TO: Chairman Brien J. Sheahan
CC: Executive Director, Cholly Smith
FROM: ICC Staff
Date: 12/17/2018

RE: RESOURCE ADEQUACY IN MISO ZONE 4

I. Resource Adequacy in MISO Zone 4

The content of this report is intended to inform the reader about long-term electric resource adequacy in the Ameren Illinois zone, otherwise known as MISO Zone 4.[1]

II. The Midcontinent Independent System Operator

In December 1997, the Illinois General Assembly enacted the Electric Service Customer Choice and Rate Relief Law of 1997, which significantly restructured the Illinois electric industry and provided a transition to competitive retail markets. The law also required that the ICC-jurisdictional public utilities in Illinois become members of a regional transmission organization ("RTO") approved by the Federal Energy Regulatory Commission ("FERC"). The FERC has approved MISO as an RTO and Ameren Illinois is a member of MISO.[2]

Established in 1998, MISO is a non-profit corporation that manages the electricity transmission system over 15 states and the province of Manitoba, Canada. As an RTO, the FERC has charged MISO with the performance of numerous functions, including transmission planning, reliability coordination and the operation of wholesale energy markets.

A. Operation of Wholesale Markets

MISO operates a centralized, regional wholesale electricity market where market participants are able to buy and sell various energy products such as capacity, energy and numerous ancillary services.[3] MISO does not own the power plants that generate the energy and capacity bought and sold in the market or the transmission facilities that move that power from the generators to the distribution utilities. However, MISO is responsible for developing the rules used to administer the energy, ancillary services and capacity markets, deciding which generators will run and at what levels, overseeing access to the transmission system and managing the billing

---

[1] MISO serves as the Balancing Authority for its entire region. Ameren Illinois Company, City Water Light and Power and Southern Illinois Power Cooperative serve as Local Balancing Authorities within Zone 4. Transmission-owning companies within Zone 4 include Ameren Illinois Company, City Water Light and Power, Southern Illinois Power Cooperative, and Prairie Power.

[2] *Alliance Companies, et al.*, 100 FERC ¶ 61,137 (2002) (July 31, 2002 Order), *order on clarification* (February 26, 2003 Order), 102 FERC ¶ 61,214, *order on reh'g and clarification*, 103 FERC ¶ 61,274, *order denying reh'g and granting clarification*, 105 FERC ¶ 61,215 (2003), *appeal docketed sub nom., American Electric Power Service Corp. v. FERC*, No. 03-1223 (D.C. Cir. Aug. 1, 2003).

[3] When a power plant is committed to provide capacity, it is making a commitment to be fully available for energy production when called on by the RTO. Ancillary services help balance the transmission system as it moves electricity from generating sources to distribution utilities.

systems for payments. With over $25.3 billion in billings annually, MISO manages a very large transmission network and operates one of the largest energy markets in the world.

B. Transmission Planning and Generator Interconnection

At a high level, transmission planning involves identifying current and future electric grid needs and then developing solutions to meet those needs. Through its transmission planning process, MISO takes into account many different factors affecting the grid's current and future operation, including potential customer demand, existing, planned and retiring power plants, state and federal environmental and clean energy standards, grid reliability issues, and the costs of moving power across the grid. Based on these and other factors, transmission owners and grid planners like MISO determine whether upgrades of existing facilities, and/or construction of new transmission facilities are needed.

As a FERC-jurisdictional public utility transmission provider, MISO is required to follow the transmission planning principles and obligations laid out by the FERC in its landmark "Order 1000".[4] Order 1000 intends to ensure an open, transparent and coordinated regional transmission planning process by requiring transmission planners like MISO to produce a regional transmission plan that takes into account factors such as system reliability, market efficiency and public policies. Order 1000 also requires all grid planners to coordinate their regional transmission plans with neighboring regions and to develop regional and interregional cost allocation methods to pay for needed new transmission projects planned by MISO. MISO's annual Transmission Expansion Plan ("MTEP") identifies network transmission expansion issues and opportunities, develops alternatives for consideration, and evaluates those options to determine effective transmission solutions.

MISO also facilitates the interconnection of new generation resources to the transmission grid. This requires MISO to review the proposed project, its location and the technical requirements necessary to reliably connect the generator to the transmission grid. As of December 2018, there are 43 projects totaling almost 7,800 MWs of capacity in MISO's generator interconnection queue for Zone 4. As noted in Table 1 below, these are primarily wind (3,796 MWs) and solar (2,886 MWs) projects, but also include two natural gas-fired generator projects (1,097 MWs).[5, 6]

---

[4] *Transmission Planning and Cost Allocation by Transmission Owning and Operating Public Utilities*, FERC Stats. & Regs. ¶ 31,323 (2011), *order on reh'g*, Order No. 1000-A, 139 FERC ¶ 61,132, *order on reh'g,* Order No. 1000-B, 141 FERC ¶ 61,044 (2012), *aff'd sub nom. S.C. Pub. Serv. Auth. v. FERC*, 762 F.3d 41 (D.C. Cir. 2014).

[5] For interconnection study purposes, MISO uses a class-average capacity factor of 15.6 percent for wind generators and 50 percent for solar generators. Therefore, if all of the wind and solar projects currently in the interconnection queue for Zone 4 were brought into service, they would comprise approximately 2,283 MWs of capacity to meet peak demand.

[6] All of the projects listed seeking interconnection within Zone 4 are in the Definitive Planning Phase (including those listed with 2017 in-service dates), meaning that each developer is awaiting MISO's system impact study results to determine if network upgrades will be needed to facilitate its interconnection, and, if so, the estimate of costs for such upgrades. The need for network upgrades and the associated cost directly influence the number of interconnection projects that are ultimately completed and placed into service.

Table 1 - MISO Zone 4 Generator Interconnection Queue
December 2018

Transmission Owner	Output (Summer MW)	Fuel Type	In Service Date
Ameren Illinois	57	Gas	2017
Ameren Illinois	102	Wind	2017
City of Springfield, IL - CWLP	150	Wind	2019
Ameren Illinois	202	Wind	2019
Ameren Illinois	100	Wind	2019
Southern Illinois Power Cooperative	69	Solar	2019
Ameren Illinois	99	Solar	2019
Ameren Illinois	99	Solar	2019
Ameren Illinois	149	Solar	2019
Ameren Illinois	150	Solar	2019
Ameren Illinois	200	Wind	2020
Ameren Illinois	150	Wind	2020
Ameren Illinois	75	Solar	2020
Ameren Illinois	304	Wind	2020
Ameren Transmission Company of Illinois	200	Solar	2020
Prairie Power, Inc.	100	Solar	2020
Ameren Illinois	99	Wind	2020
Ameren Illinois	100	Wind	2020
Ameren Illinois	300	Wind	2020
Ameren Illinois	120	Wind	2020
Ameren Illinois	200	Wind	2020
Ameren Transmission Company of Illinois	250	Wind	2020
Ameren Transmission Company of Illinois	250	Wind	2020
Ameren Illinois	200	Solar	2020
Ameren Illinois	100	Solar	2020
Ameren Illinois	100	Solar	2020
Ameren Illinois	100	Solar	2020
Ameren Illinois	144	Wind	2020
Ameren Illinois	250	Solar	2020
Ameren Illinois	275	Solar	2020
Ameren Illinois	250	Solar	2020
Ameren Transmission Company of Illinois	250	Wind	2020
Ameren Illinois	75	Wind	2020
Ameren Illinois	150	Solar	2020
Ameren Illinois	150	Solar	2021
Ameren Illinois	150	Solar	2021
Southern Illinois Power Cooperative	150	Solar	2021
Ameren Transmission Company of Illinois	200	Wind	2021
Ameren Transmission Company of Illinois	200	Wind	2021
Ameren Illinois	70	Solar	2021
Ameren Illinois	200	Wind	2021
Ameren Illinois	200	Wind	2021
Ameren Transmission Company of Illinois	1040	Gas	2021

C. Reliability Coordination and Resource Adequacy

As a reliability coordinator, MISO is responsible for the coordination of generation and transmission across its footprint, matching generation to load to balance supply and demand for electricity in real time. MISO forecasts load, schedules generation and coordinates generator maintenance and retirements to assure that sufficient generation and back-up power is available in case demand unexpectedly rises or a power plant or a transmission facility is lost.

