



Capacity Demonstration Results

Planning Year 2024/25

Case No. U-20886

March 26, 2021

MPSC Staff

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Executive Summary

All Michigan load serving entities (LSE) required to file capacity demonstrations with the Michigan Public Service Commission (MPSC or Commission) for planning year 2024/25 pursuant to MCL 460.6w and the August 2020 Commission Order in Case No. U-20886 have filed. Staff has audited the filings, contracts, and other materials and finds that all Michigan LSEs have satisfied the capacity demonstration requirements and have procured appropriate levels of resources for planning year 2024/25.

MPSC Staff (Staff) projects that the Midcontinent Independent System Operator, Inc. (MISO) Local Resource Zone (LRZ) 7, which consists of the lower peninsula of Michigan, excluding Indiana Michigan Power Company's (I&M) service territory in the southwest corner of the state, will have sufficient resources to meet its local clearing requirement (LCR) for the 2021/22 prompt year as well as the 2024/25 demonstration year based on the capacity demonstration filings and MISO publications at the time of this report. For MISO LRZ 1 and LRZ 2 in Michigan's Upper Peninsula, Staff doesn't have comprehensive enough data to accurately project zonal capacity positions because the majority of these two zones are located in other states not subject to MCL 460.6w. Based on the most recent Organization of MISO States (OMS) Survey, both LRZ 1 and LRZ 2 are projected to have sufficient capacity in 2021 as well as in 2024.¹ Additionally, Staff projects that the I&M service territory in Michigan, which is in PJM Interconnection LLC (PJM), will have sufficient levels of resources available to meet PJM's requirements.

¹ [2020 OMS-MISO Survey Results](#) released in June 2020, accessed 03/12/2020.

Background

On September 15, 2017 in Case No. U-18197, the Commission directed all Michigan LSEs to file capacity demonstrations annually pursuant to MCL 460.6w. This report outlines the results of the capacity demonstrations filed for planning year 2024/25 as directed by the Commission in Case No. U-20886 and represents the fourth annual capacity demonstration report. Prior reports are filed in Case No. U-18441, Case No. U-20154, and Case No. U-20590, respectively. In Case No. U-20886, the Commission ordered² rate regulated electric utilities³ to submit capacity demonstrations by December 1, 2020 for the 2024/25 planning year and Alternative Energy Suppliers (AESs),⁴ cooperatives,⁵ and municipal utilities⁶ to submit capacity demonstrations in the same docket for the 2024/25 planning year, on or before February 9, 2021. The purpose of these demonstrations is to ensure that each electric utility owns or has contractual rights to capacity sufficient to meet its capacity obligations as set by the MISO, PJM, or the Commission, as required by MCL 460.6w.

Pre-Demonstration Process

Like the previous years, Staff offered LSEs the opportunity to meet with Staff to discuss the capacity demonstration requirements and review relevant materials prior to the final filing deadlines discussed above. A significant number of LSEs met with Staff and clarified the process before filing reports in the docket. Staff found that the pre-filing consultations were helpful in resolving questions prior to filing. Staff will continue to offer pre-filing consultations each year to resolve potential issues prior to the filing deadlines.

² [August 20, 2020 MPSC Order](#) in Case No. U-20886, accessed 03/12/2021.

³ Alpena Power Company, Consumers Energy Company, DTE Electric Company, Indiana Michigan Power Company, Northern States Power Company-Wisconsin, Upper Michigan Energy Resources Corporation, Upper Peninsula Power Company, and Wisconsin Electric Power Company.

⁴ AEP Energy Inc, Calpine Energy Solutions LLC f/k/a Noble Americas Energy Solutions LLC, CMS ERM Michigan LCC, Constellation NewEnergy Inc, Dillon Power LLC, Direct Energy Business LLC, Direct Energy Services, EDF Energy Services LLC, Eligo Energy MI, LLC., ENGIE Gas & Power, Energy Harbor f/k/a FirstEnergy Solutions, Energy International Power Marketing Corporation, Energy Services Providers Inc., Interstate Gas Supply LLC, Just Energy Solutions Inc, Liberty Power Delaware LLC, Liberty Power Holdings LLC, MidAmerican Energy Services LLC, Nordic Energy Services LLC, Spartan Renewable Energy, Sunwave USA Holdings, Inc., Texas Retail Energy LLC, U.P. Power Marketing LLC, and Wolverine Power Marketing Cooperative Inc.

⁵ Bayfield Electric Cooperative, Cloverland Electric Cooperative, Thumb Electric Cooperative, and Wolverine Power Supply Cooperative.

⁶ City of Escanaba, City of Stephenson, City of Wakefield, Croswell Light and Power Department, Daggett Electric Department, Michigan Public Power Agency, Michigan South Central Power Agency, Newberry Water and Light Board, and WPPI Energy.

Capacity Demonstration Filings

On or before December 17, 2020, capacity demonstration filings were received from Alpena Power Company, Consumers Energy Company, DTE Electric Company, Indiana Michigan Power Company, Northern States Power Company, Upper Michigan Energy Resources Corporation (UMERC), and Upper Peninsula Power Company (UPPCO). Most of the LSEs filed confidential information under seal as part of the electric utilities' filings. Staff reviewed this information and met with LSEs as needed.

On or before February 9, 2021, capacity demonstration filings were received from Calpine Energy Solutions, LLC., Constellation New Energy Inc., Direct Energy Business, Spartan Renewable Energy Inc., Wolverine Power Marketing Cooperative Inc., Energy Harbor LLC, Just Energy, City of Escanaba, City of Stephenson, City of Wakefield, Croswell Light and Power Department, Daggett Electric Department, Michigan Public Power Agency, Michigan South Central Power Agency, Newberry Water and Light Board, WPPI Energy, Thumb Electric Cooperative, and Wolverine Power Supply Cooperative. Cloverland Electric Cooperative filed their capacity demonstrations on February 12, 2020. Bayfield Electric Cooperative Inc. filed its capacity demonstration on February 17, 2020. Staff confirms receipt of capacity demonstration filing information from, or on behalf of, all LSEs currently serving load in Michigan.

