BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the Matter of The Empire District Electric Company's 2020 Annual Update Pursuant to Commission Rule 20 CSR 4240-22.080(3)	)))))	Case No. EO-2020-0284

COMMENTS OF THE MISSOURI OFFICE OF THE PUBLIC COUNSEL

COMES NOW the Office of the Public Counsel ("OPC") and for its *Comments*, states as follows:

1. On March 20, 2020, The Empire District Electric Company ("Liberty-Empire") filed its 2020 annual update of the Integrated Resource Plan it first presented to the Commission in its 2019 triennial IRP filing in File No. EO-2019-0049.

2. Liberty-Empire subsequently filed its summary report pursuant to Commission rule 20 CSR 4240-22.080(3)(C) on April 17, 2020.

3. Pursuant to Commission rule 20 CSR 4240-22.080(3)(D), the OPC now presents its comments regarding Liberty-Empire's 2020 annual update and summary report.

4. The OPC's comments are found in the memoranda prepared by the OPC's expert witnesses, each of which have been included as an attachment to this pleading and are incorporated herein by reference.

WHEREFORE, the Office of the Public Counsel respectfully requests the Commission accept these *Comments* and order Liberty-Empire to take such actions as necessary to address the concerns raised herein.

Respectfully submitted,

By: /s/ John Clizer

John Clizer (#69043)
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CERTIFICATE OF SERVICE

I hereby certify that copies of the forgoing have been mailed, emailed, or hand-delivered to all counsel of record this eighteenth day of May, 2020.

/s/ John Clizer

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OF THE STATE OF MISSOURI

In the Matter of The Empire District Electric Company's 2020 Annual Update Pursuant to Commission Rule 20 CSR 4240-22.080(3)	))))	Case No. EO-2020-0284

VERIFICATION OF GEOFF MARKE

Geoff Marke, under penalty of perjury, states:

1. Attached hereto and made a part hereof for all purposes is my memorandum in the above-captioned case.

3. My answer to each question in the attached memorandum is true and correct to the best of my knowledge, information, and belief.

Geoff Marke
Chief Economist
Office of the Public Counsel

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the Matter of The Empire District	)	
Electric Company's 2020 Annual Update	)	Case No. EO-2020-0284
Pursuant to Commission Rule 20 CSR	)	
4240-22.080(3)	)	

VERIFICATION OF LENA M. MANTLE

Lena M. Mantle, under penalty of perjury, states:

1. Attached hereto and made a part hereof for all purposes is my memorandum in the above-captioned case.

3. My answer to each question in the attached memorandum is true and correct to the best of my knowledge, information, and belief.

Lena M Mantle

Lena M. Mantle
Senior Analyst
Office of the Public Counsel

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the Matter of The Empire District	)	
Electric Company's 2020 Annual Update	)	Case No. EO-2020-0284
Pursuant to Commission Rule 20 CSR	)	
4240-22.080(3)	)	

VERIFICATION OF JOHN A. ROBINETT

John A. Robinett, under penalty of perjury, states:

1. Attached hereto and made a part hereof for all purposes is my memorandum in the above-captioned case.

3. My answer to each question in the attached memorandum is true and correct to the best of my knowledge, information, and belief.

John A. Robinett
Utility Engineering Specialist
Office of the Public Counsel

MEMORANDUM

To: Missouri Public Service Commission Official Case File,
Case No. EO-2020-0284

From: Geoff Marke, Chief Economist
Lena Mantle, Senior Analyst
John A. Robinett, Utility Engineering Specialist
Office of the Public Counsel

Subject: Notice of Concern to Empire District Electric Company's 2020 IRP Update

Date: May 18, 2020

Overview of Concerns and Recommendations

OPC appreciates the opportunity to provide comments, concerns and recommendations to the Commission in response to Empire's 2020 IRP update. This memo outlines eight separate issues OPC has either identified in the update have since occurred that will result in material changes in the operating environment that need to be accounted for in future filings. Stated differently, Empire's preferred plan update is the result of assumptions that are no longer valid. As such, OPC has also provided recommendations to each of the identified issues for the Company to account for in its upcoming triennial IRP filing.

