Appendix A – Staff's Analysis of KCP&L Greater Missouri Operations Company

Introduction:

On June 5, 2019, the Commission directed Staff to begin an investigation into the self-commit and self-scheduling practices of Missouri's investor-owned utilities ("IOU").[1] The following report documents Staff's analysis and conclusions based on the information provided by KCP&L Greater Missouri Operations Company ("GMO").

GMO's Operation Strategy:

At Staff's request, GMO provided the general reasons behind its decisions to self-commit its power plants.

GMO stated as follows:

> GMO has worked to increase the percentage of time its power plants are market-scheduled. GMO fossil units are only self-scheduled with the Southwest Power Pool ("SPP") Market for safety, reliability, economic and environmental compliance reasons.
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> Ensuring a plant is reliable and available to serve customers is one key factor. For example, cold weather can cause reliability issues in a steam-fired power plant due to water lines freezing, oil systems becoming too cold and even coal freezing. When facing environmental issues such as these, GMO may choose to self-commit a resource to protect that resource's equipment and thus ensuring its reliability.
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> GMO may choose to self-commit a resource to prevent a thermal cycle or protect equipment that may pose a risk to the reliability of the resource as well. SPP's market model isn't always able to consider risks to GMO customer[s]' reliable power supply. If there are concerns about the effects of a thermal cycle on a resource or on a piece of equipment at that resource, GMO may choose to self-commit that resource. Managing the number of thermal cycles judicially will protect equipment thus reducing forced outages and unreliable starts due to the complexity of these large stations, all of which is a benefit to the retail customer.
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> GMO may also choose to self-commit a resource for market economic reasons. Those decisions are made looking at wind and load forecasts to see if we can expect the resource to be economical 'x' days into the future. The SPP Market model does not currently do a good job committing large, baseload units with long lead times, large startup costs and long minimum run times. For example, SPP's Day-Ahead Market will not commit a unit with a startup time greater than 24 hours. Because of these restrictions,

[1] EW-2019-0370, "Order Opening An Investigation of Missouri Jurisdictional Generator Self-Commitments And Self-Scheduling."

> the Company has historically seen a high percentage of self-commitments at its baseload resources. Also, since SPP's tool only looks at the next day, there are times we might self-commit a unit that is already online knowing that over the next five total days we would be economic even though operations for the initial two days are at a financial loss; this results in lower overall costs to serve retail customers. [2]
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> Another key factor related to the self-commitment of resources is compliance testing. GMO is required by various governing bodies to regularly test resources for reasons such as emissions performance. GMO may have no choice but to self-commit a resource during these testing periods to ensure the resource is online and available to satisfy testing requirements.
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> Lastly, GMO may sometimes self-commit a unit to vet repairs following an outage. If a resource performed a turbine overhaul they may want to check turbine vibration at both running speed and with load on the turbine. Many times, a contractor and specialty vibration equipment are on site so vetting that as soon as possible is ideal, rather than waiting for a potential market start and risk losing both the contractor and equipment to another job. Furthermore, this testing reduces the risk of being unreliable when needed for a market-commitment following a turbine overhaul because further tuning is needed the next time the unit start.[3]

Staff reached out to the SPP Independent Market Monitor ("SPP-IMM") to discuss self-commitment status trends, and also notes the SPP-IMM discussed the topic of self-commitment in its 2018 State of the Market Report (published May 15, 2019). The SPP-IMM stated:

> Self-commitment of generation continues to be a concern because it does not allow the market software to determine the most economic market solution. Furthermore, it can contribute to market uplifts and low prices. Some of the reasons for self-committing may include contract terms for coal plants, low gas prices that reduce the opportunity for coal units to be economically cleared in the day-ahead market, long startup times, and a risk averse business practice approach. Generation offers in the day-ahead market averaged almost 53 percent as "market" commitment status followed by "self-commit" status at 30 percent of the total capacity commitments for 2018. These levels almost exactly match those in 2017, however the overall trend is still downward, as 2016 had 48 percent as "market" commitment status, and 35 percent as "self-commit" status. While the overall increase in market commitments and decrease in self-commitments highlights an improvement, self-commitments still represent over 30 percent of generation, a trend that