Several AESs filed letters in Case No. U-20886 indicating that they are currently not serving customers in Michigan.⁷ Staff confirms that all licensed AESs in Michigan have either filed capacity demonstrations or a letter indicating that they are not currently serving Michigan load.

Staff conducted an audit for each capacity demonstration filing received and requested additional information from the LSE when necessary. Staff has reviewed all contracts included in capacity demonstrations from AESs as well as most of the contracts from co-ops, electric utilities, and municipalities.

Overview of Zonal Adequacy

As alluded to above, there are two regional transmission operators (RTOs) in Michigan; MISO and PJM. The majority of Michigan's load is in the MISO footprint. The exception is the southwest corner of the Lower Peninsula, which is I&M's service territory located within the PJM footprint. MISO and PJM have different resource adequacy constructs and capacity obligations. PJM has a

⁷ Eligo Energy MI, LLC., Liberty Power Holdings LLC, Liberty Power Delaware LLC, Nordic Energy Services LLC, ENGIE Gas & Power, Interstate Gas Supply LLC, Dillon Power LLC, Energy International Power Marketing Corporation, MidAmerican Energy Services LLC, EDF Energy Services LLC, Texas Retail Energy LLC, Energy Services Providers Inc., AEP Energy Inc., UP Power Marketing, and Sunwave Holdings LLC.

mandatory three-year forward capacity construct for its LSEs.⁸ MISO's capacity construct is for the upcoming year (prompt year) only. Both MISO and PJM LSEs are subject to the requirements of MCL 460.6w requiring sufficient capacity for four years forward: in this case, for planning year 2024/25. PJM LSEs can demonstrate sufficiency simply by providing evidence that the LSE is compliant with its PJM obligations. MISO LSEs must demonstrate sufficient resources to meet its current prompt year requirement four years forward. For this reason, most of this section is focused on MISO.

MISO establishes capacity obligations for all LSEs based on peak load forecasts and a planning reserve margin percentage necessary to meet the North American Electric Reliability Corporation's (NERC) Loss of Load Expectation (LOLE) standard of 1 outage day in 10 years. LSEs within MISO can meet their capacity requirements either through a Fixed Resource Adequacy Plan (FRAP) or through the Planning Resource Auction (PRA). The PRA is a residual market for LSEs that choose not to use the FRAP or do not have enough capacity resources, either owned or purchased bilaterally, to satisfy their capacity obligations and thus need to purchase additional resources.

Within MISOs resource adequacy construct, there are two key resource requirements that must both be satisfied to meet the 1 day in 10 years LOLE standard: the Planning Reserve Margin Requirement (PRMR) and LCR. The PRMR is determined through LOLE modeling based on the coincident MISO peak forecast and resources adjusted as necessary to meet the 1 day in 10 years standard. PRMR resources are not location specific, i.e. they can come from outside an LSE's zone. Individual LSEs are responsible for their own share of the zone's PRMR. The ability to use imports to meet PRMR makes it highly likely all zones will meet this requirement. Failure to meet PRMR would only occur if there were not enough resources available within all of MISO's footprint or the resource need for a particular zone exceeded the zone's ability to import capacity.

Of greater interest to Staff is the LCR. Under MISO tariffs, the LCR is the minimum amount of capacity required to be located within an LRZ to meet the loss of load standard, fully accounting for the LRZ's ability to import. The MISO LCR is for the zone as a whole, as opposed to a requirement for individual LSEs, and is determined by MISO for the prompt year. Under MCL 460.6w, as upheld by case law, the MPSC may establish a forward locational capacity requirement for individual LSEs for the capacity demonstration compliance year in order to provide visibility into Michigan's ability to meet the MISO LCR in future planning years. However, there is no LCR requirement applicable to individual LSEs in Michigan pursuant to MCL 460.6w currently. The LCR is determined by performing a LOLE analysis on each zone individually to determine the Local Reliability Requirement (LRR), which is the amount of resources a zone would need to meet the

⁸ PJM's Base Residual Auction (BRA) for planning year 2022/23 will be completed by June 2021, See below for more discussion on this issue. Also, please note, the timing of MISO's and PJM's resource adequacy constructs don't align perfectly. PJM's base residual auction ordinarily would occur in May/June 2020, for PY 2023/24 is referred to as being "three years forward" but constitutes the same planning year at issue in U-20886 and the same planning year "four years forward" in MISO's resource adequacy construct (March/April 2020 auction for PY 2021/22).

loss of load standard if it were separated from the rest of MISO. Separately, an import study is performed to determine the Zonal Import Ability (ZIA) for each zone. For LRZ 7, the ZIA is currently (and historically) equal to the Capacity Import Limit (CIL) and the terms are often treated synonymously. The ZIA is then subtracted from the LRR to determine the LCR. If an LRZ doesn't have enough resources to meet its LCR (or PRMR), the PRA clearing price would be set at the Cost of New Entry (CONE) for that year. This occurred in PY 2020/21 for LRZ 7, when it was approximately 125 MW short of its LCR. This resulted in the auction clearing price for LRZ 7 being set at CONE, which was \$257.53/MW-Day or approximately \$94,000/MW-year for LRZ 7. CONE prices vary slightly from zone to zone and year to year. The PRA clearing price being set at CONE has economic ramifications and can provide a signal to stakeholders with responsibilities regarding resource adequacy within the zone. However, it is important to note that MISO's resource adequacy construct is based on probabilistic determinations and failure to meet the requirements of the resource adequacy construct does not mean that the LRZ in question will experience a loss of load event. It simply means the probability of such a loss of load event would exceed the generally accepted criteria that govern the resource adequacy planning process.