The North American Electric Reliability Corporation requires MISO to conduct an annual loss of load expectation analysis that provides a measure of the expected generation resources necessary to meet a forecasted peak load throughout the year. This analysis, along with the requirements of Module E of the MISO tariff, result in a planning reserve margin percentage that establishes the level of resource adequacy throughout the MISO region and represents the sum of the probabilities for loss of load for all days of the planning year being equal to one day in ten years with respect to supply capability. Since 2011, MISO's targeted planning reserve margin in excess of annual forecasted load has ranged from 14.2 to 17.4 percent.[7]

The responsibility for achieving resource adequacy in MISO rests with load serving entities ("LSEs")[8], with oversight by states, as applicable by jurisdiction. MISO provides LSEs with four options to meet their resource adequacy capacity obligation.[9] First, an LSE can demonstrate achievement of its assigned planning reserve margin requirement through submission of a fixed resource adequacy plan ("FRAP"). These plans may include such resources as owned generators and bilateral purchase contracts with generating companies either inside or outside of the LSE's local resource zone. Second, an LSE can use the "self-schedule" option to offer supply resources that it either owns or has contracted[10] into MISO's annual Planning Resource Auction ("PRA"). Third, an LSE can procure capacity through MISO's annual PRA. Fourth, an LSE can opt to pay a monthly capacity deficiency penalty, in lieu of capacity procurement.[11] In MISO, the FRAP and self-schedule options are commonly used by LSEs that are traditionally regulated and are able to build and own generating units or do so jointly with other utilities. These LSEs typically have highly predictable load and are able to limit their exposure to fluctuations in fuel prices, construction costs, regulatory requirements and other economic factors by owning resources or entering into long-term purchase arrangements with independent facility developers or utilities with excess generating capacity. However, in restructured retail markets, the load of alternative retail electric suppliers and the basic service provider utility is subject to fluctuation due to customer switching, which could make long-term contracting and ownership of generating resources by these types of LSEs less practical for their total load. While data regarding ARES' capacity procurement strategies is not publicly available, the evidence indicates that overall

[7] Miso Transmission Expansion Plan 2018, Figure 6.1-1 Comparison of Recent Planning Reserve Margin. https://cdn.misoenergy.org/MTEP18%20Book%202%20Resource%20Adequacy264875.pdf

[8] The term, "Load Serving Entity" encompasses traditional utilities (whether investor-owned, municipal or coop), distribution utilities acting in their basic service provider role, and Alternative Retail Electric Suppliers.

[9] Eligible capacity resources include generators, generation purchase contracts, demand resources and energy efficiency.

[10] The self-schedule approach uses MISO's PRA with price offers guaranteed to clear. In other words, self-scheduled capacity does not use the price-setting mechanism of MISO's PRA.

[11] Because the capacity deficiency penalty is set very high, this is not a practical option for compliance.

reliance on the price-setting mechanism of MISO' PRA (i.e., option three above) is rather limited in Zone 4. For the 2018-2019 Planning Year auction, only 2,285 MWs, or roughly 23 percent of the total required capacity for Zone 4 was acquired through the price-setting mechanism of MISO's PRA.[12]

MISO holds its PRA annually, typically during the final three business days of March. The PRA commits capacity for the immediate planning year, which is the twelve-month period from June 1 to May 31. Generators use the PRA to sell capacity commitments on generation capability for which they do not have forward sales contracts. The PRA is designed to optimize regional and local resources to establish the lowest-cost result for LSEs needing to procure capacity commitments.[13] The designation of local resource zones ("LRZs") helps to ensure a locational pricing of capacity that reflects limitation on the transmission system to deliver electricity in a particular area and to account for the different needs for capacity in various areas of MISO. For each LRZ, MISO specifies a capacity import limit and a capacity export limit designed to ensure reliability and recognize any transmission constraints. MISO also determines a planning reserve margin requirement and a local clearing requirement for each LRZ. The planning reserve margin requirement ("PRMR") is the total amount of capacity that each LRZ must procure and the local clearing requirement ("LCR") is a percentage of that amount of capacity that is required to be procured either from resources located within each LRZ or from resources external to MISO having firm transmission service into the LRZ.[14] Table 2 shows the MISO Zone 4 parameters for the past five MISO PRAs.

Table 2 - Zone 4 Planning Resource Summary

Planning Year	**2014 - 2015**	**2015 - 2016**	**2016 - 2017**	**2017 - 2018**	**2018 - 2019**
PRMR (MWs)	10,616	10,420	10,375	9,894	10,060
LCR (MWs)	8,879	8,852	5,476	5,839	4,960
Capacity Import Limit (MWs)	3,025	3,130	6,323	5,815	6,411
Capacity Export Limit (MWs)	1,961	4,125	7,379	11,756	4,280
Total Committed MWs (Offer Cleared + FRAP)	9,316	8,852	9,152	9,124	8,927

[12] See, 2018/2019 Planning Resource Auction Results (April 2018), at 10. ("2018-19 PRA Results") (https://cdn.misoenergy.org/2018-19%20PRA%20Results173180.pdf . Planning Reserve Margin Requirement (10,060 MWs) – FRAP (1,136 MWs) – Self Scheduled (6,636 MWs) = 2,285 MWs of capacity demand using the price-setting mechanism of MISO's PRA.

[13] The MISO PRA uses a single clearing price auction design.

[14] On March 26, 2018, MISO submitted a filing to the FERC to change the rules regarding external resources. On August 2, 2018, the FERC rejected MISO's proposed tariff revisions. See, *Midcontinent Independent System Operator, Inc*. 164 FERC ¶ 61,081 (2018)

Self-Scheduled[15] (MWs)	N/A	N/A	N/A	7,723	6,636
FRAP (MWs)	874	838	910	712	1,136
Cleared Imports (MWs)	1,300	1,568	1,224	771	1,133
ACP ($/MW-Day)	$16.75	$150.00	$72.00	$1.50	$10.00

For example, in the 2018-2019 PRA[16], MISO determined that LSEs in Zone 4 needed to procure 10,060 MWs of capacity ("PRMR"), with at least 4,960 MWs coming from resources that are either located within the zone or from resources external to MISO that have firm transmission into the zone ("LCR"). The capacity import and export limits for Zone 4 were 6,411 MWs and 4,280 MWs, respectively. The results of the auction plus FRAP for that period show that Zone 4 was able to meet its planning reserve margin requirement by securing 8,927 MWs procured in the auction from resources located within the zone plus FRAP resources and imports of 1,133 MWs of lower-cost capacity from outside Zone 4. The auction clearing price ("ACP") reveals that all capacity supply obtaining capacity commitments cleared in the PRA offered to sell at a price equal to or less than the $10/MW-Day ACP. The price paid for FRAP resources is not publicly available.

III. MISO Zone 4 Electricity Generating Capability and Production

MISO's energy and capacity market region includes all, or a portion of, fifteen states. Figure 1 below shows the MISO region divided into ten LRZs, over which MISO coordinates the movement of wholesale electricity.[17] MISO Zone 4 includes the Ameren Illinois service area and MISO Zones 1 and 3 include relatively small areas of northwestern Illinois.

