

**DRAFT**

**Integrated Resource  
Plan Filing  
Requirements for  
December 16<sup>th</sup>  
Stakeholder Meeting**

**Pursuant to Public Act 341 of 2016,  
Section 6t**

## **Application Instructions for Integrated Resource Plan Filings**

These application instructions apply to a standard electric utility application for Michigan Public Service Commission (Commission) approval of an Integrated Resource Plan (IRP) under the provisions of MCL 460.6t, as well as an IRP that may be filed under the provisions of MCL 460.6s.<sup>1</sup> The application shall be consistent with these instructions, with each item labeled as set forth below. Any additional information considered relevant by the utility may also be included in the application.

### **Schedule**

A utility shall coordinate with the Commission Staff (Staff) in advance of filing its application to avoid resource challenges with IRP applications being filed at the same time as IRP applications filed by other utilities. A utility may be requested to delay its IRP application to preserve a 21-day spacing between IRP applications.

Following the initial IRP applications, the utilities shall comply with all future filing deadlines directed by the Commission and shall continue to coordinate with the Staff to schedule future IRP application filing dates.

### **Filing Announcement**

To facilitate the scheduling and preparation of IRP proceedings, a utility, who intends to file an IRP on a date other than its scheduled filing date, shall file a filing announcement, in a new docket, at least 30 calendar days prior to the proposed filing. The filing announcement, along with a proof of service, shall be served on all parties granted intervention in the utility's last IRP case and the utility's last electric rate case. If the IRP described in the filing announcement is not filed within 120 days after filing of the announcement, the filing announcement will be considered withdrawn. If a

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<sup>1</sup>Variations from the standard instructions may occur as allowed by MCL 460.6t(4) for multistate utilities and those serving fewer than 1 million Michigan customers.

certificate of necessity (CON) is also being filed, the same filing announcement would serve as the filing announcement required for the CON.

The filing announcement shall include:

- a) Statement of intent to file an IRP;
- b) Estimated date of filing;
- c) Information related to any stakeholder engagement meetings that have already taken place or are scheduled to take place; and
- d) Information related to any CON application that would be filed with the utility's IRP.

The Commission may, if necessary, order a delay in filing an application to establish a 21-day spacing between filings. The filing announcement shall be submitted at least 30 calendar days prior to the IRP application, thus providing the Commission with sufficient time to issue an order regarding the 21-day spacing if it so chooses.

### **Pre-Filing Request for Proposals**

Each electric utility whose rates are regulated by the Commission shall issue a request for proposals (RFP) to provide any new supply-side capacity resources needed to serve the utility's reasonably projected electric load, applicable planning reserve margin, and local clearing requirement for its customers in this state, as well as customers located in other states but served by the utility, during the initial three-year planning period to be considered in each IRP to be filed, as outlined in MCL 460.6t.

The utility shall comply with the following:

- a) The utility shall include with the IRP application documentation demonstrating that the RFP process was completed;
- b) The utility's RFP process is subject to audit by the Staff;
- c) The IRP filing shall include evidence that the pre-filing RFP process was conducted in a manner consistent with the Commission's code of conduct, and applicable state, federal, and Commission rules;

- d) The RFP shall allow for proposals to provide new supply-side capacity resources to partially meet the requirement, pursuant to MCL 460.6t(6); and
- e) The RFP shall allow for proposals to provide new supply-side capacity in the form of a purchase power agreement for a period that is the lesser of the study period or of the useful life of the resource type proposed.

### **Stakeholder Engagement and Public Outreach Process**

Participant engagement early in the development of the IRP is strongly encouraged to: (1) educate potential participants on utility plans; (2) utilize a transparent decision-making process for resource planning; (3) create opportunity to provide feedback to the utility on its resource plan; (4) encourage robust and informed dialogue on resource decisions; and (5) reduce utility regulatory risk by building understanding and support for utility resource decisions. The utility may choose to incorporate some, or all, of the participant input in its analysis and decision-making for the IRP filing.

In the 12 months prior to the IRP filing, each utility is encouraged to host update workshops with interested participants. The purpose of the pre-filing workshop(s) is to ensure that participants have the opportunity to provide input and stay informed regarding: (1) the assumptions, scenarios, and sensitivities; (2) the progress of the utility's IRP process; and (3) plans for the implementation of the proposed IRP. Documentation demonstrating the public outreach process undertaken by the utility shall be included with the IRP filing. Documentation may include:

- a) Workshop dates and times, including times outside of the workday.
- b) Evidence that a notice of the workshops was provided to the public.
- c) Meeting minutes.
- d) Meeting or workshop attendance lists.
- e) Participant comments on the last approved IRP and/or inputs into the proposed IRP application; and

- f) Discussion indicating if or how the public outreach process influenced the IRP.

A minimum of two stakeholder engagement workshops are recommended. A stakeholder engagement workshop will provide stakeholders with an opportunity to provide input regarding the utility's assumptions, inputs, and modeling methodologies employed during the development of the IRP. The utility is encouraged to invite stakeholders, including expected intervenors and the Staff, to its stakeholder engagement workshops.