The sections are broken down as follows:

1. Customer Savings Plan;
2. State Line Combined Cycle Upgrade;
3. Demand Side Management ("DSM");
4. DSM Market Potential Study: Rate Design;
5. COVID-19 Impact on Modeling;
6. Executive Order on Securing the United States Bulk-Power System;
7. Southwest Power Pool ("SPP") Solar and Wind Effective Load Carrying Capability ("ELCC"); and
8. Sierra Club Recommendation for a Transparent 3rd-Party All-Source Request for Proposal ("RFP") Framework.

Customer Savings Plan, Asbury Power Plant and SPP prices

Issue

Empire's 2020 IRP does not contain any modifications or updates regarding Empire's Customer Savings Plan. The expected costs and operational date for Empire's Customer Savings Plan are "in-flux" for many reasons both within and outside the Company's control. Additionally, wholesale market prices and demand for energy continue to drop in SPP impacting the economics of the wind projects.

OPC Recommendation

Empire should update its future IRP filings to account for changes in the assumed cost, valuation and operational dates for its wind projects. In addition, its future IRP filings need to account for a greater range of uncertain outcomes in its modeling. The absence of any information on this huge capital investment calls into question the conclusions drawn from models in the 2020 update.

Stateline Combine Cycle Upgrade

Issue

Empire is planning on further supply side investment in its Stateline Combine Cycle despite a lower load, a lower SPP planning margin, a planned "Customer Savings Plan" investment of three merchant generation wind farms exceeding one billion dollars coming online in the next year and after having literally just prematurely stranded an existing supply side investment that also had significant efficiency investments in.

Empire's 2019 Triennial IRP preferred plan #4 included an additional 35 MW of planned upgrades to the Stateline Combine Cycle Generation Unit. Empire's 2020 annual update has doubled the investment amount to 70 MW to the existing winter capacity and 36 MW to the existing summer capacity as a result of planned upgrades including improved heat rate improvements.

OPC Recommendation

Empire should not move forward with this investment until it can properly model and justify such an investment in light of its other planned actions and the decrease in customer demand. Empire's decision to improve the heat rates of its existing gas unit is at odds with other planned capital investments and the continued drop in demand from customers. The last time serious efficiency upgrades were made in an Empire fossil fuel unit was Asbury's recent air quality control measures, but the Company elected to prematurely strand the unit and leave ratepayers covering the costs without after incurring very little of the benefits. The lack of detail around these capital investments calls into question the prudency of the preferred plan.

If such analysis shows the efficiency upgrades to be beneficial to customers, Empire should file with the Commission its change to its resource plan within 60 days of Empire's determination as required by 20 CSR 4240-22.080(12)(B). [1]

Demand Side Management ("DSM")

Issue

Empire is not compliant with 20 CSR 4240-22.050(5)(A)1 with the calculation of its avoided capacity cost of generation, transmission, and distribution for purposes of DSM program screening.

Empire's modeled level of DSM does not result in avoided costs and consequently does not benefit all customers "in the customer class in which the programs are proposed, regardless of whether the programs are utilized by all customers."[2] There were no updates in Empire's 2020 IRP filing to its DSM programs other than to inform the Commission about its activities in Arkansas.

Empire's 2019 IRP assumptions surrounding DSM appears to be premised on the assumption that avoided costs could theoretically result in the premature retirement of an existing supply-side resource; therefore, the hypothetical avoided costs is not zero. What unit that would be, now that Empire has prematurely stranded Asbury is not clear and therefore overstates the level of demand-side investment that is planned for.

OPC Recommendation

Empire has publically stated that it plans to file a Missouri Energy Efficiency and Investment Act (MEEIA) application during the 3rd quarter of 2020. As such, that docket is the proper venue to

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[1] 20 CSR 4240-22.080(12)(B) If the utility decides to implement a resource plan not identified pursuant to 4 CSR 240-22.070(4) or changes its acquisition strategy, it shall give a detailed description of the revised resource plan or acquisition strategy and why none of the contingency resource plans identified in 4 CSR 240-22.070(4) were chosen. In this filing, the utility shall specify the ranges or combinations of outcomes for the critical uncertain factors that define the limits within which the new alternative resource plan remains appropriate.

[2] Mo. Rev. Stat. § 393.1075.4.

address this issue. If the application is not approved, Empire should adjust its future resource filings to accurately account for the appropriate valuation of DSM programs.