[15] MISO did not include self-scheduled volumes in its PRA results until the PRA for the 2017-2018 delivery year.
[16] 2018-19 PRA Results, at 10.
[17] MISO Tariff, Attachment VV, at 35.0.0

Figure 1- MISO Local Resource Zones

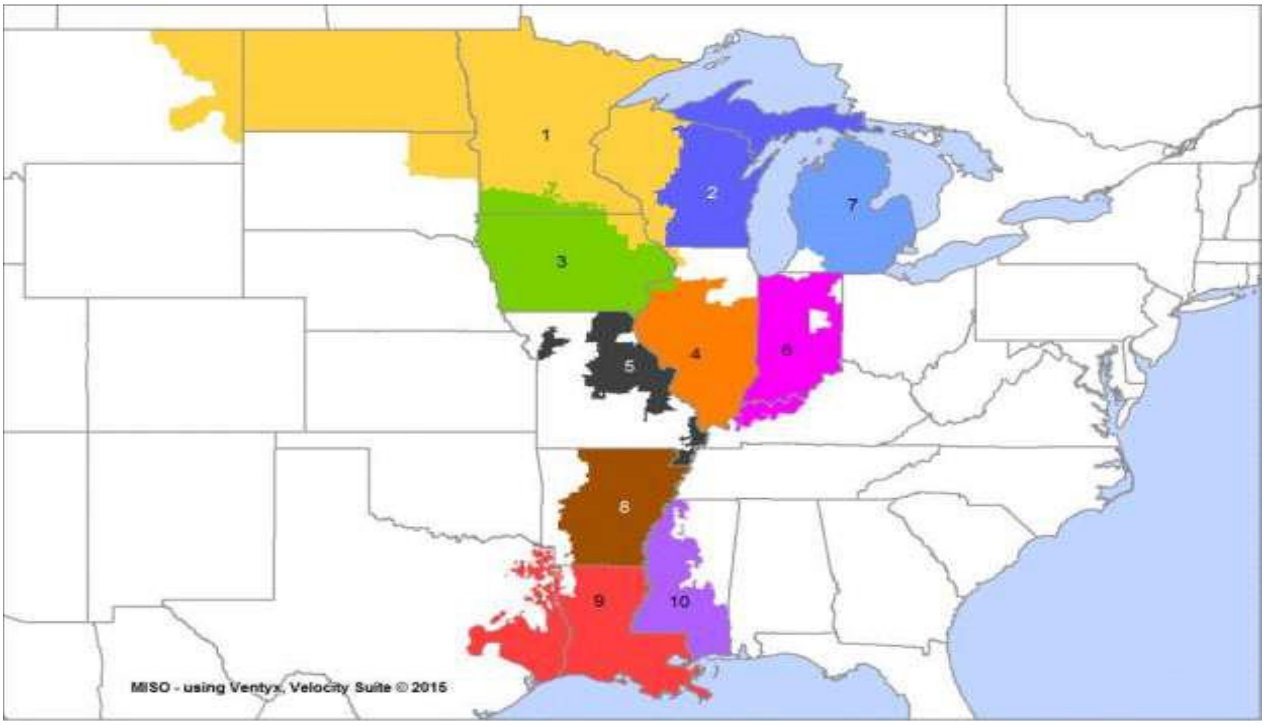

Table 3 below shows that as of 2018, Zone 4 has 58 utility-scale generating stations, with a combined summer capacity rating of nearly 14,700 MWs. These plants are owned and operated by a combination of municipals, merchants and cooperatives and employ diverse fuel types, including water, wind, natural gas, landfill gas, petroleum, nuclear and coal. Coal and nuclear plants represent the bulk of electricity production and capacity located in Zone 4. There is also a significant amount of natural gas-fired capacity in Zone 4. However, most of these natural gas fired plants were designed to operate during peak demand periods when electricity prices are high. A small portion of the natural gas-fired plants in MISO Zone 4 use combined-cycle technology, designed to produce "base load" generation or to operate economically even during off-peak periods.

Table 3- MISO Zone 4 Power Plants[18]

Primary Plant Technology	2018 Summer Capacity (MWs)	2018 Summer Capacity (% of Total)	2017 Generation (MWhs)	2017 Generation (% of Total)
Nuclear	1,060	7.2	8,348,336	14.5
Coal	8,469	57.7	44,712,599	77.9
Natural Gas	3,967	27.0	1,555,345	2.7
Petro	241	1.6	3,534	0.0
Wind	899	6.1	2,692,806	4.7
Hydro	38	0.3	48,809	0.1
Landfill Gas	16	0.1	20,747	0.0
Total	14,690	100.0	57,382,176	100.0%

As shown in Table 4, Dynegy has complete and/or partial ownership of seven power plants in Zone 4 and the Joppa Plant. The Joppa plant, located in southern Illinois, is outside of Zone 4, but has historically served load in Zone 4 and for purposes of the MISO PRA has been treated by MISO as if it were located in Zone 4. These plants have a combined nameplate capacity of approximately 6,500 MWs, making Dynegy[19] the largest capacity owner in Zone 4.

[18] Information on which plants are operating is from EIA's Inventory of Operating Generators as of June 2018. Source for 2017 net generation data is Form EIA-923 September 20, 2018 Annual 2017 final release. Includes only plants identified by MISO as in MISO Zone 4. Excludes plants owned by commercial or industrial customers or with less than 1 MW of nameplate capacity. Plants relying on multiple technologies are assigned according to their primary technology. Although EIA lists EEI as its balancing authority, the Joppa Steam plant is included within this information becuase it is treated for the MISO PRA as located within MISO Zone 4. All units of the Livingston Generating Facility Landfill Gas facility and unit 3 of the Baldwin Energy Complex are listed by EIA as "(OS) Out of service and NOT expected to return to service in next calendar year." Breese, Bushnell, Carlye, Freeburg, McLeansboro, Princeton, Units 5-6 of Marion, Units 1-6, 9-12 of Sullivan, Units 1-8, 12-13 of Waterloo, Altamont, Energy Shelby County, City of Casey, and IMEA Highland are listed as "(SB) Standby/Backup: available for service but not normally used." The combined nameplate and summer capacity for all of these units are 1,442 MW and 1,266 MW, respectively. The information for all of these plants, regardless of status, is included above.

[19] The Coffeen, Duck Creek, Edwards, and Newton plants are owned by the Dynegy company Illinois Power Holdings, LLC. The Joppa Steam Plant is co-owned by Dynegy and Electric Energy, Inc.

Table 4 - Dynegy Plants in MISO Zone 4[20]

Plant Name	Nameplate Capacity (MWs)	In-Service Dates	Unit (MWs)	Output (MWhs)
Baldwin	1,895	1970	625	7,874,339
		1973	635	
		1975	635[21]	
Coffeen	1,006	1965	389	5,566,718
		1972	617	
Duck Creek	441	1976	441	1,944,069
Edwards	645	1968	281	3,104,709
		1972	364	
Havana	488	1978	488	2,525,569
Hennepin	306	1953	75	1,666,409
		1959	231	
Newton	617	1982	617	3,281,532
Joppa	1,098	1953	183	3914254
		1953	183	
		1954	183	
		1954	183	
		1955	183	
		1955	183	
Total	6,496		6,496	29,877,599

In 2017, the Dynegy coal plants produced 52 percent of the electricity produced by utility-scale plants in Zone 4. In the past, Dynegy has stated that one third of its Illinois coal plants are at "high risk of retirement" and that another third is "under serious consideration for retirement". In the past several years, Dynegy has made several announcements concerning the potential retirement of portions of the Baldwin and Newton generating stations. The largest actual reductions of capacity in MISO Zone 4 in recent years can be attributed to the retirement of Dynegy coal-fired plants. In 2016, Dynegy retired its 500 MW, coal-fired Wood River power station in Alton, Illinois and its 617 MW, coal-fired Unit 2 of the Newton power plant in Newton, Illinois. In 2015, Dynegy retired the 136 MW, coal-fired Unit 1 of the Edwards plant in Bartonville, Illinois. Dynegy has also stated that by June 2018, it will have approximately 1,200 MWs of its Zone 4 capacity pseudo-tied into PJM.[22] These past and potential future generator retirements and out-of-Zone 4 transfers are likely a significant contributor to MISO's expressed Zone 4 resource adequacy concerns.