In addition to the required compliance year (PY 2024/25), most demonstrations filed included updates for the 2021/22 planning year through the 2023/24 planning year. These updates are voluntary and were not provided by all LSEs.⁹ Staff appreciates the efforts made by LSEs to provide updated capacity resource data for these years as it allows Staff to update zonal resource adequacy projections for the prompt year and interim years, as well as the compliance year. It is important to note that the compliance year capacity obligations (PY 2024/25) that are demonstrated for in this case are based off an LSE's prompt year (PY 2021/22) requirement. Changes to load, resources, and MISO procedures in the upcoming years can lead to discrepancies between an LRZ having sufficient capacity to meet its four-year forward Michigan requirements and not having enough capacity to meet MISO's requirements when the prompt year arrives.

MISO – Local Resource Zone 7

Figure 1 shows a comparison of LRZ 7 aggregated resources and MISO resource adequacy requirement projections for the next 4 years. These numbers represent Staff's current projection based on the capacity demonstration filings and MISO publications at the time of this report, although the information is subject to change for all years, including PY 2021/22. Unless otherwise noted, resources and resource requirements in this report are in Unforced Capacity (UCAP) Megawatts (MW), equal to Zonal Resource Credits (ZRCs).

⁹ The required demonstrations for planning years 2020/2021 and 2021/2022 were made in the 2018 capacity demonstration (Case No. U-18441). The required demonstration for planning year 2022/23 was made in the 2019 capacity demonstration (Case No. U-20154). The required demonstration for planning year 2023/2024 was made in the 2020 capacity demonstration (Case No. U-20590).

Figure 1: U-20886 Results - LRZ 7 Capacity Position (ZRCs)

Line #		PY 2021/22	PY 2022/23	PY 2023/24	PY 2024/25
1	Planning Reserve Margin Requirements (PRMR)	21,758	21,652	21,546	21,439
2	Local Reliability Requirement (LRR)	25,054	25,445	25,837	26,228
3	Capacity Import Limit (CIL)	4,888	4,888	4,888	4,888
4	Zonal Import Ability (ZIA)	4,888	4,888	4,888	4,888
5	Local Clearing Requirement (LCR)	20,166	20,557	20,949	21,340
6	Total Owned	16,588	16,882	16,789	16,838
7	Total PPA Contracts	2,749	2,140	2,412	2,606
8	Total ZRC Contracts	605	780	834	668
9	Total Qualified Demand Response	1,341	1,466	1,532	1,545
10	Total Resources (Line 6 + Line 7 + Line 8 + Line 9)	21,282	21,268	21,566	21,657
11	LCR Demonstrated Position (Line 10 - Line 5)	1,116	711	618	317
12	PRMR Demonstrated Capacity Position (Line 10 - Line 1)	-477	-384	21	218
13	Net Undemonstrated Zone 7 Capacity	350	175	120	286
14	Anticipated LCR Position (Line 11 + Line 13)	1,466	885	738	603
15	Anticipated PRMR Capacity Position (Line 12 + Line 13)	-127	-209	141	504

(1) PY 2021 PRMR from Preliminary PRA Data. PY 2024 PRMR calculated using the peak demand forecast from the 2021-22 LOLE Study Report and multiplying by the coincidence factor (95%) and reserve margin (108.8%). PY 2022 & PY 2023 calculated through interpolating PY 2021 & PY 2024.

(2) PY 2021 LRR from Preliminary PRA Data. PY 2024 LRR from the 2021-22 LOLE Study Report. PY 2022 & PY 2023 calculated through interpolating PY 2021 & PY 2024.

(3) PY 2021 CIL from the 2021-22 LOLE Study Report, held constant at prompt year value per MISO recommendation.

(4) PY 2021 ZIA from the MISO Preliminary PRA data, held constant at prompt year value per MISO recommendation

(5) LRR-ZIA=LCR

(6-10) Zone 7 resources included in capacity demonstrations sorted by resource type.

(11) LCR position based on demonstrated resources only.

(12) PRMR position based on demonstrated resources only.

(13) Net Undemonstrated Zone 7 Capacity is Staff's attempt to reconcile the capacity demonstration resources with the MISO PRA. There are resources located in Zone 7 that Staff anticipates will be in the PRA that were not included in any capacity demonstration as well as a small amount of resources included in the capacity demonstration that Staff expects are no longer available due to recent events.

(14) LCR Position after accounting for undemonstrated Zone 7 Capacity.

(15) PRMR position after accounting for undemonstrated Zone 7 capacity. A negative value means the Zone will need to import resources to meet its requirement. A positive value means the Zone may import resources based on economics but will not need to in order to meet its PRMR.

Prompt Year (PY 2021/22)

For the prompt year (PY 2021/22), based on capacity demonstration filings and the 2021/22 LOLE report, Staff expects LRZ 7's PRMR to be 21,758 ZRCs and the LCR to be 20,166 ZRCs. The total LRZ 7 resources included in demonstration filings for the prompt year is 21,282 ZRCs. Staff is also aware of capacity resources in Zone 7 that were not included in capacity demonstration filings. Staff projects that an additional 350 ZRCs in LRZ 7, beyond what has been demonstrated for LRZ 7, will be available for the prompt year. Based on the demonstrated resources and projected undemonstrated resources Staff anticipates LRZ 7 will exceed its LCR by approximately 1,466 ZRCs for the 2021/22 planning year.

Line 12 of Figure 1 outlines the capacity position of LRZ 7 relative to the PRMR. Based on Staff's analysis of LSE filings in this docket, Staff expects that LRZ 7 will need to import 127 ZRCs to meet its PRMR for planning year 2021/22. This represents a fraction of LRZ 7 import limit and will not be an issue, unless the entire MISO territory was short resources, which is very unlikely. While Staff projects that LRZ 7 could meet its prompt-year PRMR with only 127 MW of imports, additional imports could occur based on resource prices. Once the LCR criteria is satisfied, additional resource requirements will be satisfied based on the marginal cost resource available in the market regardless of zonal location.