DSM Market Potential Study: Rate Design

Issue

Empire is planning on deploying advanced metering infrastructure ("AMI") investments in the near future; however, to date, there has been no attempt to model the impact of modern rate design that has historically been used to justify AMI investment. The modeling of demand-side rates is also required by Commission rules.[3]

As such, the 2020 Annual IRP update does not account for the potential impacts to load as a result of properly pricing its cost of service.

OPC Recommendation

Empire's future IRP filings should include scenarios that account for various "potentials" of load impacts under different pricing structures. Because objectives surrounding rate design can vary, OPC recommends that Empire work with stakeholders to receive specific input on possible rate design parameters.

COVID-19 Impact on Modeling

Issue

Empire's 2020 Annual Update does not account for near or long-term load changes, or consider alternative planned capital investment strategies as a result of a prolonged economic downturn due to COVID-19.

OPC Recommendation

Empire's future IRP filings need to account for a greater range of uncertain outcomes in its modeling. At a minimum, OPC recommends that the Company utilized the historical data from

[3] 20 CSR 4240-22.050 (4)(D)3 The utility shall develop potential demand-side rates designed for each market segment to reduce the net consumption of electricity or modify the timing of its use. The utility shall describe and document its demand-side rate planning and design process and shall include at least the following activities and elements:

> (D) Estimate the input data and other characteristics needed for the twenty (20)-year planning horizon to assess the cost effectiveness of each potential demand-side rate, including:
>
> > 3. An assessment of how the interactions between potential demand-side rates and potential demand-side programs would affect the impact estimates of the potential demand-side programs and potential demand-side rates;

the 2009 recession and double its negative impact over at least a one-year period to account for a loss in load and impact to the economy. OPC strongly recommends that a greater range of low to high probability be included in each of the relevant critical uncertain factors and work with stakeholders to determine if further modifications are warranted.

Executive Order on Securing the United States Bulk-Power System

Issue:

The recent executive order halting the installation of bulk-power system (BPS) equipment "designed, developed, manufactured, or supplied, by persons owned by, controlled by, or subject to the jurisdiction or direction of a foreign adversary" leads to greater modeling uncertainty and cost increases on existing and future capital investments.

On May 1, 2020, President Donald Trump's issued an executive order limiting the installation of bulk power system (BPS) equipment sourced from adversaries of the United States.[4] The executive order aims to address weaknesses in the utility sector supply chain. According to the executive order, unrestricted foreign supply of BPS electric equipment "constitutes an unusual and extraordinary threat to the national security, foreign policy, and economy of the United States." The order also authorizes the U.S. Department of Energy to establish criteria for recognizing particular equipment and vendors as “pre-qualified” and to identify any now-prohibited equipment already in use. It is expected that promulgated regulations could be done within three to six months.[5] As of this writing, it is unclear what equipment will be covered in the executive order.

OPC Recommendation

This is an evolving issue that may impact the Company’s future IRP filings and operations. Empire should work with stakeholders to discuss possible impacts and appropriate modifications to its modeling and planned investments, especially the pending investments related to AMI, Stateline and the merchant generation wind projects.

[4] Trump, D. (2020) Executive Order on Securing the United States Bulk-Power System https://www.whitehouse.gov/presidential-actions/executive-order-securing-united-states-bulk-power-system/

[5] Walton, R. (2020) Trump's security order could have 'chilling effect,' slow smart grid deployment, experts say. *UtilityDive*. https://www.utilitydive.com/news/trumps-security-order-could-have-chilling-effect-slow-smart-grid-deploy/577545/

Southwest Power Pool Solar and Wind Effective Load Carrying Capability

Issue

Southwest Power Pool ("SPP") solar and wind generation will likely experience a reduction in nameplate capacity in the near future as wind and solar penetration produces diminishing returns (absent large-scale battery cost-reductions, capacity increases and deployment).

In late 2018, the SPP Balancing Authority ("BA") directed the Supply Adequacy Working Group ("SAWG") to review the processes and requirements needed to maintain reliable supply adequacy in the SPP BA. One of those requirements for review is the accreditation methodology for intermittent resources. In 2019, SPP staff completed a system-wide wind and solar effective load carrying capability ("ELCC") analysis and found that there was measureable difference in the results between the two methodologies as wind and solar penetrations increased.

Importantly, the results of the ELCC Wind[6] and Solar Studies[7] demonstrated that as wind and solar generation increases the accredited nameplate capacity should decrease for both.

