to Item 31 of Sierra  
3 Club's Initial Request for Information that included a description of Wood Mackenzie's  
4 calculation of market energy price projections. While the description of Wood Mackenzie's  
5 process and modeling capability is correct, the specific energy market curves that Big Rivers  
6 used in the Strategist modeling portions of the IRP process did not include any capacity costs. It  
7 was appropriate to model market capacity rates and resultant revenues separately from energy  
8 projections, as Big Rivers did.

9 Sierra Club criticizes Big Rivers' fuel forecast for [REDACTED]  
10 [REDACTED].<sup>22</sup> Big Rivers has been utilizing JD Energy for its long term coal price  
11 forecasts. For the 2014 IRP filing, the February 2013 JD Energy coal forecast was utilized. Big  
12 Rivers used the February 2014 JD Energy coal forecast in its more recent model runs. A  
13 comparison of the two forecasts is attached and shows that in the 2014 forecast, coal prices are  
14 on average about [REDACTED] than the 2013 forecast. Also, actual prices [REDACTED] in 2013  
15 from 2012 prices while the 2013 prices in the 2013 JD Energy forecast were forecasted to  
16 [REDACTED]. This follows the [REDACTED] in actual coal prices in [REDACTED].  
17 Thus, the 2014 forecast is consistent with changes in actual prices.

18 When it developed the IRP, Big Rivers relied on the most up-to-date actual forward  
19 prices and forecasts available at the time from reputable firms whose business includes such  
20 forecasts. Other utilities also rely on the forecasts from these firms. As such, Big Rivers'  
21 reliance on these forecasts was reasonable.

22  

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<sup>21</sup> See *id.* at p. 12.

<sup>22</sup> See Sierra Club's comments at p. 2.

1 **IV. The scenarios included in the IRP were reasonable.**

2  
3 Sierra Club makes several claims about the scenarios included in the IRP. It complains  
4 that Big Rivers should have evaluated the retirement or sale of plants.<sup>23</sup> That claim is addressed  
5 above.

6 Sierra Club similarly argues that Big Rivers ignored studies on the value of Wilson that  
7 Big Rivers had commissioned.<sup>24</sup> Those studies have no impact on the IRP because Big Rivers  
8 determined that the IRP should assume that Coleman and Wilson remain on the system while  
9 Big Rivers evaluates the future of those plants for the reasons stated above. And Sierra Club's  
10 opinion of the value of Wilson<sup>25</sup> stands in stark contrast to the facts that Wilson is a low cost unit  
11 and that Big Rivers was able to forward sell the energy and capacity from Wilson even under  
12 current market prices.

13 Sierra Club states, "Risks that should be evaluated [in an IRP] includes changes in fuel  
14 prices (coal, oil, and natural gas), future load, electricity market prices, and carbon dioxide and  
15 other environmental regulation."<sup>26</sup> Big Rivers' IRP includes base case and high and low  
16 sensitivities around fuel prices and energy and capacity market prices.<sup>27</sup> It includes high and low  
17 sensitivities of carbon pricing.<sup>28</sup> It includes load sensitivities for base case, extreme, and mild  
18 weather, and for base case, optimistic, and pessimistic economic conditions.<sup>29</sup> It includes two  
19 sensitivities for environmental compliance costs.<sup>30</sup> Simply put, Big Rivers did include sensitivity  
20 runs around each of the risks noted by Sierra Club; thus, Sierra Club's implication that Big  
21 Rivers did not include these cases is false.

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<sup>23</sup> See Synapse Report at p. 16.

<sup>24</sup> See *id.* at p. 1.

<sup>25</sup> See *id.* at p. 17.

<sup>26</sup> *Id.* at p. 3.

<sup>27</sup> See IRP Section 1.7.

<sup>28</sup> See *id.*

<sup>29</sup> See *id.*

<sup>30</sup> See *id.*

1 Sierra Club complains that Big Rivers only included carbon regulation in two of the  
2 scenarios, and Sierra Club asserts that carbon regulation should be assumed in all scenarios,  
3 including the base case.<sup>31</sup> Regulation of carbon emissions is not currently in effect. Its form and  
4 timing are uncertain. Including high and low sensitivities for carbon regulation is therefore  
5 reasonable and consistent with the approach used by other utilities in Kentucky that do not  
6 include carbon pricing in their base cases.

7 Sierra Club complains that “none of the scenarios include both compliance with known  
8 environmental regulations and a price on carbon emissions,”<sup>32</sup> and that the scenarios contained in  
9 the IRP were only examined one at a time.<sup>33</sup> The scenarios presented in the IRP identify  
10 potential deviations from the base case for numerous influential factors, and Big Rivers believes  
11 that reasonable and informed judgment can be exercised in evaluating the combined impacts of  
12 multiple scenarios.

13 Sierra Club argues that Big Rivers used “a base case energy price forecast that is said to  
14 include a carbon price,” but did “not model payment of any carbon costs by its own generating  
15 units in the base case....”<sup>34</sup> This claim likely arises from Big Rivers’ response to Item 14 of  
16 Sierra Club’s Second Request for Information, where Big Rivers responded affirmatively to a  
17 question about whether Wood Mackenzie included carbon regulation in its long-term energy  
18 price forecast. While Wood Mackenzie does have an energy price forecast with carbon included,  
19 the Wood Mackenzie price forecast Big Rivers relied on in preparing the IRP did not include  
20 carbon. So, the energy price forecast used in the base case and most other scenarios did not

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<sup>31</sup> See Synapse Report at pp. 13, 16.