Compliance Year (PY 2024/25)

Staff used the 2021/22 LOLE study report to project requirements for future planning years. These projections are subject to change. The projected PRMR for LRZ 7 for the compliance year (PY 2024/25) is 21,439 ZRCs. Staff determined this number by taking the forecasted peak demand for LRZ 7 in PY 2024/25 (20,360 MW) and accounting for LRZ 7's coincidence factor of 96.43% and the MISO reserve margin of 9.2%. This is a reduction of 319 ZRCs from the prompt year PRMR. Using the LOLE Study Report LRR for PY 2024/25 of 26,228 ZRCs and assuming the ZIA remains constant at 4,888, results in a projected LCR of 21,340 ZRCs for LRZ 7 in PY 2024/25.

Based on the resources included in the capacity demonstration filings for PY 2024/25 (21,657 MW) as well as Staff's estimate (286 MW) of additional LRZ 7 capacity that was not included in the demonstrations and the projected requirements, Staff projects LRZ 7 to have a surplus of 603 MW compared to the projected LCR in PY 2024/25.

Interim Years (PY 2022/23 & PY 2023/24)

Figure 1 also includes data and projections for the interim years, PY 2022/23 & PY 2023/24. This information is derived using the same methodology as described for the compliance year with interpolation as necessary because the LOLE Study Report didn't provide specific LRZ analysis for the interim years. Comparing those projected requirements to the demonstrated and undemonstrated resources in LRZ 7 results in a capacity surplus of 885 ZRCs in PY 2022/23 and a surplus of 738 ZRCs in PY 2023/24 compared to the projected

LCRs. This information is based on the best information currently available to Staff but includes several assumptions and, again, is subject to change. Likely changes include new forecasts, unknown resource additions or subtractions, changes in generator performance, increased or decreased zonal import ability, and/or changes to MISO requirement methodology.

Noteworthy for MISO Local Resource Zone 7

1. Capacity Requirements

Capacity requirements can change from year to year based on changes to calculation and modeling methodology, as well as changes to resource characteristics and load forecasts.

- PRM%:** The PRM% represents the resources required to meet the 1 day in 10 years loss of load standard compared to the MISO system peak demand as a percentage of the MISO system peak demand. The planning reserve margin percent (PRM UCAP) has increased from 8.9% for PY 20/21 to 9.4% for PY 21/22. The primary driver for this change is an adjustment to more realistic planned outages within the model, increasing the PRM% by 1.08 partially offset by changes to load profiles, resource mix, and monthly wind effective load carrying capability.
- LRR:** The LRR represents the amount of resources required for a particular zone to meet the 1 day in 10 years loss of load standard when modeled as an island (no imports). The LRR is comparable to the PRMR except that it is modeled for an individual zone instead of the entire MISO territory. LRZ 7 had an LRR of 25,051 MWs in the 2020/21 PRA Results. The 2021-2022 LOLE Study shows an LRR of 25,055 MWs for PY 2021/22. MISO is in the process of working with stakeholders on implementation of the realistically optimized planned outage schedule for the LRR analysis as part of the 2022/23 LOLE Study. This implementation will lead to an increase in LRZ 7's LRR. The 2021/22 LOLE Report projects the LRR for PY 2024/25 to be 26,228 MWs.
- CIL / ZIA:** The ZIA is defined as the ability of an LRZ to import capacity from areas outside of that LRZ. In LRZ 7, the ZIA is equal to the CIL. The 2021 CIL/ZIA has increased to 4,888 from 3,200 in 2020 after internal changes to MISO's transfer analysis methods. MISO has recommended Staff assume a constant CIL/ZIA for future year projections.

LCR: The LCR is the difference between the LRR and the ZIA. The LCR represents the minimum amount of resources that must be located within a specific zone for that zone to meet the reliability standard. The LOLE Data for 2021 shows an LCR of 20,166 ZRCs. Last year’s LCR was 21,851 ZRCs. Using the 2021/22 LOLE Report LRR and assuming a ZIA of 4,888 MW results in a projected LCR of 21,340 MW for PY 2024/25.

2. Historical Requirements

Figure 2 below shows data from the annual MISO LOLE study reports for LRZ 7. These numbers typically change slightly prior to the PRA but can be used to see how the capacity requirements have changed over time. Changes in these requirements can have economic and reliability impacts and will continue to be monitored.

Figure 2: Annual MISO LOLE Report Data

Source	LRR	CIL	LCR (ZRCs)
MISO 2013 LOLE Report	25,305	4,576	20,729
MISO 2014 LOLE Report	24,815	3,884	20,931
MISO 2015 LOLE Report	24,710	3,813	20,897
MISO 2016 LOLE Report	24,715	3,813	21,309
MISO 2017 LOLE Report	24,654	3,320	21,334
MISO 2018 LOLE Report	24,545	3,785	20,760
MISO 2019 LOLE Report	24,845	3,211	21,634
MISO 2020 LOLE Report	25,370	3,200	22,170
MISO 2021 LOLE Report	25,054	4,888	20,166

The increased CIL for PY 2021/22 results in a pause in the trend of decreasing margin between the PRMR and LCR for LRZ 7, as shown in Figure 3. This trend is likely to resume pending implementation of realistic planned outages in the LRR calculation methodology.