[20] EIA's Inventory of Operating Generators as of June 2018 and Form EIA-923 September 20, 2018 Annual 2017 final release..

[21] Unit 3 of the Baldwin Energy Complex is listed by EIA as "Out of service and NOT expected to return to service in next calendar year."

[22] Pseudo-tying is a technical concept which describes a manner of virtually transferring generating capacity physically located in one market into another (i.e., from MISO to PJM).

IV. The OMS-MISO Survey

As part of an effort to assess future resource adequacy, MISO and the Organization of MISO States, ("OMS")[23] conduct a voluntary annual survey of MISO LSEs and merchant power producers that attempts to forecast the amount of capacity expected to be available in MISO for five years forward and compare it to the regional and LRZ load forecasts. Survey respondents provide MISO information about their existing and planned resources, as well as data regarding their load, imports/exports and inter-zonal transfers. The intent of the survey is to provide insight into the sufficiency of resources across the MISO region to meet MISO's planning reserve margin requirement, as well as how each LRZ in MISO will meet its share of the region-wide planning reserve margin. The survey helps to give stakeholders and regulators an idea as to how well prepared the MISO region is for the future and if there are any areas of concern regarding resource adequacy. Participation in the survey is voluntary and a high percentage of LSEs in the MISO footprint typically take part in the survey. For example, in 2017, the survey represented more than 95 percent of the total load in the MISO region.

The OMS-MISO survey first noted the potential for a deficit relative to its target reserve margin requirement in its 2015 survey, stating that the MISO region could face a capacity deficit of 1.8 gigawatts ("GWs") as early as 2020.[24] In this instance, the projected capacity deficit was in the portions of MISO located in the upper-Midwest, lower Michigan, Indiana and Kentucky. The 2016 OMS-MISO survey noted that the amount of surplus capacity in the MISO region was declining due to the announced retirement of certain capacity resources.[25] LRZs with potential future capacity deficits included Michigan, Missouri and Illinois. MISO estimated that the planning reserve margin requirement deficit in Zone 4 could be 1.2 GWs for 2017 and almost 1.7 GWs by the 2021 delivery year. While MISO does not provide stakeholders or regulators with the data submitted by survey participants, a large portion of the then-projected deficit in Zone 4 can likely be attributed to Exelon's announcement that it intended to retire the Clinton nuclear power plant.[26]

The 2017 OMS-MISO survey predicted capacity surpluses in both the MISO region and in Zone 4 through 2022.[27] In the 2018 survey, the most recent survey released, MISO projects a potential surplus of capacity for the MISO region that ranges from 0.6 to 6.6 GWs in excess of the reserve margin requirement for the 2019 delivery year.[28] For Zone 4, the 2018 Survey forecasts a level of committed capacity that ranges from a deficit of 1.5 GWs to a potential surplus of 0.7 GWs

---

[23] The OMS is a regional state advisory committee that was established pursuant to the FERC's direction in Docket No. RM01-12-000 to provide MISO with coordinated oversight that includes the views of the states throughout the MISO region. The OMS consists of 17 members, across 15 states and the Canadian province of Manitoba.

[24] https://www.misoenergy.org/Library/Repository/Meeting%20Material/Stakeholder/SAWG/2015/20150709/20150709%20SAWG%20Item%2002%202015%20OMS-MISO%20Survey%20Results.pdf

[25] https://www.misoenergy.org/Library/Repository/Meeting%20Material/Stakeholder/RASC/2016/20160629/20160629%20RASC%20Item%2003%20OMS-MISO%20Survey%20Full%20Deck.pdf

[26] http://www.exeloncorp.com/newsroom/clinton-and-quad-cities-retirement. MISO treats individual responses to its survey as confidential. As a result, which particular resources MISO includes or excludes when reporting results of the survey are not publicly available.

[27] https://cdn.misoenergy.org/2017%20OMS-MISO%20Survey%20Results128835.pdf.

[28] *2018 OMS MISO Survey Results*, (June 2018), at 8-10 ("2018 Survey"). https://cdn.misoenergy.org/20180711%20RASC%20Item%2003d%20OMS%20MISO%20Survey243534.pdf

for the 2019 delivery year.[29] For the 2023 delivery year, the 2018 Survey predicts a committed capacity projection that ranges from a deficit of 2.8 GWs to a surplus of 1.1 GWs for Zone 4 and predicts a committed capacity projection that ranges from a deficit of 4.5 GWs to a surplus of 10.5 GWs for the MISO region .[30] The potential surplus in Zone 4 is attributed to new solar, wind and natural gas resources that either have signed an interconnection agreement with MISO or are in the MISO interconnection queue process.[31] A portion of the surplus can also be attributed to Exelon's decision to rescind its retirement announcement for the Clinton nuclear power plant operating in Zone 4. Decreased capacity availability is attributed to new resource retirements, potential retirements and changes in performance of existing resources.[32] The current planning reserve margin for the 2018-2019 planning year is 17.1 percent.[33] MISO expects the planning reserve margin across the MISO region for the 2018-2024 period to remain in the 17.1 to 17.2 percent range.[34]

The use of the OMS-MISO survey to measure resource adequacy has received mixed reactions. Some critics argue that the survey is not a rigorous, independent examination of resources in MISO and that the survey is unable to capture the entry and exit decisions of merchant generators that can occur within the five-year forward period of the survey. Others argue that the survey results are unreliable in that the survey is overly-sensitive to MISO's load forecast, which is the basis of the planning reserve margin and the OMS-MISO survey. Conversely, some MISO stakeholders have argued that the OMS-MISO survey is overly-conservative and focused on the low-end of capacity estimates, resulting in unnecessarily alarming results and exaggerating any possible capacity deficits. In particular, state regulators in traditionally regulated states and the utilities that they regulate argue that their use of integrated resource planning helps assure long-term resource adequacy, even if the particular resources expected to be used in the forward period are unknown at the time of the survey. While MISO has taken some steps to address these criticisms, the OMS-MISO survey is, by its nature, limited in its ability to provide definitive conclusions regarding future resource adequacy in either the MISO region or its LRZs.

V. MISO's Competitive Retail Solution

In 2016, MISO initiated an examination of its PRA, which MISO referred to as its "Competitive Retail Solution" ("CRS"). MISO intended for the CRS to address its concerns regarding the ability of the business model in competitive retail areas of the MISO region in Michigan (Zone 7) and Illinois (Zone 4) to ensure enough electricity capacity resources to meet demand on a long-term basis. The CRS was prompted, in part, by the results of the 2016 OMS-MISO survey forecasting potential capacity deficits (as compared to the reserve margin target) in the competitive retail areas of MISO.[35]

---

[29] 2018 Survey, at 37.
[30] 2018 Survey, at 39.
[31] 2018 Survey, at 39 and 41.
[32] 2018 Survey, at 39.
[33] *Out-year LOLE Results: PRM and LRR*, MISO Loss of Load Expectation Working Group (September 12, 2017), at 2.
[34] *Out-year LOLE Results: PRM and LRR*, MISO Loss of Load Expectation Working Group (September 12, 2017), at 5.
[35] MISO's Competitive Retail Solution – What it is, Why it's Needed, How it Works, (October, 2016) http://www.misomatters.org/2016/10/misos-competitive-retail-solution-what-it-is-why-its-needed-how-it-works

MISO's main concerns with resource adequacy in the competitive retail areas was that there is no state regulatory agency charged with enforcing resource adequacy outcomes and that the design of the MISO PRA may not induce the retention and/or entry of sufficient resources to ensure resource adequacy in competitive retail areas. MISO also expressed a concern with tightening reserve margins across the MISO footprint that could limit the ability of LSEs in competitive retail areas from addressing any capacity deficits through the import of excess capacity from other MISO zones.