<sup>32</sup> *id.* at p. 16.

<sup>33</sup> See *id.* at p. 17.

<sup>34</sup> *Id.* at p. 13.

1 include carbon. The only energy prices that included carbon were those used in the carbon  
2 scenarios.

3 Sierra Club states that Big Rivers should not wait to evaluate the impact of potential  
4 carbon regulation until the regulation is finalized.<sup>35</sup> But Big Rivers is not waiting until the  
5 regulation is finalized. Big Rivers included sensitivities in its IRP to evaluate the potential  
6 impact of carbon regulation, and Big Rivers continues to evaluate the potential impact and  
7 potential compliance strategies. Big Rivers is, however, waiting until there is more certainty to  
8 take definitive action to comply with potential carbon regulations.

9 Sierra Club notes that Big Rivers has run models with Green Station converted to natural  
10 gas and argues that those model runs should have been included in the IRP.<sup>36</sup> The Sargent &  
11 Lundy study prepared and filed as part of Big Rivers' 2012 Environmental Compliance Plan did  
12 suggest converting Green Station to natural gas as one approach for compliance with CSAPR.  
13 However, the conclusions of the study showed that an SCR at Green and enhanced FGD at  
14 Wilson were preferred compliance methods for Big Rivers, assuming Coleman was still in  
15 operation. Thus, Big Rivers did not include the potential conversion of the Green Station to  
16 natural gas in the IRP. Nevertheless, Big Rivers continues to evaluate the possible natural gas  
17 conversion of its coal units as natural gas prices change and new environmental regulations are  
18 proposed.

19 For the foregoing reasons, the scenarios included in Big Rivers' 2014 IRP were  
20 reasonable.

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<sup>35</sup> See *id.* at pp. 5-6.

<sup>36</sup> See Synapse Report at p. 20.

1 **V. Big Rivers' evaluations of demand-side management and energy efficiency were**  
2 **reasonable**  
3

4 Sierra Club argues that “Big Rivers failed to evaluate, much less propose as part of its  
5 preferred resource plan, the inclusion of higher levels of energy efficiency that the Company's  
6 own consultant has identified as achievable and has estimated could provide between \$63 million  
7 and \$270 million in net benefits.”<sup>37</sup> It is false that Big Rivers did not evaluate higher levels of  
8 demand-side management (“DSM”) and energy efficiency measures. Big Rivers had GDS  
9 Associates, Inc. perform a DSM potential study to evaluate a range of potential energy efficiency  
10 and demand response programs.<sup>38</sup> Sierra Club points to no deficiency in this study. Sierra  
11 Club’s real complaint is that Big Rivers did not implement all of the programs the potential study  
12 found to be cost effective. Implementing additional energy efficiency measures would require  
13 additional rate increases, and Big Rivers decided that now was not the right time to seek  
14 additional rate increases. Big Rivers began offering DSM and energy efficiency programs in late  
15 2011. A number of modifications have been made and are currently being considered to  
16 effectively meet retail member needs. 2014 was the first year that all programs were offered for  
17 the entire year at each Member Cooperative, and Big Rivers’ current DSM and energy efficiency  
18 budget is based on the \$1 million DSM budget included in Big Rivers’ base rates in its last rate  
19 case. Instead of implementing additional measures at this time, Big Rivers and its Members are  
20 focused on improving the effectiveness of the approved amount of dollars spent on existing  
21 programs and the number of retail members impacted.

22 **VI. Conclusion**  
23

24 807 KAR 5:058 provides, “The plan shall include the utility's resource assessment and  
25 acquisition plan for providing an adequate and reliable supply of electricity to meet forecasted

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<sup>37</sup> Sierra Club’s comments at p. 2.

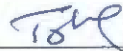
<sup>38</sup> See IRP Section 5.



1 electricity requirements at the lowest possible cost.” Big Rivers’ 2014 IRP and its ongoing  
2 planning activities rely on reasonable methodologies and assumptions, consider an appropriate  
3 range of potential scenarios, and seek to fulfill the goal of the IRP regulation of providing an  
4 adequate and reliable supply of power at the lowest reasonable cost by optimizing the capacity  
5 Big Rivers has available. Based on the foregoing, Big Rivers’ 2014 IRP complies with 807 KAR  
6 5:058, and the Attorney General’s and Sierra Club’s criticisms of the IRP are unfounded.

7 On this the 17<sup>th</sup> day of December, 2014.

8  
9 Respectfully submitted,

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24  
25 *Counsel for Big Rivers Electric Corporation*