Figure 3: MISO LRZ 7 LCR & PRMR Comparison

Year	LCR	PRMR	ECIL	Source
PY 2013/14	21055	22702	1647	PRA Results
PY 2014/15	21293	22998	1705	PRA Results
PY 2015/16	21442	22679	1237	PRA Results
PY 2016/17	20851	22406	1555	PRA Results
PY 2017/18	21109	22295	1186	PRA Results
PY 2018/19	20628	22121	1493	PRA Results
PY 2019/20	21812	21976	164	PRA Results
PY 2020/21	21851	21945	94	PRA Results
PY 2021/22	20166	21758	1592	MISO 2021/22 LOLE Study & MPSC Staff Projection
PY 2022/23	20557	21652	1095	MISO 2021/22 LOLE Study & MPSC Staff Projection
PY 2023/24	20949	21546	597	MISO 2021/22 LOLE Study & MPSC Staff Projection
PY 2024/25	21340	21439	99	MISO 2021/22 LOLE Study & MPSC Staff Projection

The difference between a zone’s PRMR and its LCR is sometimes referred to as Effective Capacity Import Limit (ECIL). The ECIL is not a MISO defined term and is not representative of a physical import limitation. The ECIL is a product of the MISO resource adequacy construct and is an import limitation only within the constraints of the construct. To meet the loss of load standard and avoid the auction clearing price being set at CONE, a zone must have enough resources located within the zone to meet its LCR even if the LCR exceeds the PRMR.

3. Capacity Resource Changes

In addition to expected variation in each generating unit’s unforced capacity from year to year, there were a few other noteworthy resource changes this year as compared to last year’s report.

Ludington Upgrades

Consumers Energy Company and DTE Electric Company plan to continue upgrades to the Ludington Pumped Storage facility to help support intermittent resources and provide a price hedge against variable market energy prices. The six units began undergoing a maintenance overhaul upgrade in 2015, one unit at a time. As

of the filing of DTE's Integrated Resource Plan (IRP) in Case No. U-20471, four of the unit upgrades had been completed. A fifth was completed in May 2019. According to DTE's IRP, the \$800 million upgrade project to replace each of the six unit turbines in the facility was scheduled to be completed in 2020.¹⁰ However, due to the COVID-19 pandemic and difficulties with component manufacture, the completion date was pushed back to June of 2021 in the summer of 2020.^{11 12}

Increased Utility Demand Response Programs

The two LSEs in LRZ 7 will see consistent growth of several of their Demand Response (DR) programs from the prompt year to 2024. This growth amounts to a 185 MW total increase throughout the next four years. Specifically, DTE will see growth in their Interruptible Air Conditioning (AC) program as well as their unspecified new DR pilot programs. Consumers is expected to see growth in their Commercial & Industrial (C&I) DR program and Smart Thermostat Program.

Demand Response Aggregation

Pursuant to a Commission Order in Case No. U-18369, the Commission affirmed that AESs may offer DR programs to their customers through a curtailment service provider (CSP) or third-party aggregator.¹³ The Commission made this determination in the context of finding that it will continue to review DR programs offered by AESs as part of the capacity demonstration process.

As the Relevant Electric Retail Regulatory Authority (RERRA), the Commission approved the aggregation of 71.4 MWs of DR to be offered into the 2021 MISO capacity market, which is the same as what was approved for the previous year. While still a relatively small percentage of the total capacity, it is expected that aggregated DR will grow in future years.

MISO Resource Adequacy Construct Changes¹⁴

The changing resource mix within the MISO footprint has highlighted issues with an annual capacity planning construct. With baseload generation that operates at a relatively high capacity factor, the traditional method of planning for a single, annual system peak worked well. As MISO moves to more intermittent resources, we are seeing inefficiencies through loss of load analysis which has prompted

¹⁰ MPSC Case No. U-20471, Direct Testimony of Laura J. Mikulan, Exhibit A-3, p. 287.

¹¹ "Turbine Upgrade Project Delayed at Ludington Pumped Storage Plant." David Bossick, Ludington Daily News. July 24, 2020.

¹² MPSC Case No. U-20590, Consumer's Energy Company's Capacity Demonstration for Planning Years 2020 Through 2023, p. 1.

¹³ [September 15, 2017 MPSC Order](#) in Case No. U-18369, p. 5, accessed 03/23/2019.

¹⁴ [Resource Adequacy and Need, MISO RASC](#), accessed 02/12/2021.

discussions within the MISO Resource Adequacy Sub-Committee (RASC) on ways to mitigate this risk. The change that is currently being discussed is changing from an annual resource adequacy construct to a seasonal construct that would require resource planning four times a year. In addition, MISO has proposed a conversion of Unforced Capacity (UCAP) to Available Capacity (ACAP). The ACAP conversion takes the UCAP of thermal resources and removes the external resources, wind, solar, and LMRs. After averaging the availability of these thermal resources using the top 5% tight margin hours over the prior three years, the calculation then divides this by the UCAP values. The PRMR and LCR ACAP is then multiplied by the conversion ratios.¹⁵ These changes are currently being discussed within the MISO RASC and the RASC is expected to submit the tariff to FERC for review and approval in the second quarter of 2021, pending implementation beginning in the first quarter of 2022. This move to a seasonal model would affect all three MISO LRZ represented in Michigan, including LRZ 1 and LRZ 2.

MISO – Local Resource Zone 2

MISO's LRZ 2 encompasses almost the entire Upper Peninsula (UP) of Michigan, as well as northern and eastern Wisconsin. MISO LRZ 2 has a CIL of 3,599 ZRCs for planning year 2020/21, but MISO does not define MW capacity imports or export limits between states within the boundaries of the same MISO LRZ. Considering LRZ 2 includes LSEs from Wisconsin (not subject to MCL 460.6w), the data available to Staff for LRZ 2 from capacity demonstration filings is not comprehensive enough to project a zonal capacity position as Staff did in its analysis of LRZ 7. Nevertheless, all Michigan LSEs serving load within MISO LRZ 2 demonstrated sufficient resources to meet their requirements.

Noteworthy for MISO Local Resource Zone 2

MISO determined that there are limitations to the transmission system in the UP that require generation availability to reliably serve all of the load in the UP.