In an effort to address its concerns regarding long-term resource adequacy in competitive retail areas, the MISO CRS proposed a partial forward-looking market for capacity for competitive retail areas by incorporating several features different from MISO's current PRA construct. MISO's belief was that a three-year forward resource auction ("FRA"), in contrast to the prompt-year PRA, would incent investment in capacity resources and provide greater assurance of long-term resource adequacy. In competitive areas, the CRS would have replaced the PRA's administratively determined vertical demand curve with an administratively determined downward-sloping demand curve. The use of a vertical demand curve results in the procurement of the exact amount of capacity necessary to meet MISO's planning reserve margin target, regardless of cost (up to an pre-established price cap). The downward-sloping demand curve would have allowed the amount of capacity purchased to deviate from the target (either higher or lower), depending on offer-price and supply conditions. Critics argued that a vertical demand curve can produce excessive year-to-year price volatility and results in severe price spikes when resource availability declines. The proposed downward-sloping demand curve was intended to mitigate this purported price volatility and provide resource owners and developers with a more predictable stream of revenue, which was suggested to encourage the retention of existing resources and investment in new resources. MISO proposed these changes only with respect to competitive retail areas, which would have had the effect of bifurcating MISO's planning resource auction process.

Ultimately, the FERC rejected MISO's CRS proposal on multiple grounds.[36] The FERC's primary concern was that the bifurcated capacity market under the CRS would be less efficient and suffer from poor price formation, relative to a MISO-wide clearing process that operates within a single set of transmission capability constraints and supply offers. The FERC also expressed concerns with the relatively small amount of demand in competitive retail areas and potential for increased volatility in the PRA due to a vertical demand curve in the PRA and a downward-sloping demand curve in the CRS. Ultimately, the FERC was not convinced that the CRS would produce efficient pricing outcomes, as supply sources outside of the CRS areas would be able to choose between a three-year forward auction and a prompt auction.

VI. Resource Adequacy, Transmission Import Capability and MISO's MVPs

Transmission import capability plays a key role for resource adequacy in the MISO region and in its LRZs by allowing LSEs to access low-cost generation resources both from other zones in the MISO region and from regions external to MISO to minimize the cost of capacity and energy for

[36] See, *Midcontinent Independent System Operator, Inc.*, 158 FERC ¶ 61,128 (2017)

consumers. Absent sufficient transmission import capability, LSEs within an LRZ may be forced to rely more extensively on generation resources located inside the LSE's zone to meet the planning reserve margin requirement, even when lower cost generation resources are available outside the zone.

Prior to each PRA, MISO performs a series of transfer analyses to determine the ability of each local resource zone (including Zone 4) to reliably import and export power. Capacity import limits ("CIL") are found by modeling increases in MISO generation resources in adjacent zones while modeling decreased generation inside the zone under study until a limiting constraint is identified. For instance, during the 2017-2018 PRA, Zone 4 had a CIL of 5,815 MWs, with the Ballard-Meredosia 138-kV transmission line being identified as the limiting contingency. The CIL for the 2018-2019 PRA was 6,411 MWs, with the Clinton nuclear plant as the limiting contingency. Capacity export limits ("CEL") are determined by modeling increases in the amount of generation within a particular zone, while proportionately modeling decrease in generation in all other MISO zones until a constraint is reached. The Zone 4 CEL for the 2017-2018 PRA was 11,756 MWs and is set at 4,280 MWs for the 2018-2019 PRA.[37,38] MISO also determines a local clearing requirement ("LCR") for each zone, which is the minimum number of MWs that must be located within each zone (or treated as if they were located in the zone) in satisfying the Zone's PRMR. Factors that contribute to a zone's LCR include the zone's CIL, local reliability requirement and any exports outside of MISO. The Zone 4 LCR for the 2017-2018 PRA was 5,839 MWs[39] and was 4,960 MWs for the 2018-2019 PRA.[40]

In the 2018-2019 PRA, Zone 4 had a PRMR of 10,060 MWs, an LCR of 4,960 MWs and a CIL of 6,411 MWs. This means that Zone 4 had to source 4,960 MWs from inside the zone (or equivalent resources), leaving 5,100 MWs to be sourced from inside or outside of the zone. Given that the CIL for the zone was 6,411 MWs, there was more than enough transmission capacity to allow Zone 4 to meet the balance of its PRMR obligation by importing resources from outside of the zone. Obtaining the balance of the PRMR from outside Zone 4 would require that there be sufficient capacity located outside the zone and that it is offered at a low-enough price to clear ahead of the remaining available generation inside Zone 4. In actual experience, the 2018 auction results for Zone 4 showed just 1,133 MWs of capacity imports.[41]

In 2011, MISO's Board of Directors approved its first multi-value project ("MVP") portfolio that included 17 new high-voltage transmission projects intended to meet renewable energy mandates and goals by moving over 41 million MWh of wind energy annually from western MISO to markets. Every zone in the MISO North region has an MVP project, with five 345-kV

---

[37] *2017/2018 Planning Resource Auction Results*, (April 14, 2017), at 9 ("2017-18 PRA Results") and 2018-19 PRA Results, at 10. https://cdn.misoenergy.org/2018_2019_Preliminary_PRA_Data_Final153525.xlsx

[38] In 2017, to more properly align the CIL, CEL and LCR figures with the capacity in the PRA, MISO adjusted the assumptions used in the modeling and calculation of those figures. In the CIL calculations, resources that were exporting capacity to serve non-MISO load were assumed to be offline, while the CEL calculations assumed these units were online to serve MISO load. MISO's changes recognized that exporting resources consume some export capacity and act as counter-flow for imports. These changes to recognize flows of these resources resulted in a decrease in a zone's CEL and an increase in the CIL.

[39] 2017-18 PRA Results, at 9.

[40] 2018-19 PRA Results, at 10.

[41] 2018-19 PRA Results, at 10.

transmission lines being located in Illinois. The construction of the Illinois portion of these MVP projects is well under way, and when completed, MVPs are expected to increase both the import and export capability for almost all transmission zones in MISO. These increases will enable access to lower-cost surplus generation located outside of Zone 4, as well as allow generation located inside of Zone 4 to sell energy and capacity to markets outside of the zone.

VII. Business Environment for Generators in Zone 4

A. MISO's Capacity Auction Design

Generators that operate under a traditional, vertically integrated utility construct obtain nearly all of their revenues through retail rate base and retail sales of electricity. Conversely, merchant power plants in competitive retail markets derive a significant portion of their revenues through the sale of electricity, ancillary services and capacity in wholesale markets. The sale of electricity can take place through a variety of contractual forms - through "over-the-counter" markets, organized exchanges, RTO spot markets, bilateral contracts, auctions, etc. and are usually for a set duration of time. Ancillary services refer to a variety of generator attributes beyond the generation of electricity used by grid operators to maintain grid stability and security. In the MISO footprint, power plants can provide these services through a MISO-operated ancillary services market or rate-based regulated sales. When a power plant sells capacity, it is making a commitment to be fully available for energy production when called on by the RTO market operator during the commitment period. MISO has operated an annual planning resource auction for capacity since 2013.

While there are numerous factors in the current electric industry's business environment that contribute to generator business risk, merchant generators face an additional risk that traditionally regulated generators do not face. This additional risk stems from MISO's capacity market auction design. MISO's PRA allows competing generators owned by traditional state-regulated utilities to offer their capacity into MISO's auction at prices that do not reflect their gross going-forward costs.[42] Because these utilities are compensated through state-regulated retail rates, they typically use the self-schedule option in MISO's PRA and offer their generation capacity at lower prices than a merchant power producer would. Relative to state-regulated competitors, generators operating as merchants are more likely to depend on MISO's capacity, energy, and ancillary services markets to recover their operating costs and to support investment decisions.

The relatively low capacity clearing prices in MISO that have been experienced in recent years, and result, to some extent, from low offers submitted by generators owned by traditionally regulated utilities present economic challenges to both existing and potential merchant generators. Some merchant generators in Zone 4 have taken steps to pseudo-tie their resource to the PJM capacity market, which generally pays a higher price for capacity than the MISO capacity market. Others have sought revenues from out-of-RTO market sources. When pursuit of such alternative revenue options fails, pressure increases for premature unit retirement.