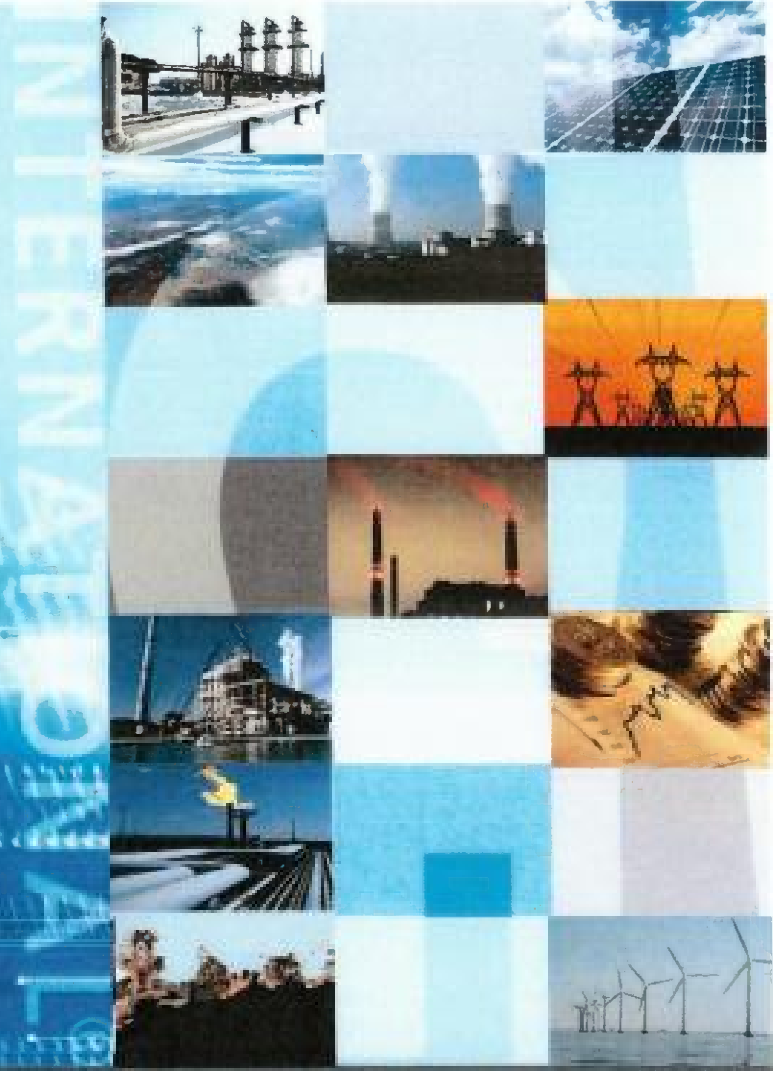
26  
27  
28 **Certificate of Service**

29 I certify that a true and accurate copy of the foregoing was served by regular mail upon  
30 the persons listed on the accompanying service list, on or before the date the foregoing is filed  
31 with the Kentucky Public Service Commission.  
32