In its capacity demonstration, UPPCO discussed the mechanical failure and subsequent retirement of its Portage generating unit, one of its two fuel oil generators in the UP, in November of 2018. The Company intends to continue operation of the Gladstone fuel oil generator as approved in its IRP in Case No. U-20350.

In addition, the Michigan Department of Environment, the Great Lakes, and Energy is currently conducting stakeholder meetings as part of its Upper Peninsula Energy Task Force¹⁶ established by Governor Whitmer in Executive Order 2019-14. The taskforce will identify and evaluate potential changes in the Michigan UP energy supply while formulating

¹⁵ [RAN Reliability Requirements and Sub-annual Construct](#), February 25, 2021, accessed 03/12/2021.

¹⁶ [Upper Peninsula Energy Taskforce Homepage](#), accessed 03/16/2021.

alternative solutions for meeting future energy needs. The final report will be submitted on March 31, 2021. Potential changes to the energy infrastructure from the recommendations in this report may have overarching implications for the reliability of the Michigan portion of LRZ 2. The 2019 OMS-MISO Survey results indicate an installed capacity surplus of 100 MW in the 2020/21 planning year for LRZ 2, increasing to a surplus of 200-800 MW for 2024, for LRZ 2.¹⁷ Notwithstanding the localized reliability issues in the UP, the results of the OMS-MISO Survey indicate that LRZ 2 is projected to have an adequate supply of capacity resources to meet its PRMR requirements for the planning years.

MISO – Local Resource Zone 1

A very small fraction of Michigan’s UP load is in LRZ 1. Northern States Power, Bayfield Electric Cooperative, and the City of Wakefield municipal utility have less than 30 MW combined in MISO LRZ 1. The 2021 OMS-MISO Survey results indicate an installed capacity surplus of approximately 1,600 MW for the 2021 planning year and a similar capacity surplus projected for 2025.¹⁸ LRZ 1 is projected to have an adequate supply of capacity resources to meet its PRMR requirements for the 2021/22 planning year, as well as the next several planning years.

PJM – Indiana Michigan Power Company¹⁹

As previously stated, PJM has a mandatory forward capacity market for LSEs in its service territory. LSEs in the PJM service territory meet capacity obligations either through participation in PJM’s Reliability Pricing Model (RPM) Base Residual Auction (BRA) or through PJM’s Fixed Resource Requirement (FRR) plan. As a result of a 2016 complaint, FERC found that PJM’s capacity market was unjust and unreasonable due to the Minimum Offer Price Rule’s (MOPR) failure to mitigate out-of-market payments that threaten the competitiveness of the PJM’s capacity market. After several years and several rounds of proposals, in December 2019 FERC rejected most of the filed solutions in favor of an expanded MOPR and directed PJM to file a compliance filing by March 18, 2020.²⁰ In a May 21, 2020 order, FERC accepted PJM’s proposed replacement market design and directed further clarification on reserve market rules, which PJM provided. On November 12, 2020, FERC accepted PJM’s compliance filing and approved PJM’s treatment used to establish the minimum offer price.²¹

PJM announced an accelerated schedule for its next five annual capacity auctions following the FERC order to allow the regular cadence to resume. The first of these BRAs for the 2022/23 delivery

¹⁷[2019 OMS-MISO Survey Results](#) released in June 2019 revised in August, 2019, accessed 03/17/2020.

¹⁸ *Id.*

¹⁹ Indiana Michigan Power Company is an electric operating company of American Electric Power Company, Inc. (AEP). I&M is a wholly owned subsidiary of AEP and is operated as a single utility in the American Electric Power System (AEP System).

²⁰ [FERC Directs PJM to Expand Minimum Offer Price Rule](#), December 19, 2019, accessed 03/22/2020.

²¹ [FERC Order 2020-11-12](#), November 18, 2020, accessed 3/12/2021.

year opens May 19, 2021 and closes a week later. PJM expects results from that auction in early June of 2021.²²

The capacity demonstration process and requirements approved by the Commission in Case No. U-20154²³ allow PJM LSEs to file an amended capacity demonstration two weeks after the completion of the PJM RPM BRA. Due to the multi-year FERC MOPR decision process, I&M was unable to update its capacity demonstration in prior years. Staff worked with the Company this year and last to allow I&M to submit a capacity demonstration based on its projection of owned-resources and capacity contracts for the 2023/2024 planning-year without an updated BRA.

I&M's most recent capacity demonstration filed in Case No. U-20886 indicates that the Company plans to continue with the PJM FRR plan that allows them to opt out of participation in the PJM competitive capacity market, barring any major FERC ordered changes. Based on this, I&M's capacity position should not be greatly affected by decisions resulting from FERC's November 12, 2020 order. Nevertheless, this delays the Company's ability to provide, with 100% certainty, an indication of where future planning year capacity will come from to make up small differences between owned-resources and short-term market purchases until the PJM BRA auction results are known in summer of 2021.

The Commission Order in Case No. U-16090 set I&M's customer choice cap amount to zero, and was subsequently reset to ten percent on February 1, 2019 pursuant to the Commission Order and MCL 460.10a(1)c. On February 1, 2019, I&M began enrolling customers in its choice program and is now fully subscribed at the cap. Currently, I&M is responsible for the capacity of its choice load in its FRR plan under the PJM RAA. If suppliers were to choose to self-supply capacity, then that capacity would also need to be included in I&M's FRR plan. Constellation NewEnergy Inc. is currently the only AES serving load in I&M's service territory.

Indiana Michigan Power Company's capacity demonstration indicates that it has already satisfied PJM's requirements for planning years 2021/22 through 2023/24 and that it expects to meet PJM's requirements for planning year 2024/25.

²² [PJM Reestablishes Capacity Auction Schedule](#), November 19, 2020, accessed 03/12/2021.

²³ [September 13, 2018 MPSC Order](#) in Case No. U-20154, accessed 03/14/2018.