In August of 2019, the SPP released a white paper summarizing the results of the previous studies and proposing:

> A methodology for prioritizing and allocating the available effective load carrying capability ("ELCC") from wind and solar generating facilities that qualify as capacity in the SPP Balancing Authority ("BA"). **Because of wind and solar generation intermittency, the capacity value or effective load carrying capability (ELCC) of wind and solar powered resources are lower than their nameplate values and will decrease as their penetration increases across the BA.** As the penetration of wind and solar generation increases, SPP and its members need to be aware of and understand the changing impact these resources have on the economics of resource adequacy and on the reliability of the system.[8] (Emphasis added)

[6] SPP (2019) ELCC Wind Study Report. https://www.spp.org/documents/60434/2019%20elcc%20wind%20study%20report.pdf
[7] SPP (2019) ELCC Solar Study Report. https://www.spp.org/spp-documents-filings/?id=168293
[8] SPP (2019) Solar and Wind ELCC Accreditation. https://www.spp.org/documents/61025/elcc%20solar%20and%20wind%20accreditation.pdf

OPC has previously raised concerns about likely changes to SPP intermittent generation valuation as a result of diminishing returns from increased solar and wind penetration. For example, the following is a Q&A from OPC testimony in Empire's proposed Customer Savings Plan:

> **Q. Why would an increase in wind generation in SPP diminish Empire's prospects of successfully generating revenues for its ratepayer-funded merchant generation proposal**?
>
> A. Because of the law of diminishing returns as intermittent supply begins to exceed flat demand. This problem of diminishing returns is well documented for both wind and solar power generation. Here is how MIT's Future of Solar study puts it:
>
>> [A]s a result of basic supply-and-demand dynamics, solar capacity systematically reduces electricity prices during the very hours when solar generators produce the most electricity. **<u>Beyond low levels of penetration, an increasing solar contribution results in lower average revenues per kW of installed solar capacity.</u>** For this reason, even if solar generation becomes profitable without subsidies at low levels of penetration, there is a system-dependent threshold of installed PV capacity beyond which adding further solar generators would no longer be profitable. [9] (Emphasis added).
>
> The same phenomenon is true for wind.[10,11]

<u>OPC Recommendation</u>

Empire's future IRP filings need to account for a greater range of uncertain outcomes in its modeling. Empire should adjust its supply-side modeling to include scenarios in which the expected accredited nameplate capacity for future wind and solar projects is lower than what SPP currently authorizes and more in line with proposed SPP ELCC outcomes.

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[9] MIT Interdisciplinary Studies (2015) Future of Solar. p. 189 https://energy.mit.edu/wpcontent/uploads/2015/05/MITEI-The-Future-of-Solar-Energy.pdf

[10] Wiser R. et al. (2017) Impacts of Variable Renewable Energy on Bulk Power System Assets, Pricing, and Costs Berkeley & Argonne National Laboratories. https://emp.lbl.gov/sites/default/files/lbnl_anl_impacts_of_variable_renewable_energy_final.pdf

[11] Case No. EA-2019-0010 Rebuttal Testimony of Geoff Marke p. 4, 17-25 & p. 5, 1-6.

<u>Sierra Club Recommendation for a</u>
<u>Transparent 3rd-Party All-Source Request for Proposal ("RFP") Framework</u>