33  
34 On this the 17<sup>th</sup> day of December, 2014,

35  
36 

37 \_\_\_\_\_  
38 Counsel for Big Rivers Electric Corporation

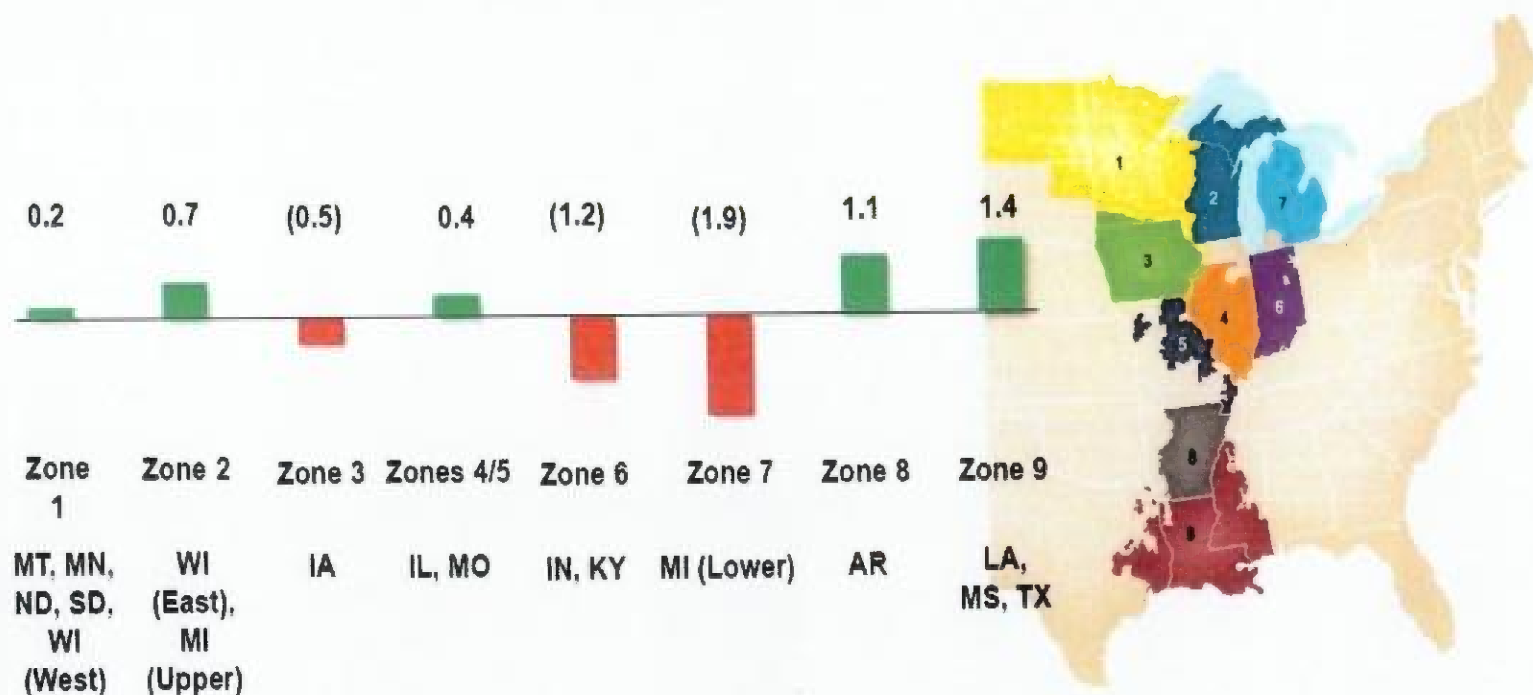


# MISO Capacity Price Webinar

Presented by: ICF International

October 7, 2014

# Need for More Capacity in MISO Due to Retirements

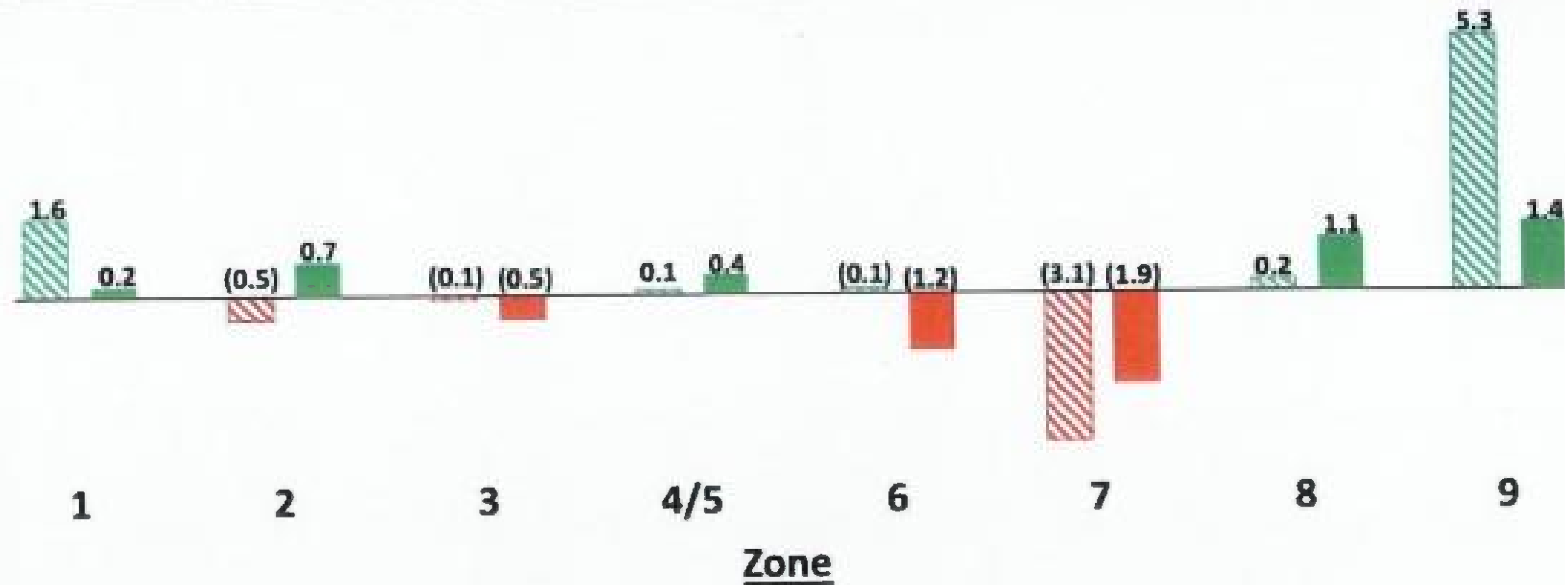




## Summary for 2016:

- 2.3 GW reserve margin shortfall in North and Central regions
- Reserve Margin shortfalls in three zones; marginal surplus in four zones
- 2.5 GW reserve margin surplus in South region
- Export limits from MISO South to North currently limited by ORCA

Source: MISO 2014 Investor Presentation, September 18, 2014

# June 2014 vs. January 2014 Assessment of Capacity Need



-  January 2014 Survey
-  June 2014 Survey

## Summary for 2016:

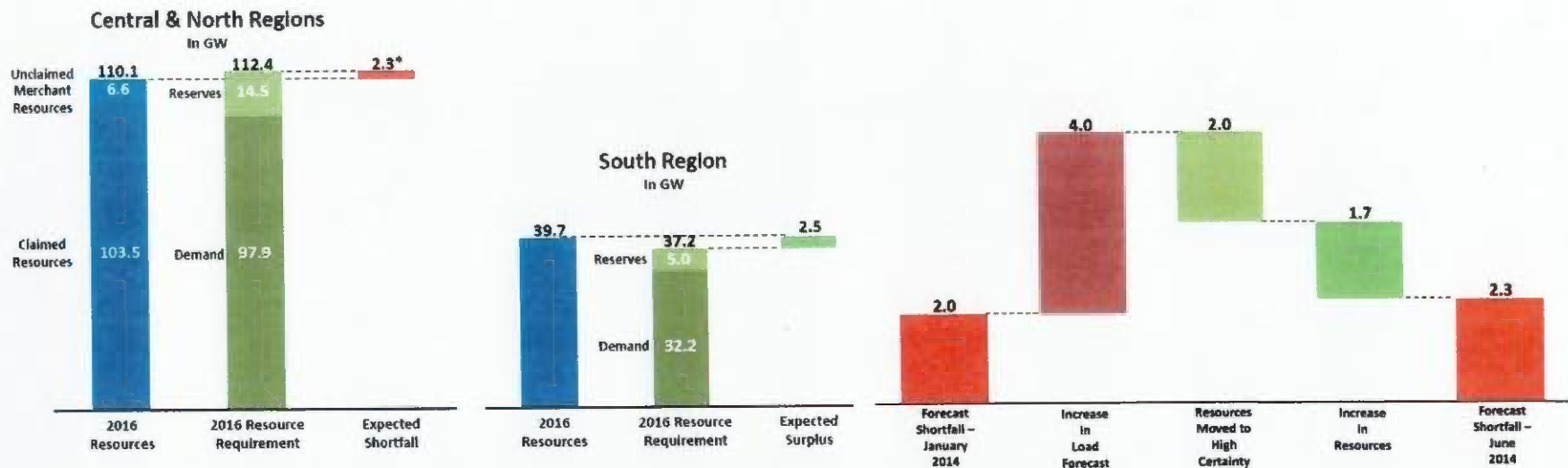
- Capacity shortfall reduced in Lower Michigan (LRZ 7)
- Capacity surplus reduced in LA/MS/TX (LRZ 9)
- Export limits from MISO South to North currently limited by ORCA