Figure 4: Indiana Michigan Power Company Capacity Demonstration Summary

Item	PY 2021/22	PY 2022/23	PY 2023/24	PY 2024/25
Total Planning Reserve Margin (expected reserves), UCAP MW	4,325	4,386	4,386	4,386
Total Company Owned Generation, MW	3,993	4,034	3,400	3,400
Total Demand Response Resources (treated as capacity), UCAP MW	304	369	369	369
Total PPA, UCAP MW	223	280	618	618
Total Planning Resources, MW	4,520	4,683	4,387	4,387
UCAP Surplus / (Shortfall), MW	195	297	1	1

In addition to I&M's capacity demonstration, Staff also reviewed information for approximately 231.9 MW of cooperative and municipal utility obligations in the Michigan portion of PJM's territory for planning year 2024/25.

Based upon its review, Staff expects that the LSEs in the Michigan portion of PJM will continue to meet the PJM capacity obligations based on information included in individual capacity demonstrations and the current level of surplus capacity in the PJM market. With such an abundance of reserve resources, if I&M were to encounter an unanticipated shortfall in the immediate future, Staff expects that it could easily be accommodated through the procurement of some amount of these reserve resources through market purchases. As market conditions may change over time, Staff will continue to monitor the resource adequacy of the PJM region overall as well as the capacity plans of Michigan LSEs located within the PJM territory. Staff will continue to monitor I&M's capacity plans and expects to work with the Company to update its capacity demonstration after PJM's next BRA. As reaffirmed in the Company's Integrated Resource Plan filed in Case No U-20591²⁴ Staff does not anticipate I&M to have any issues meeting capacity obligations.

LSE Capacity Demonstration Results (PY 2024/25)

Staff appreciates the time and effort made by all Michigan LSEs to comply with the provisions of MCL 460.6w, as well as to comply with the questions, audits, contract reviews, and requests for additional information throughout this process. The LSE capacity demonstration results are reported for planning year 2023/24 because, following the initial capacity demonstration which covered four years, only the fourth year forward is required for compliance. As previously described in its September 15, 2017 Order in Case No. U-18197, the Commission requested a table be included in this report that identifies the capacity by type for each individual electric

²⁴ MPSC Case No. U-20591, Direct Testimony of John Torpey, p. 15.

provider without revealing the identity of any specific electric provider. The requested table with a breakdown for each electric provider that filed a capacity demonstration is included as Appendix A. In addition to the breakdown by individual supplier, Staff reports the following aggregate results in Figure 5 below.

Figure 5: Resource Breakdown (%) by Supplier Type Planning Year 2024/25

Supplier Type	Owned	DR	Contract - PPA	Contract - ZRC	Auction
Muni/Co-Op Aggregate	77.9%	0.1%	10.5%	7.9%	3.6%
AES Aggregate	3.0%	0.0%	8.2%	85.1%	3.7%
Utility Aggregate	77.8%	6.5%	15.6%	0.1%	0.0%

Demand Response

As part of its analysis, Staff reviewed the LSEs’ DR programs as an optional source of capacity. When used, a reduction in demand through DR programs offsets a portion of an LSE’s capacity needs. LSEs can utilize interruptible DR during critical peak times to quickly respond to bulk electric system needs, which can delay future capital investment in new generation. Behavioral DR programs allow the utility to lower its peak demand forecast, thus mitigating the need for an equal of amount supply side resources.

Demand response played a prominent role in LSEs’ integrated resource plan filings, where DR is required to be considered along with traditional supply side resources for meeting capacity needs. MCL 460.6t directs Staff to complete a statewide study of DR potential in Michigan every five years, and the most current state of Michigan demand response potential study was issued on September 29, 2017.²⁵ Michigan is currently working with GuideHouse on conducting the next DR and Energy Waste Reduction potential study. In addition, the Commission approved Michigan Integrated Resource Planning Parameters on November 21, 2017 in Case No. U-18418 that include provisions regarding including DR options in future integrated resource plans.

By planning year 2024/25, Consumers Energy and DTE Electric are forecasting increased DR levels to support capacity through the expansion of existing programs. The DR levels assumed in both Consumers Energy’s and DTE Electric’s IRPs are reflected in their capacity demonstration filing. Consumers Energy forecasted growth in its Smart Thermostat program, which began last year, as well as its Commercial and Industrial Demand Response program. DTE Electric has a forecasted growth in its Programable Controllable Thermostat

²⁵[State of Michigan Demand Response Potential Study Technical Assessment](#), Applied Energy Group, September 29, 2017, accessed 03/22/2020.

DR program as well as other new DR pilots. Staff will continue to monitor these plans and the use of DR in Michigan for the foreseeable future.

ZRC Contracts

In U-18441, Staff recommended that forward ZRC contracts to be utilized for capacity demonstration purposes specify delivery of the ZRCs in the MISO Module E Capacity Tracking (MECT) tool prior to the applicable PRA auction. All new forward ZRC contracts were audited by Staff this year, and all complied with Staff's requested delivery terms, allowing Staff to audit the ZRC transfers each year prior to the PRA.

An important thing to note is that ZRCs are defined in MISO's tariff and are created in the prompt year when UCAP for supply-side and demand-side resources are converted into ZRCs in the MISO MECT. ZRCs for any year further out than the prompt year are projected and do not become "real" ZRCs until the prompt year. ZRCs are fungible products that can be sold or transferred, and in some cases, sold more than once. The characteristics of ZRCs allow for them to be easily traded and tracked within the MISO MECT. MISO has a view into the source of ZRCs and transfers of those ZRCs that occur prior to the PRA in the prompt year, and those ZRC transfers can be audited by Staff as a secondary check on the ZRC contracts utilized in the capacity demonstrations.

At this point in time, the overall amount of ZRC contracts included in capacity demonstration filings do not impact Staff's ability to continue to make forward resource adequacy projections on a zonal basis. Staff will continue to monitor and audit ZRC contracts and ZRC transfers within the MECT going forward.