[2] KCPL-GMO response to Order Opening An Investigation of Missouri Jurisdictional Generator Self-Commitments And Self-Scheduling, pgs. 3-4.
KCPL-GMO response to Order Opening An Investigation of Missouri Jurisdictional Generator Self-Commitments And Self-Scheduling, pg. 4.

> has existed since the Integrated Marketplace began in 2014. In order to improve market commitment in the SPP market, we recommend that SPP and stakeholders look to find ways to address this issue.[4]

The SPP-IMM also addressed the limitations of the day-ahead market model. The SPP-IMM recognizes that self-commitment in the market may be occurring due to limitations of the day-ahead market with respect to generating resources with long minimum run times. Large coal plants are more likely to have long minimum run times. The SPP-IMM also discussed changes that are already under consideration within the SPP Market that may address some of these issues.

In its 2018 State of the Market Report, the SPP-IMM stated:

> The clearing engine may see that it is economic on the first day and issue the commitment, and then in future days the resource will stay on until its minimum run-time is met even if it is uneconomic. As such, many resources that have multi-day minimum run times avoid the market clearing process and instead self-commit in the market based not on an evaluation by the market, but on their own evaluation of market conditions.
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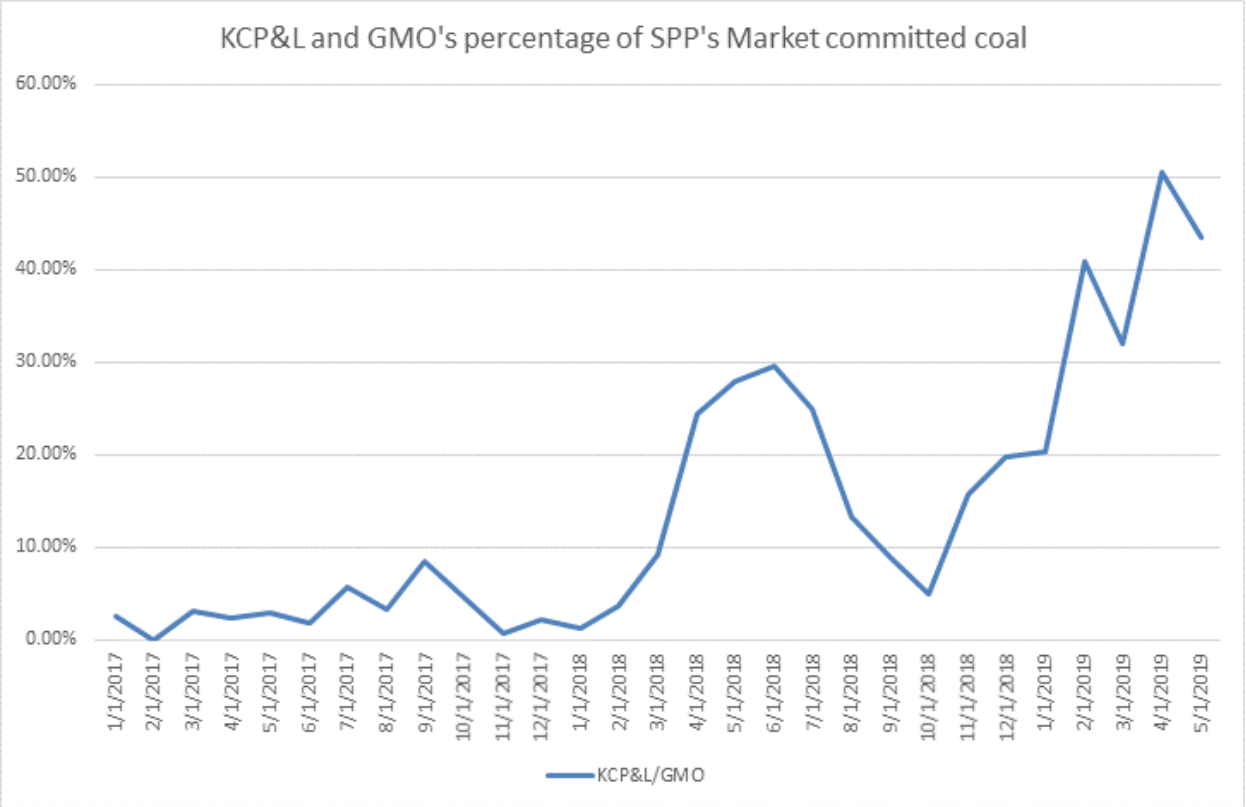
> Adding multi-day unit commitment logic is at the top of the current SPP stakeholder market design initiative list and has been discussed in 2018 and 2019 in the stakeholder process. SPP staff has proposed a multi-part approach to address multi-day unit commitment. First, they have indicated that they prefer to provide a multi-day forecast of prices or schedules as it would be quicker, easier, and less expensive to implement. The multi-day forecast would serve to provide information to aid market participants that self-schedule to do so in periods that would be more favorable for their resources and for the market. Second, SPP staff has indicated that after the multi-day forecast was made available, they would consider developing a multi-day unit commitment process. The MMU [Market Monitoring Unit]is currently in the process of reviewing the SPP staff proposal to provide multi-day forecast information. At this time, it is not clear if the benefits of this approach outweigh costs and concerns.[5]