Source:

<https://www.misoenergy.org/Library/Repository/Meeting%20Material/Stakeholder/SAWG/2014/20140605/20140605%20SAWG%20Item%2003%202014%20OMS-MISO%20Survey%20Update.pdf>

# June 2, 2014 vs. January 2014 Reconciliation

- 4 GW increase in load
- 2 GW of generation reclassified from retirement/low confidence to high confidence
- 2 GW of capacity additions – DRs, purchases, new builds
- Generation retirements consistent with MISO-EPA survey
- Continued accounting of all merchant generation as MISO capacity (only exclusions of units cleared in PJM RPM)

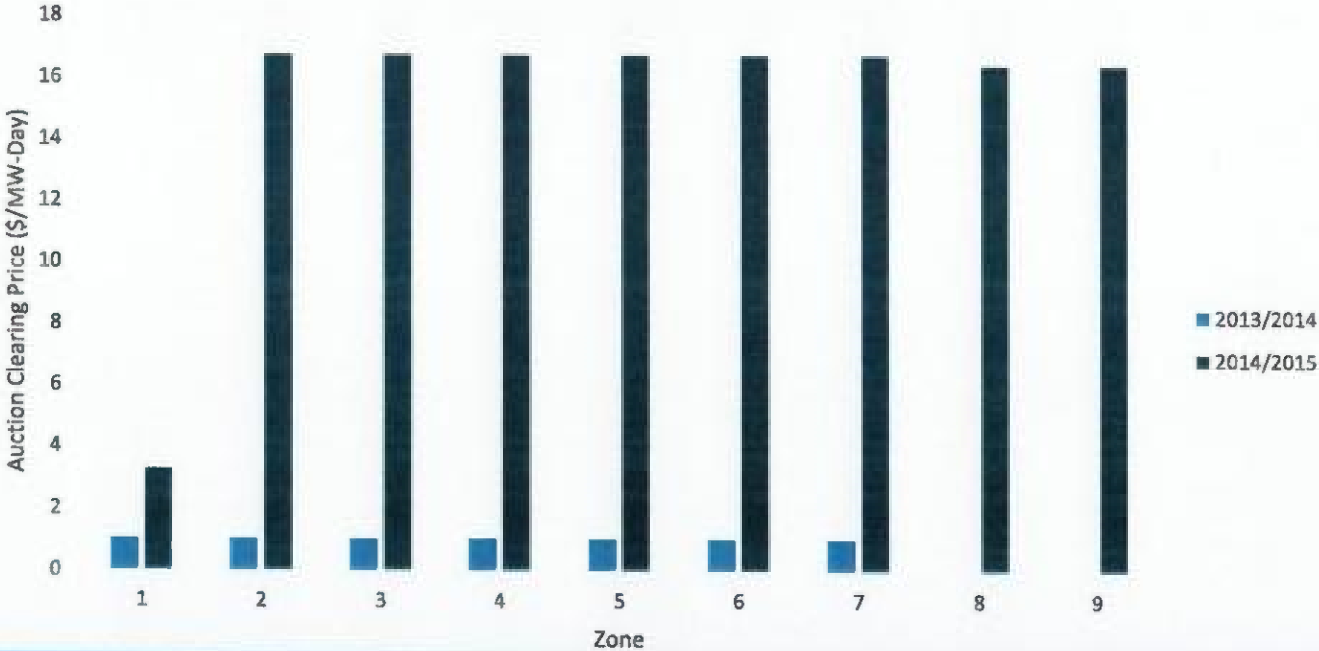


Source:

<https://www.misoenergy.org/Library/Repository/Meeting%20Material/Stakeholder/SAWG/2014/20140605/20140605%20SAWG%20Item%2003%202014%20OMS-MISO%20Survey%20Update.pdf>