B. Energy and Capacity Growth Rates

[42] These are typically costs that could be avoided by not having the plant operable for the planning year.

The electricity industry is currently facing a relatively static demand for electricity and there is an expectation that low load growth may persist in the future. The State Utility Forecasting Group at Purdue University conducts annual load forecasts for the MISO region and in 2017 the forecasted annual growth rate for Zone 4 for the time period of 2018-2027 was 0.43 percent.[43] When the study accounted for energy efficiency, demand response and distributed generation, the annual growth rate in summer and winter peak demand for Zone 4 fell to 0.25 percent and 0.21 percent, respectively.[44] All generators in MISO compete against each other, to some extent, to serve existing and new incremental load. As load growth for the near future is expected to remain relatively modest, this competitive pressure is not likely to go away.

C. Compliance with Environmental Standards

Merchant coal-fired plants are also subject to costs due to compliance with environmental regulations. In recent years, the U.S. Environmental Protection Agency ("EPA") has issued several standards intended to reduce harmful air emissions. The Mercury and Air Toxics Standards require power plants to limit their emissions of pollutants such as mercury, arsenic and metals.[45] The Cross-State Air Pollution Rule requires fossil fuel-fired electric generating units at coal-, gas-, and oil-fired facilities in 27 states in the eastern half of the U.S. to reduce emissions to help affected downwind areas.[46] The EPA also recently released proposed emission guidelines for greenhouse gas emissions from existing electric generating units that, if implemented, would likely impose requirements on coal-fired steam generating units to reduce their energy use per unit of electricity generated.[47] Illinois also implemented legislation intended to address mercury emissions from power plants that are more stringent than federal requirements.[48]

While environmental legislation may result in increased prices for electricity and capacity, depending on the extent of competition, coal-fired plants may not benefit from these increases in price to the extent they also bear the cost of compliance. Conversely, renewable and other low or zero-emissions generators, which compete directly with the coal-fired plants, generally benefit from emissions-compliance driven increases in wholesale electricity prices.

D. Abundant, Low-Cost Natural Gas

An increasing percentage of new generation resources in many parts of the U.S. have been fueled by clean-burning, low-cost natural gas. This is largely due to an increasing supply of natural gas, lower forward-looking prices, an increased focus on carbon dioxide emissions from power plants and the relative flexibility of siting, construction and operation of natural gas powered generation. This regional trend also appears to be accelerating as an increasing amount of coal-

[43] 2017 MISO Independent Load Forecast Update, ("MISO ILF") (November 2017), at Table 10. http://www.purdue.edu/discoverypark/sufg/miso/reports-presentations.php
[44] MISO ILF, at Tables 19 and 20.
[45] https://www.epa.gov/mats
[46] https://www.epa.gov/csapr/cross-state-air-pollution-rule-csapr-fact-sheets
[47] https://www.epa.gov/sites/production/files/2018-08/documents/frn-ace-proposal_8.20.2018.pdf
[48] http://www.epa.illinois.gov/topics/forms/air-permits/mercury-rules/index

powered generation is being retired due to age, environmental restrictions, or economic pressures.

While the dash-to-gas has not been as pronounced in Illinois as in some other portions of the country as demonstrated by the Zone 4 generator interconnection queue data on page 8 above, energy and capacity prices throughout MISO and in Zone 4 have likely been affected by the general increase in natural gas generating capacity in recent years. Because of relatively low natural gas prices and improved technological efficiencies of new natural gas generation plants, these plants can successfully compete in regional wholesale markets. The result of these trends has generally been to flatten market supply curves, particularly in the increments that often set wholesale market clearing prices. The result is a lowering of revenue for the marginal unit as well as all of the infra-marginal suppliers, because RTO markets, including those operated by MISO, work on the single auction clearing price design.

E. The Future Energy Jobs Act

On December 7, 2016, Public Act 99-0906 (commonly referred to as the Future Energy Jobs Act or "FEJA") was enacted into law with an effective date of June 1, 2017. Among other things, the FEJA calls for updates to Illinois' renewable portfolio standards, revises energy efficiency standards and creates a new zero emission standard. The overall result of FEJA is to encourage development of more Illinois-based renewable resources, reduce the growth of electricity usage through increased energy efficiency and retain zero-emission nuclear facilities meeting public interest factors which may have otherwise ceased operation.

With respect to renewable energy, the FEJA retains the previous target of 25 percent of retail energy coming from renewable energy sources by 2025, but provides more funding for renewable resource generation deployment to achieve the target.[49] The FEJA establishes both interim and long-term renewable energy goals that are to be met through the Illinois Power Agency ("IPA") procuring a significant amount of utility-scale solar and wind renewable energy credits ("RECs") annually through 2030. Further, the FEJA creates an Adjustable Block Program to facilitate the procurement of RECs from new distributed solar generation and/or community renewable generation projects.[50] Finally, the FEJA creates a Solar for All Program to purchase RECs according to an approved procurement plan and provides incentives for low-income distributed generation and community solar projects.[51]

With respect to energy efficiency, the FEJA requires Illinois utilities, by 2030, to achieve between 16 percent and 21.5 percent in cumulative persistent annual savings, relative to their average annual sales for the years 2014-2016. The FEJA also provides the utilities with performance-based financial incentives (penalties) for exceeding (falling short of) their efficiency targets. Finally, the FEJA creates specific carve-outs for efficiency spending on low-income programs and public buildings.

[49] 20 ILCS 3855/1-75(c)(1)(B)
[50] 20 ILCS 3855/1-75(c)(1)(K)
[51] 20 ILCS 3855/1-56(a),(b)(1)

The FEJA requires the IPA to enter into ten-year contracts to procure zero emission credits ("ZECs") from nuclear power plants meeting public interest factors to cover 16 percent of electricity delivered by electric utilities in calendar year 2014.[52]

The FEJA stands to drive growth in renewable energy and energy efficiency resources by requiring the utilities to take long-term positions with respect to energy efficiency and renewable energy. The Zero Emission Standard portions of the FEJA will also allow the Clinton Power Station in MISO Zone 4 to forestall retirement for the next decade. Nuclear power plants tend to be very reliable, have high capacity and high capacity factors. They therefore, are formidable competitors to all resources, including coal-fired plants.[53]

The renewable energy and energy efficiency requirements in the FEJA stand to significantly lower the amount of demand in Illinois and increase the amount of new renewable generation built in Illinois. The FEJA, when paired with the increase in available low-cost natural gas and nuclear energy resources, reduces the ability for generation capacity from older and relatively more expensive coal-fired plants to successfully compete for the sale of capacity and long-term energy contracts.

VIII. Potential Policy Options

There is a range of possible responses the State of Illinois might make to the long-term resource adequacy concerns raised in MISO's letter to Governor Rauner, including:

1. Continue to rely on existing competitive forces and market structures;
2. Impose additional capacity requirements on load serving entities;
3. Create a reliability or resource adequacy portfolio standard; or
4. Reconfigure RTO participation.

1. Continue to rely on existing competitive forces and market structures

Section 101A of the Illinois Public Utilities Act states:

> Competitive forces are affecting the market for electricity as a result of recent federal regulatory and statutory changes and the activities of other states.
>
> A competitive wholesale and retail market must benefit all Illinois citizens. The Illinois Commerce Commission should act to promote the development of an effectively competitive electricity market that operates efficiently and is equitable to all consumers.