GMO compared its level of Market Committed Coal Generation to Coal Generation in the SPP market footprint:

> Compared to generation actually produced in SPP, the graph below shows the percent of Market committed Coal Generation MWh for KCP&L/GMO as a percentage of the total amount of Market committed MWh of Coal generation in the SPP Footprint. This demonstrates that in April of 2019, half of the Market Committed Coal Generation in the

[4] https://www.spp.org/documents/59861/2018%20annual%20state%20of%20the%20market%20report.pdf pg. 5
[5] State of the Market 2018 Report Pg. 243-244.

SPP Footprint was provided by KCP&L/GMO Coal units running in a Market Commitment status. The trend of KCP&L/GMO's Market Committed Coal Generation is outpacing the SPP footprint as a whole. This point is made more evident when you consider that as of 2018 KCP&L and GMO combined to account for a mere 11% of total Coal Capacity within the SPP footprint, according to SNL. October and November of 2018 saw a large percentage of KCP&L/GMO coal generation unavailable, which helps explain that dip. For that time period, the units were unavailable 78% of the time in October and 72% of the time in November.[6]



Staff Analysis:

Staff's task was to investigate whether the self-commit and self-scheduling practices of Missouri's investor-owned electric utilities benefit their ratepayers.

It is important to take into account the entire bid when evaluating the revenue in excess of generation costs. Each variable that a utility changes in its offer curve that is not tied to physical constraints or realities can and will influence the amount a unit may be dispatched above the self-commit economic minimum and thus impact the revenue in excess of generation costs.

[6] KCPL-GMO response to Order Opening An Investigation of Missouri Jurisdictional Generator Self-Commitments And Self-Scheduling, pg. 6.

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Generation Facility	Ownership	%	2016	Name Plate Capacity 2017		Source
Iatan	Owned	18	310.50	310.50	310.50	FERC Form 1
Jeffrey Energy Center	Owned	8	172.80	172.80	172.80	FERC Form 1
Sibley	Owned	100	524	524	524	FERC Form 1

Table 1: GMO Coal Plants

It should be noted that Sibley 3 was retired as of December 31, 2018 and GMO is a minority owner of the Jeffrey Energy Center units.

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Staff Conclusion:

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SCHEDULES 1-4

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