# MISO Capacity Prices – Auction Results

## Historical Capacity Prices

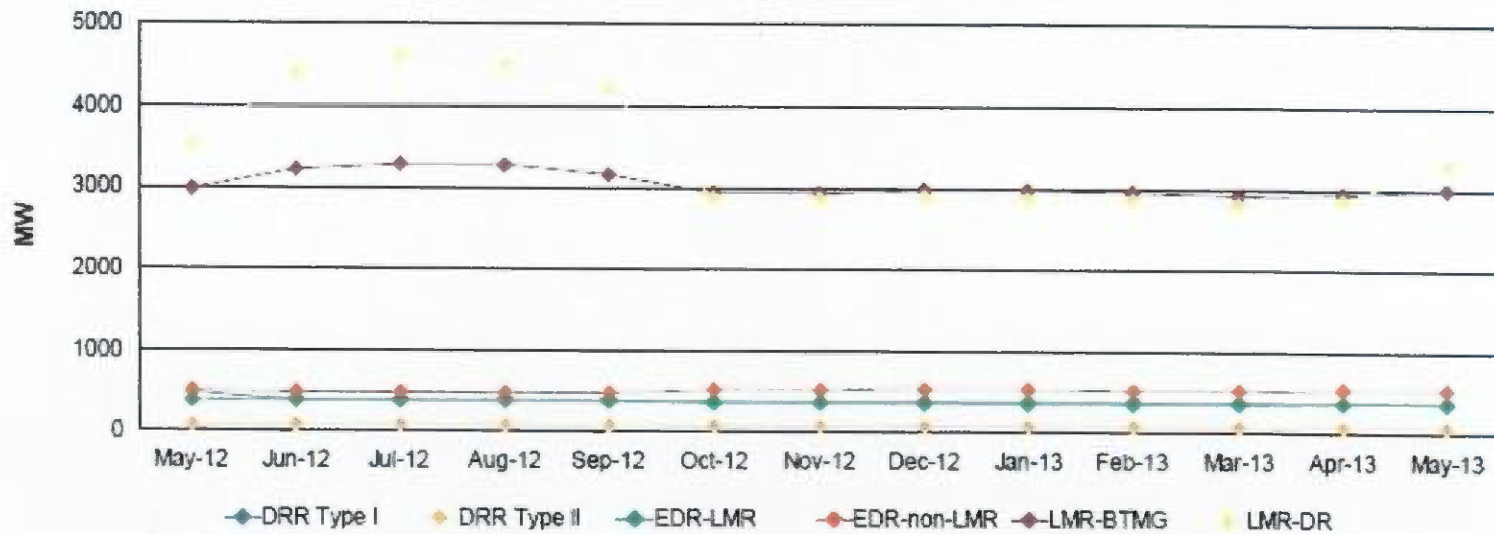


Auction Clearing Price (\$/MW-Day)									
	Local Resource Zone								
	Z1	Z2	Z3	Z4	Z5	Z6	Z7	Z8	Z9
2013/2014	1.05	1.05	1.05	1.05	1.05	1.05	1.05		
2014/2015	3.29	16.75	16.75	16.75	16.75	16.75	16.75	16.44	16.44

Source: MISO 2013/2014 and 2014/2015 Auction Results – MisoEnergy.org

# MISO Demand Resources Could Decrease, Raising Prices

## Demand Response Breakdown



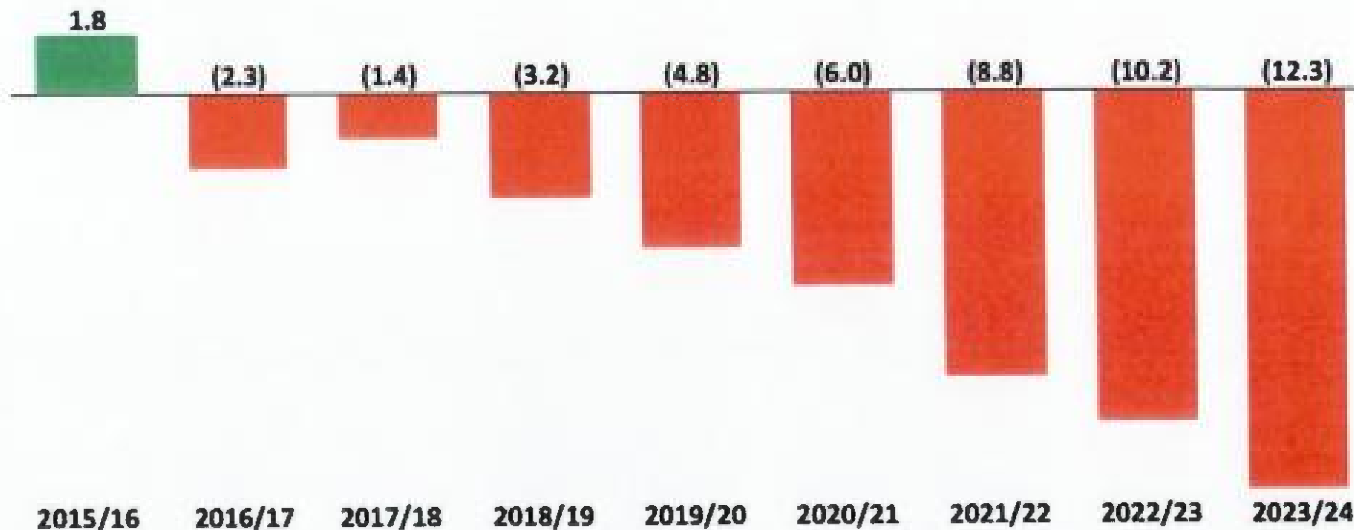
	May-12	Jun-12	Jul-12	Aug-12	Sep-12	Oct-12	Nov-12	Dec-12	Jan-13	Feb-13	Mar-13	Apr-13	May-13
DRR Type I	472.3	372.3	372.3	372.3	372.3	372.3	372.3	372.3	372.3	372.3	372.3	372.3	372.3
DRR Type II	75	75	75	75	75	71	71	71	71	71	71	71	71
EDR-LMR	375	391.6	391.6	391.6	391.6	351.1	351.1	351.1	351.1	351.1	351.1	365.5	365.5
EDR-non-LMR	490.2	473.6	473.6	473.6	473.6	514.1	514.1	522.2	522.2	513.2	518.2	528.4	528.4
LMR-BTMG	2971.5	3208.8	3273.6	3262.5	3145.8	2934	2933.2	2966.1	2966.2	2941.4	2913.9	2928.6	2963.8
LMR-DR	3515.3	4392.4	4605.3	4503.3	4212.6	2968	2854.1	2951.8	2960.4	2946.4	2795.8	2943.6	3284.7

Source: MISO Registered Demand Response & BTMG, Publish Date (EST): 06/13/2013

# Potential Shortfall Estimated to be 12 GW by 2023 Even Before Accounting for 111d



Capacity Surplus / Shortfall  
North / Central Regions  
In GW



- A preliminary 10-year forecast, as is required for the NERC Long Term Reliability Assessment, indicates a growing shortfall of 12 GW by 2023/2024.
- MISO does not have sole responsibility for a region wide reserve planning margin .
- These figures are likely to change significantly as future capacity plans are solidified by load serving entities and state commissions.