MISO was able to obtain capacity sufficient to meet the planning reserve margin requirement in its most recent MISO planning resource auction, for the 2018-2019 delivery year, and was able to do so at a clearing price of $10.00/MW-day or $3,650/MW-year. In that same delivery year,

[52] 20 ILCS 3855/1-75(d-5)(1)

[53] Copied from slide 4 of "Capacity Performance," a presentation posted for the Education and Dialogue Session, August 12, 2014, of PJM's Markets and Reliability Committee, which is posted on the PJM website: http://www.pjm.com/~/media/committees-groups/committees/mrc/20140812/20140812-item-01-capacity-performanceproblem-statement-presentation.ashx

the Cost of New Entry for Zone 4, which represents the annualized capital cost of constructing a power plant was $89,870/MW-year.[54] Additionally, MISO's recent 2018 OMS MISO Survey Results suggest that Zone 4 capacity requirements are likely to be met through 2023.[55] Planned transmission and expected generator entry into the market provide additional confidence in this regard.

Circumstances could change, which would alter the balance in the market. One suggested approach to allow Illinois to more directly maintain situational awareness would be for the ICC or IPA to engage an independent consultant to periodically evaluate resource adequacy in Zone 4. Some have also suggested that the ICC conduct scenario modeling of resource adequacy or that the ICC rigorously study the issue using an analytical framework. It is likely that data unavailability or commercial confidentiality would be an obstacle to either approach.

It's notable that resource adequacy for much of the retail load in Zone 4 may already be covered through self-schedules or FRAP, for example by the municipal and cooperative utilities serving retail load in Zone 4, or by Dynegy which is the dominant alternative retail electric supplier in Zone 4 as well as the dominant generator. As shown in Table 2 above, FRAP load for Zone 4 has ranged between 712 MW and 1,136 MW in the most recent five delivery years and self-schedules were 6,636 MW in the 2018-2019 delivery year. As a result, for the 2018-2019 delivery year, only 2,288 MW of the 10,060 MW planning reserve margin requirement for Zone 4 was actually procured in MISO's PRA. In conjunction with resource adequacy coverage for Ameren Illinois basic service load as described in Subsection 2.a below, the amount of Zone 4 retail load whose capacity needs are covered through MISO's PRA is limited and could be further reduced, for example, through additional encouragement of forward bilateral contracts.

Since the state of Illinois adopted electric industry restructuring and Illinois generators were separated from their previous utility owners (e.g., Ameren Illinois) and became merchant companies, the ICC lost its Public Utilities Act authority to request and obtain data from Illinois generators. Reinstating the ICC's authority to obtain generator data (and expanding it to demand response developers and distributed energy resources) would provide a mechanism to better assess whether resource adequacy is, or is becoming, a problem in Zone 4. Better information, available from year-to-year would enable more focused tailoring of solutions to developing issues and problems. Some have recommended that the ICC and IPA should consider creating an additional process for gathering and assessing data to shed light on resource adequacy. For example, Exelon stated that, "the Illinois General Assembly should explore legislation facilitating further analysis to the extent Illinois' state agencies are not already statutorily authorized or equipped to collect and/or examine information pertaining to resource adequacy in the state. Defining the problem and exploring the various solutions more thoroughly is the first step to take before developing a long-term solution."[56]

---

[54] *Filing of the Midcontinent Independent System Operator, Inc. Regarding LRZ CONE Calculation*, Attachment B. FERC Docket No. ER17-2416 (September 1, 2017) https://cdn.misoenergy.org/Final%20MISO%202017%20Annual%20CONE%20filing51321.pdf

[55] 2018 Survey, at 38.

[56] See, Resource Adequacy in MISO Zone 4 Summary Report, (February 26, 2018), at 118 ("ICC Zone 4 Report"). https://www.icc.illinois.gov/Electricity/workshops/MISOZone4.aspx

Some commenters have noted[57] that MISO's FERC-approved resource adequacy tariff provides an option for state regulatory bodies like the ICC to establish a planning reserve margin for the load serving entities "under that state's jurisdiction."[58] Notably, the provision allows for the ICC to set the reserve margin either lower or higher than MISO's default level. While Ameren Illinois is under the ICC's jurisdiction, and the ICC could arguably employ this option for the basic service provided by Ameren Illinois under existing Illinois statutory authority, the ICC may not be able to apply this option to ARES load absent additional legislative authorization.

In addition, while MISO's proposed competitive retail solution was not approved at the FERC, many observers believed that proposal failed largely on the basis of its far-reaching impacts. On the other hand, there may be more modest market-based modifications that could be made to MISO's current energy, ancillary services, and capacity constructs to better address resource adequacy needs by compensating beneficial generator attributes and valuable grid services that generators may provide. Some of the suggested initiatives for MISO include:

- changing MISO's procurement mechanism for Zone 4 from a single clearing price auction to a pay-as-bid approach;
- improving the generating plant retirement notification and reporting process to create greater transparency and better signaling to the market;
- improving the load forecasting methodology to require greater consistency in how load serving entities calculate and report their load growth estimates;
- posting of a daily Zone 4 fuel resource pie chart;
- modifying the MISO/OMS Survey to, for example, improve the quality and quantity of data obtained from ARES;
- increasing transparency and reporting of forward prices for bilaterally traded capacity;
- exploring the possibility of raising the maximum auction clearing price allowed in the MISO PRA; and
- implementing seasonal capacity procurement.

While none of these options completely ensure Zone 4's long-term resource adequacy, Illinois could rely on existing competitive forces and market structures, complemented by modest improvements like those mentioned above as a basis for taking no legislative action or limited legislative action, at this time, while periodically re-assessing the matter as additional information and evidence is obtained.

2. Impose additional capacity requirements on load serving entities

The bulk of electricity generated in MISO Zone 4 has been coal-fired generation. With past coal plant retirements and the potential for more retirements, the plants that have historically been the

[57] ICC Zone 4 Report, at 30.

[58] The MISO tariff states, "The Transmission Provider [MISO] will determine a Planning Reserve Margin (PRM) using analytical study methods described in Section 68A.2, provided that if a state regulatory body establishes a PRM for its regulated entities that is higher or lower than the PRM determined by the Transmission Provider, then the state-established PRM will apply to the Coincident Peak Demand of LSEs under that state's jurisdiction." (MISO Tariff, Module E-1, Section 68A.1).

source of the majority of electricity generated in Zone 4 may not be available to Illinois in the future. Despite projections that new transmission and generation will be deployed, there is no guarantee that new generation will be built, be available for import, or otherwise materialize to replace these traditionally reliable generating resources. Illinois could take steps to reduce resource adequacy uncertainty by imposing additional capacity requirements on load serving entities that would result in reducing reliance on MISO's capacity resource auction for procurement and price-setting and increasing reliance on MISO's self-scheduling option or FRAP option. Subsection (a) explores approaches which would make use of MISO's self-scheduling option and subsection (b) explores FRAP approaches.

a. Forward IPA Procurement for Increased Capacity Self-Scheduling

i. Illinois Power Agency forward capacity hedging for basic service load

The IPA was established to develop procurement plans and conduct procurements of power and energy necessary to serve customers in classes that have not been declared competitive and who take service from the utility's bundled rate ("eligible retail customers"). Under the authority granted it by the General Assembly, and subject to ICC approval, the IPA conducts procurements of both energy and capacity for Ameren Illinois' basic service load in MISO Zone 4.

Under its currently approved procurement plan, the IPA is following a hedging strategy for energy procurement. This approach uses a laddering technique whereby a portion of forecasted energy needs are purchased up to three years ahead of a delivery year. For example, in each of the spring and fall of 2018 the IPA sought to procure incremental blocks of energy to meet 12.5 percent of forecasted need for the June 1, 2020 – May 31, 2021 delivery year. The plan calls for the IPA to purchase additional incremental blocks of energy to meet 12.5 percent for of forecasted need for the June 1, 2020 – May 31, 2021 delivery year in each of the spring 2019 and the fall 2019 procurement events. The remaining forecasted need is scheduled to be procured in the spring and fall of 2020 just prior to when the energy is to be delivered.

With respect to capacity, in each of the spring and fall of 2018, the IPA sought to procure 25 percent of forecasted need for the June 1, 2019 – May 31, 2020 delivery year. The remaining forecasted need is scheduled to be obtained through MISO's planning resource auction, conducted shortly before the beginning of the June 1, 2019 – May 31, 2020 delivery year.