AES Load Switching

For this year's report, there were no AESs that were required to file an amended or supplemental capacity demonstration. Like last year, Staff requested that any AES who experienced load switching during this time provide a signed affidavit confirming the increase or reduction in their load compared to the PLC data provided by the utility with their capacity demonstration that contained the amount of load switching for each planning year. Each supplier contracting for additional customer load provided a copy of its affidavit confirming this transaction to the supplier that was losing the load to be accounted for in both suppliers' demonstrations. For this filing year, all of the load switching had occurred prior to the filing date. Energy Harbor LLC f/k/a FirstEnergy Solutions also filed a confidential affidavit showing a load loss due to a business closure, which Staff reviewed and accepted.

LSE Compliance with Capacity Demonstration Requirements

All LSEs that filed capacity demonstrations in Case No. U-20886 have met the requisite levels of planning resources for planning year 2024/25. Staff highlights a few issues that it will continue to monitor in the next section.

Other Issues

FERC Order No. 2222²⁶

In addition to aggregation of DR, FERC has issued Order No. 2222. This rule enables Distributed Energy Resources (DER) to be aggregated and participate in regional wholesale markets in a similar manner to aggregated DR as a load modifying resource, but in contrast to DR, DERs may also participate as an energy resource and not just a capacity or ancillary market resource. The tariff will need to be designed and available to aggregated blocks of resources that do not exceed 100 kW but there are no minimum or maximum limits on individual DERs. This rule does not apply to smaller utilities whose electric output was 4 million MWh or less in the preceding year unless the relevant electric retail regulatory authority allows it. Currently compliance with this rule is due July 19, 2021, but MISO has requested a 9-month extension to April of 2022.

COVID-19 Crisis

In March of 2020, Michigan experienced its first medical cases in the global novel coronavirus pandemic (COVID-19), which resulted in a partial lockdown to prevent the spread of the virus over the following year of which the MPSC was involved in.²⁷ The COVID-19 pandemic had wide-ranging social and economic impacts, which are difficult to reflect fully in long-term capacity positions. Some reported numbers may be affected in this case, including differences between residential and commercial/industrial loads, delays in facility construction, and flatter demand response trends. Staff does not expect these to impact the capacity position of Michigan over the evaluation period.

Polar Vortex 2021

In the middle of February 2021, Texas was hit with several winter storms that left more than 4.5 million houses without power.²⁸ The Electric Reliability Council of Texas (ERCOT) determined that, at its worst point, nearly half of the power available to the grid went offline due to fuel supply shortages and/or freezing issues at various plants. The unfortunate situation in Texas should not have any direct impact on the Michigan grid, but it does serve as a lesson in reliability, resiliency, and energy diversification.

²⁶ [FERC Order No. 2222](#), October 6, 2020, accessed on 03/16/2021.

²⁷ [MPSC COVID-19 Information Page](#), accessed 03/16/2021.

²⁸ [Millions Without Power in Texas](#), Time, February 17, 2021, accessed on 03/12/2021.

Conclusion and Recommendations

All Michigan load serving entities required to file capacity demonstrations with the Michigan Public Service Commission for planning year 2024/25 pursuant to MCL 460.6w and the August 2020 Commission Order in Case No. U-20886 have filed. Staff has audited the filings, contracts, and other materials and finds that all Michigan LSEs have satisfied the capacity demonstration requirements and have procured appropriate levels of resources for planning year 2024/25.

Staff appreciates the cooperation of all Michigan LSEs with respect to this process and the willingness to provide sensitive data and answer questions necessary for Staff to complete its review. Staff opines that the process continues to become more efficient for both Staff and LSEs. To help accommodate further process efficiency improvements for future capacity demonstrations, Staff has the following comment as stated below.

Staff expects to continue monitoring the discussions taking place regarding changes to the MISO resource adequacy construct from annual to seasonal through the RASC. Once finalized, Staff expects it will work with the Commission and stakeholders to determine the most appropriate way to meet the requirements of MCL 460.6w(8) in light of these changes.

Appendix A

Figure 6: Planning Year 2024/25 Resource Breakdown (%) by Individual Supplier²⁹

LSE	Owned	DR	Contract - PPA	Contract - ZRC	Auction
Supplier 1	48%	52%	0%	0%	0%
Supplier 2	0%	0%	100%	0%	0%
Supplier 3	33%	0%	67%	0%	0%
Supplier 4	96%	0%	3%	1%	0%
Supplier 5	69%	0%	16%	7%	7%
Supplier 6	0%	0%	0%	100%	0%
Supplier 7	0%	0%	0%	100%	0%
Supplier 8	72%	0%	11%	11%	6%
Supplier 9	0%	0%	0%	100%	0%
Supplier 10	77%	0%	22%	0%	0%
Supplier 11	0%	0%	100%	0%	0%
Supplier 12	0%	0%	100%	0%	0%
Supplier 13	0%	0%	0%	100%	0%
Supplier 14	29%	37%	33%	0%	0%
Supplier 15	0%	0%	100%	0%	0%
Supplier 16	0%	0%	100%	0%	0%
Supplier 17	0%	0%	0%	100%	0%
Supplier 18	59%	0%	0%	41%	0%
Supplier 19	0%	0%	36%	0%	64%
Supplier 20	64%	8%	28%	0%	0%
Supplier 21	0%	0%	100%	0%	0%
Supplier 22	90%	8%	1%	0%	0%
Supplier 23	0%	0%	0%	100%	0%
Supplier 24	10%	7%	83%	0%	0%
Supplier 25	0%	0%	0%	100%	0%

²⁹ Suppliers (municipal and cooperative electric utilities) that combined their capacity resources are shown as one supplier in the above figure. The total number of suppliers may vary from year to year based on changes to which suppliers combine their capacity demonstrations as well as new suppliers or suppliers no longer serving load in Michigan.