Source:

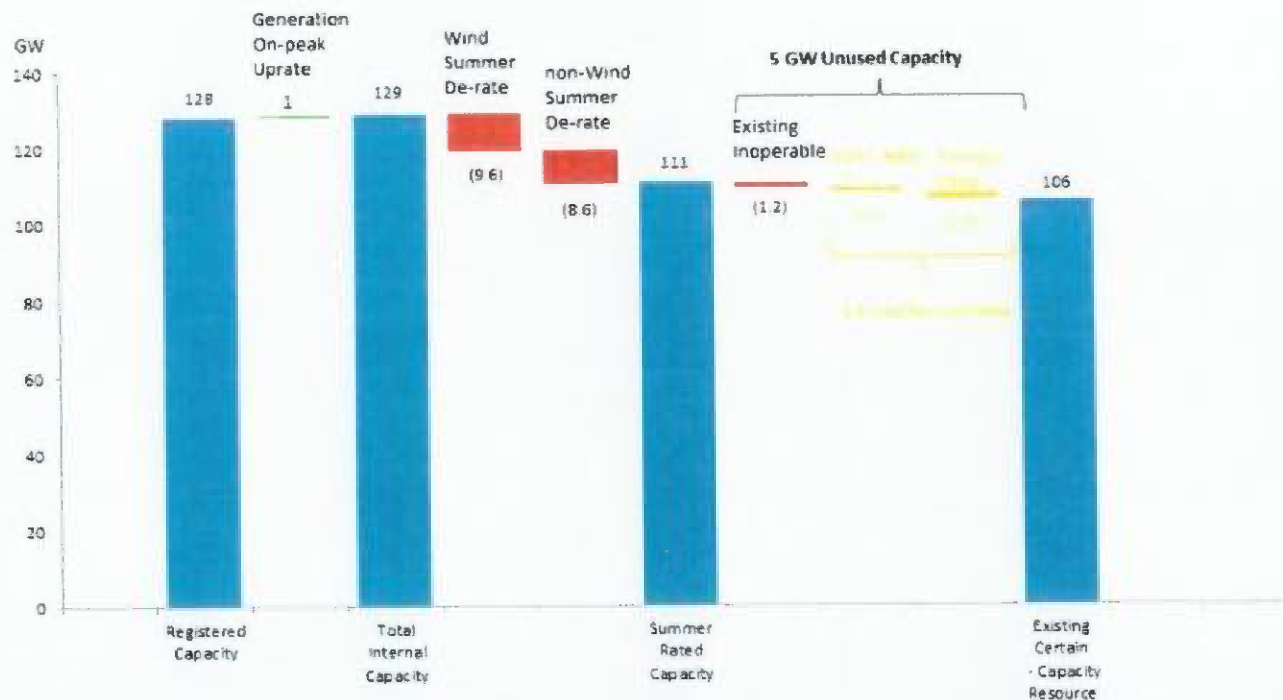
<https://www.misoenergy.org/Library/Repository/Meeting%20Material/Stakeholder/SAWG/2014/20140605/20140605%20SAWG%20Item%2003%202014%20OMS-MISO%20Survey%20Update.pdf>