By purchasing energy and capacity in advance of when these products are delivered, the procurement plans provide some assurance that adequate resources will be available in the future. The ICC could provide additional resource adequacy assurances in MISO Zone 4 by increasing the amount of forward energy and capacity that is procured by the IPA for Ameren Illinois customers. Advance purchases will provide generators a highly certain stream of known revenues that may better ensure their future availability. This approach could be pursued by the IPA with the approval of the ICC or it could be ordered by the ICC. However, increasing the amount of energy and capacity procured on behalf of the basic service load could result in increased customer switching away from basic service if the IPA procurement prices are higher than the prices available from ARES or to basic service if the IPA procurement prices are lower

than the prices available from ARES, either of which could raise costs for the remaining basic service customers.

Relying on the current procurement process to better assure resource adequacy will, however, be of limited effectiveness. The load of eligible retail customers is only a fraction of overall load in Ameren Illinois' territory. The IPA is not authorized to procure any resources for Ameren Illinois' larger customers (those with demand in excess of 150 kilowatts) or for customers that use a supplier other than Ameren Illinois. As a result, Ameren Illinois projects that the basic service load will have capacity requirements between 1,720 MW and 1,756 MW for delivery years 2019/2020 through 2023/2024. For the 2019-2020 delivery year, this basic service load constitutes only about 17% of the total capacity target requirement for Zone 4.

Additionally, while the IPA has used hedging as a strategy primarily to mitigate against pricing variability, the strategy can be a costly one. For example, the IPA procured capacity for the June 1, 2018 – May 31, 2019 delivery year at average rates of $132.27 per MW-day (in a 2016 procurement) and $23.26 per MW-day (in a 2017 procurement). Capacity in the MISO planning resource auction, for that same delivery period, subsequently cleared at a price of $10.00 per MW-day.

ii. ARES Forward Contract Reporting

Under current ICC rules, ARES are not required to submit reports detailing the manner in which they choose to meet their MISO-imposed capacity obligations. The data suggests that, as a whole, ARES do not rely entirely on MISO's PRA for capacity procurement and price-setting. For example, for the 2018-2019 delivery year, only 2,285 MWs of Zone 4 PRMR used MISO's PRA for procurement and price-setting, and ARES load in Zone 4 is greater than that number. So, we can conclude that ARES make some use of MISO's self-scheduling option (which entails either forward contracting or generating unit ownership). Light could be shed on this matter by requiring ARES to submit annual reports to the ICC describing their forward contracting or generating unit ownership strategies for satisfying their capacity obligations.[59] Depending on the results of these reports, the ICC could seek legislation authorizing the ICC to take steps to increase ARES forward capacity contracting or generating unit ownership.

iii. IPA Forward Contracting on Behalf of ARES

The IPA, with ICC oversight could procure capacity on behalf of Alternative Retail Electric Suppliers serving load in Ameren Illinois' service area. The General Assembly could, in order to address resource adequacy, provide the IPA and the ICC authority to administer capacity procurements on behalf of ARES. Such legislation could specify how capacity is to be procured, assign the design to the IPA and the ICC, or adopt some hybrid of the two approaches. This could include plans that specify a forward procurement period, allow for multi-year capacity purchases, capacity purchases that enhance supply diversity, or other factors that may increase long-term resource adequacy in MISO Zone 4. The expectation would be that ARES would

[59] It appears that the state of Michigan has adopted a variation of this reporting approach (Michigan Public Act of 2016, §6w).

subsequently offer such procured capacity as self-supply in MISO's PRA. This approach has a downside in that the State of Illinois cannot require wholesale capacity suppliers to offer into an IPA solicitation for capacity and those suppliers could, in some cases, manipulate the price paid for capacity by the IPA.

b. Forward Fixed Resource Adequacy Plan (FRAP) for basic service and/or ARES load.

i. IPA FRAP Procurement on Behalf of Basic Service Load

As an alternative to procuring capacity through MISO's planning resource auction, load-serving entities can submit a FRAP to MISO. Load serving entities may submit FRAPs to MISO that demonstrate capacity resources are deliverable to them to adequately satisfy their planning reserve margin requirement and other MISO imposed capacity requirements for a planning year.

The IPA and the ICC could, under existing authority, administer procurements to procure resources that would enable Ameren Illinois, on behalf of its basic service load, to submit a FRAP to MISO. As a practical matter, FRAP and the forward hedging approach described in Section IX.2.a.i above have similar implications for resource adequacy.

ii. ARES FRAP Reports

While the IPA and the ICC could, under existing authority, administer procurements to procure resources that would enable Ameren Illinois, on behalf of its basic service load, to submit a FRAP to MISO, the IPA and the ICC currently do not have the authority to require ARES to submit FRAPs (or even to submit reports on FRAP activity). Legislation could be adopted to require ARES to submit annual FRAP reports to the ICC. Additionally, legislation could authorize the ICC to require some amount of capacity compliance to be met through MISO's FRAP option.

iii. IPA FRAP Procurement for ARES Load

Alternatively, the IPA, with ICC oversight could procure capacity on behalf of Alternative Retail Electric Suppliers serving load in Ameren Illinois' service area. The General Assembly could, in order to address resource adequacy, provide the IPA and the ICC authority to administer FRAP capacity procurements on behalf of ARES. Such legislation could specify how capacity is to be procured, assign the design to the IPA and the ICC, or adopt some hybrid of the two approaches. This could include plans that specify a forward procurement period, allow for multi-year capacity purchases, capacity purchases that enhance supply diversity, or other factors that may increase long-term resource adequacy in MISO Zone 4. This FRAP approach has downsides such as: because the State of Illinois cannot require wholesale capacity suppliers to offer into an IPA solicitation for capacity, those suppliers could, in some cases, manipulate the price paid for capacity by the IPA. Also, mandated FRAPs would eliminate ARES ability to manage their supply portfolio through alternative bilateral arrangements. Others have suggested that certain forms of the FRAP approach might not respect the great lengths to which Illinois has gone to advance its clean energy and environmental goals.

3. Create a Reliability or Resource Adequacy Portfolio Standard

MISO has expressed concerns, both in its letter to Governor Rauner and in the course of developing its "Competitive Retail Solution" ("CRS"), that, because it was designed for the needs of utilities in traditionally regulated areas, its capacity construct does not adequately provide for resource adequacy in Illinois. This suggests that MISO's capacity construct, including its planning resource auction, may not adequately compensate resources for the value they have in assuring long-term resource adequacy. The Zero Emissions Standard ("ZES"), included in P.A. 99-0906, addressed a similar concern, that wholesale market constructs existing at the time did not adequately compensate resources for certain of their positive environmental attributes. The legislature could, as it did with the ZES program, create a resource adequacy portfolio standard to compensate resources for the value they have in assuring long-term resource adequacy. If modeled upon the ZES, such legislation would presumably require the IPA, with ICC oversight, to procure resource adequacy credits from electric supply resources. Some have suggested that this approach would constitute abandonment of the market-based approach to electricity supply and would be counter to current public policy favoring competitive markets.

4. Reconfigure RTO Participation

Illinois is divided between two different regional transmission organizations, MISO and PJM. Differences in the characteristics of the participants in these markets and differences in the market rules between the two markets impact resource adequacy. For example, PJM relies almost solely on market mechanisms to ensure there is sufficient supply available to meet customer demand. MISO also provides market-based resource adequacy mechanisms but allows for state policy initiatives to be integrated into its resource adequacy construct.

A possible path to ensure resource adequacy would be for Illinois to either encourage or require utilities to change their RTO participation choices. Notably, such reconfigurations may not come without cost, as existing obligations of the utilities may require them to pay certain "exit" fees should they elect to change their RTO participation choices. In addition, Section 16-126.1 of the Public Utilities Act currently prohibits the state from preventing a utility from participating in an RTO of its choosing.