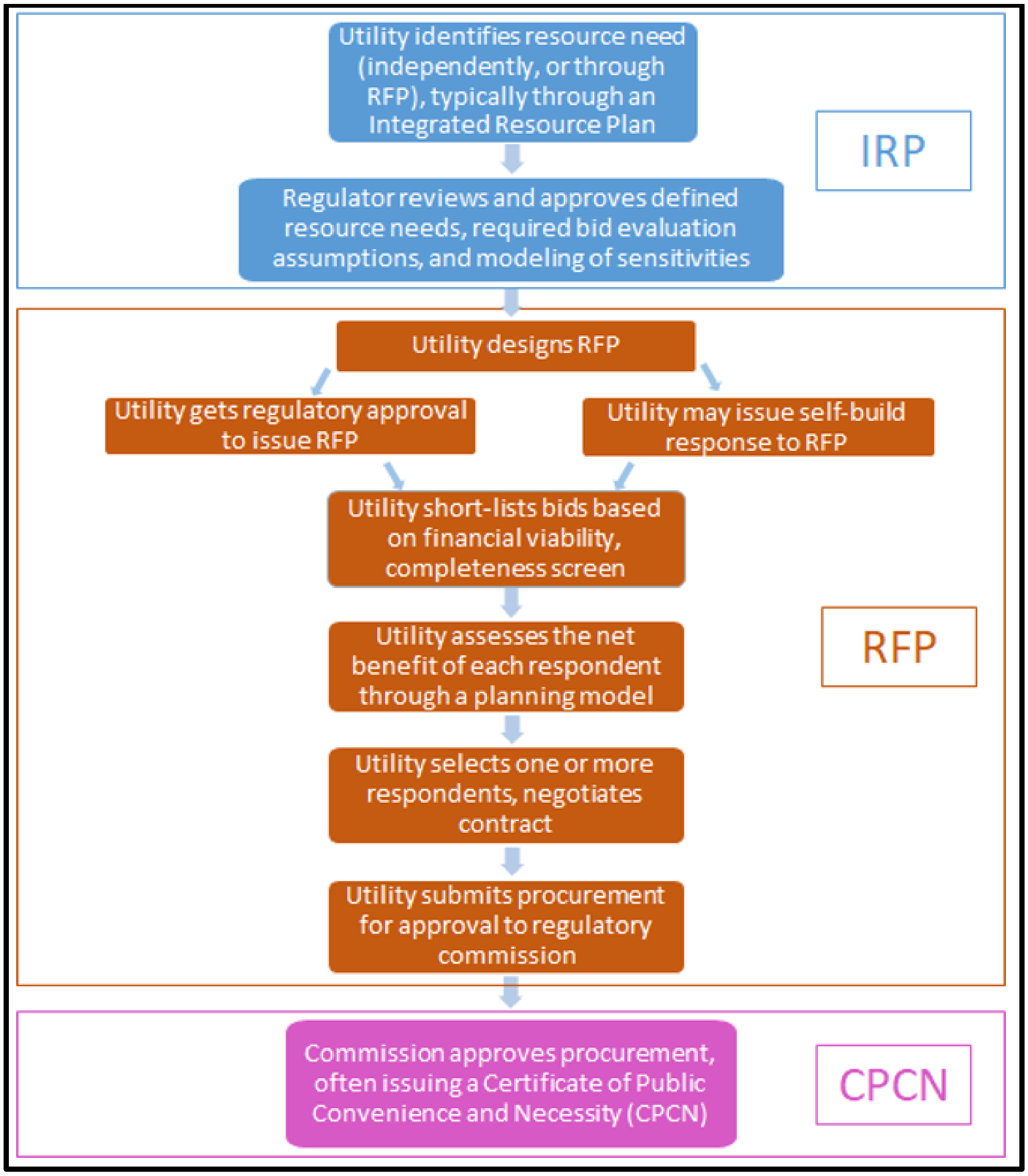
Issue

Best practice all-source requests for proposals should be followed for any future resource addition.

In a separate utility IRP stakeholder meeting, the Sierra Club recommended utilities should strongly consider procuring the services of a third-party contractor and utilizing an open, transparent framework for future all-source requests for proposals. Representatives from the Sierra Club pointed to favorable results from Indiana in the North Indiana Public Service Company (NIPSCO) 2018 all-source RFP, and conversely pointed to unfavorable results from a different Indiana electric utility, Vectren, who failed to issue a reasonable RFP. Finally, the Sierra Club forwarded a copy of a white paper, titled "Making the most of the power plant market: Best practices for all-source electric generation procurement" from Energy Innovation.[12] The white paper lays out a framework for competitive bidding that stresses transparency and stakeholder involvement. The process advocated by the Sierra Club appears to maximize competitive bids and due diligence. Figure 1 provides a snapshot from the whitepaper of an idealized illustrative framework of robust, transparent utility planning and procurement.

[12] Wilson, J.D. et al (2020) "Making the most of the power plant market: Best practices for all-source electric generation procurement." *Energy Innovation*. https://cleanenergy.org/news-and-resources/making-the-most-of-the-power-plant-market-best-practices-for-all-source-electric-generation-procurement/

Figure 1: Illustrative sequencing of utility planning and procurement



OPC Recommendation

OPC has reviewed the white paper and strongly supports Sierra Club's recommendation. A similar format should be applied to all large-scale supply-side resource procurements shown to be a least-cost resource for its customers in future IRP.