# MISO Resource Capacity Planning May Overstate UCAP



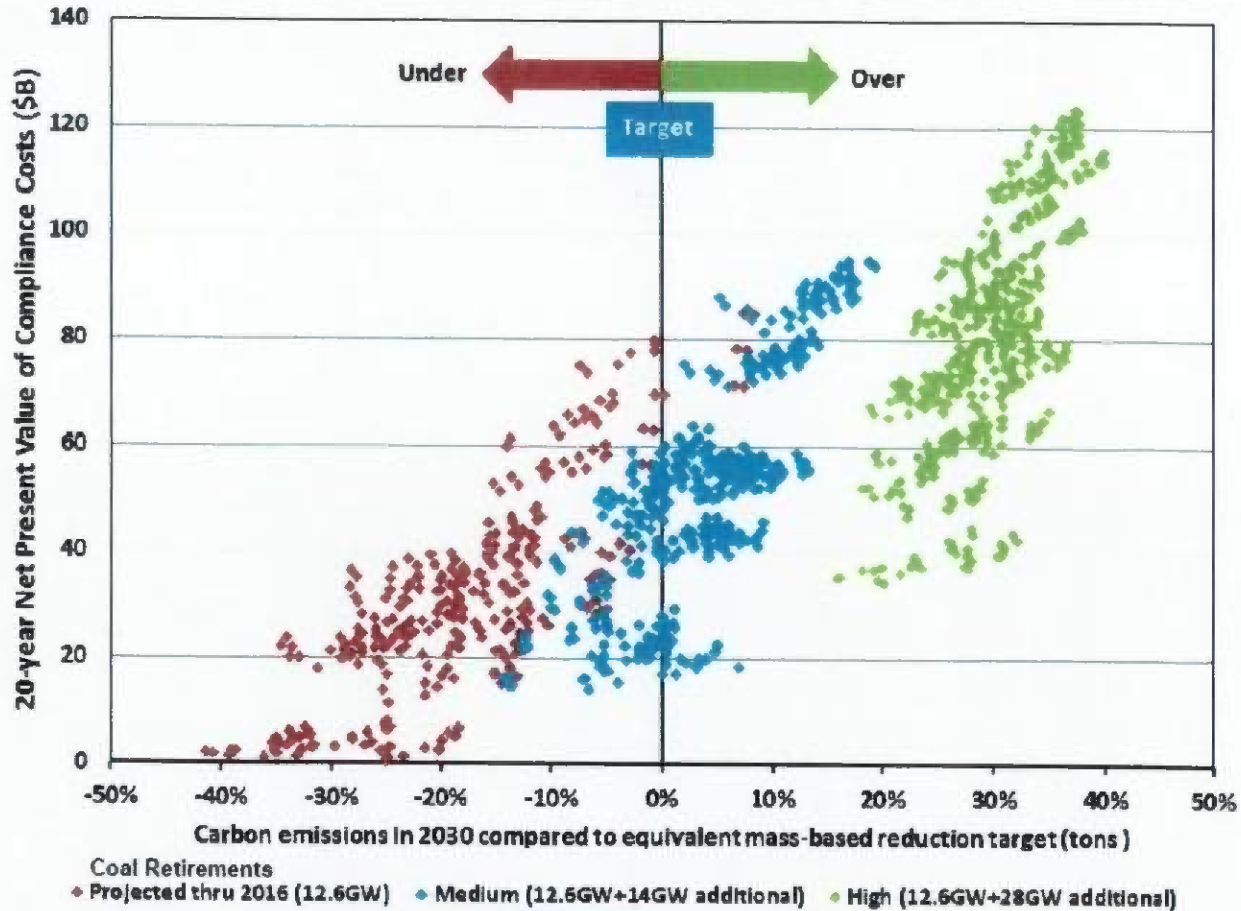
- UCAP may be over-estimated by as much as 18,000 MW due to measurement issues for wind and other resources.
- Partially mitigating this, there may be unused / trapped generation capacity.
  - MISO indicates that 5,000 MW of such capacity may be accessible
  - The amount recoverable is not well understood



Source:

<https://www.misoenergy.org/Library/Repository/Meeting%20Material/Stakeholder/PAC/2014/20140129/20140129%20PAC%20Item%202011a%20South%20to%20Midwest%20Transfer%20and%20Unused%20Generation%20Capacity%20Projects.pdf>

# 111d, with Proposed Compliance by 2020, Increases Retirements and Expected Capacity Prices



Lower cost compliance strategies to implement the proposed CO<sub>2</sub> rule put an additional 14 GW of coal capacity at-risk for retirement

Source: MISO 2014 MISO GHG Reg Impact Analysis document\_ew\_01



## MISO Capacity Market Observations

- 1. We have long expected a need for more capacity in MISO due to retirements**
- 2. MISO capacity price response due to market tightening tends to lag PJM**
  - PJM clears with a 3 year forward view; formally, MISO has a shorter 1-year time horizon, and a bilateral component that is more opaque
- 3. PJM has been taking increasing amounts of power from MISO that reinforces convergence between the two markets**
- 4. MISO tightness will likely appear first in the eastern LRZ's nearest to PJM West**
- 5. As a result of these factors, MISO capacity price response may not be smooth and may vary as supply/demand is rebalanced**
- 6. In recent years, MISO prices have been very low but poised on a supply/demand "knife edge"**
  - Recent responses are not unexpected
- 7. Effective analysis requires an assessment of energy *and* firm capacity**
  - Coupled through a transmission-constrained approach treating energy and capacity separately makes market tightening clearer

## MISO Capacity Market Observations

- 8. Recent developments in PJM heighten the potential for stronger prices in MISO**
  - August 20 statement
  - DR court decisions, First Energy compliant
  - Market Monitor (MMU) reports
  - Capacity Performance negotiations
  
- 9. Over the long term, capacity prices in MISO could be higher than in PJM**
  - Lower MISO energy prices need to be offset by higher capacity value to earn similar returns
  
- 10. Key MISO data to understand regional S/D balance includes:**
  - Broad MISO shortfall estimates in the context of MISOs unique planning process
  - “Early Indicator” LRZs - Michigan and Illinois zones versus total MISO



## MISO Capacity Market Observations

### **11. Resource capacity planning is fundamentally different in large markets like MISO**

- Transmission security constraints combined with retirements often create surprisingly large numbers of smaller submarkets and greater value for discrete capacity blocks addressing these constraints

### **12. Several trends bear watching:**

- Looser ORCA constraints
- Lower UCAP for wind and non-wind
- Higher bid costs due to tightening capacity performance rules
- Extra uncleared supply
- DR
- The Federal Clean Power Plan (CPP/111d) makes regional retirements more likely and creates additional pressures for higher capacity prices



JDE Long Term Base Case - Spot

February, 2014	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
<i>Illinois Basin</i>												
-3%, 11000 BTU (IL)												
-3%, 11000 BTU (KY)												
\$/MMBtu												
% annual change												

February, 2013	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
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2014 to 2013 Difference	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
\$/MMBtu												
% change												

JDE Long Term Base Case - Spot

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