If the stakeholder engagement workshops are not open to the public, two additional public meetings are recommended. The public meetings are intended to educate the public on the utility's planning process as well as provide an opportunity for the public to comment. The public meetings should be offered in the utility's service territory in geographic locations convenient to customers, with advanced notice provided to customers in the utility's service territory. The utility is encouraged to consider holding public meetings after normal business hours to encourage attendance.

If the utility chooses to hold pre-filing workshops, including stakeholder engagement workshops or public meetings, the utility shall prepare a public outreach report to document the outcomes of any pre-filing workshops, and shall file the report with the IRP application.

**All presentations, recordings, comments, and transcripts should be maintained on a website in a location open to the public for the duration of the stakeholder outreach process and the duration of the IRP case, until a final commission order is published.**

### **Risk Assessment Methodology**

The utility's IRP filing shall include a thorough risk analysis of the ~~preferred plan~~ **proposed resource plan** and the optimal plans for each of the scenarios specified in the Michigan Integrated Resource Planning Parameters (MIRPP), as well as all additional scenarios and sensitivities filed with the IRP application. The plans should be feasible and differ in generation mix from the **proposed resource plan** ~~preferred plan~~ and MIRPP plans. The intent of the risk assessment is to test the optimized resource strategies for each scenario to determine how each strategy would perform in an unexpected range of possible futures. The IRP shall include a discussion of the methodology used for risk analysis including the utility's justification for the chosen methodology over other alternatives. Acceptable forms of risk analysis include, but are not limited to, the following: scenario analysis, global sensitivity analysis, stochastic optimization, generating near-optimal solutions, agent-based stochastic optimization, mean-variance portfolio analysis, and Monte Carlo simulation.

### **Confidential Information**

Transparency and the use of data that can be shared with the Commission, the Staff, and intervenors is encouraged. Proprietary, confidential, and other nonpublic materials used in the development of the forecasts, scenarios, or other aspects of the IRP shall be presented in such a way that the proprietary and confidential nature of the materials is preserved. The use of publicly available data and materials is encouraged in lieu of proprietary and confidential materials and claims that information is proprietary or confidential should be justified by the utility.

Inclusion of specific materials in the IRP filing may be contingent upon appropriate confidentiality agreements and protective orders. Proprietary, confidential, and other nonpublic materials filed as part of the IRP shall be clearly designated by the utility as confidential.

## Approval of Costs

For the Commission to specify the costs to be approved for the construction of or significant investment in supply or demand-side facilities, or contractual agreements, excluding short-term market capacity purchases to meet state reliability mechanism capacity requirements, in accordance with MCL 460.6t(11) through (12), the following information, data, and documents shall be provided:

- I) For specific supply-side resources (inclusive of storage technologies such as battery storage) of less than 225 megawatt (MW) (this threshold shall be applied to the nameplate capacity of a project, not individual generators, storage facilities, etc.), that are planned to go into service within three years following the approval of the IRP, the following evidence (covering the lifespan of the project) shall be provided:
  - a) A description of the plant size, type, and summary of engineering/design specifications.  
The description shall also include the following:
    - i. Description of fuel use, both primary and back-up, and provisions for transporting and storing fuel;
    - ii. Projected annual costs, in accordance with the breakdown specified in the Federal Energy Regulatory Commission Uniform System of Accounts; and
    - iii. Annual depreciation on the capital investment.
  - b) Projected annual return and income taxes on capital investment.
  - c) The operation and maintenance (O&M) costs over the

life of the facility described as costs which are variable, in current dollars perkilowatt-hour (kWh), with expenses for fuel and non-fuel items indicated separately; and costs which are fixed, in current dollars per kilowatt.

- d) Projected property taxes;
- e) The rates of escalation of cost, including:
  - i. Capital costs;
  - ii. O&M costs which are variable and related to fuel;
  - iii. O&M costs which are variable and unrelated to fuel; and
  - iv. O&M costs which are fixed.
- f) The total annual average cost per kWh at projected loads in currentdollars for each year of the plan for the proposed facility.
- g) Equivalent availability factors, including both scheduled and forcedoutage rates.
- h) Capacity factors for each year in the planning period.
- i) Operation cycle (i.e., baseload, intermediate, or peaking), identifyingexpected hours per year of operation, number of starts per year, and cycling conditions for each year in the planning period.
- j) Heat rates (efficiency) for various levels of operation.
- k) Unit lifetime, both for accounting book purposes and engineeringdesign purposes, with explanations of differences.
- l) Lead time, separately identifying the estimated time required for engineering, permitting and licensing, design, construction and pre-commercial operation date testing.
- m) Potential socioeconomic impacts, such as employment, for the localregion of the proposed supply-side



resource, construction of or significant investment in an electric generation facility, or the purchase of an existing electric generation facility.

- n) **Procurement strategy, including power purchase agreements and company owned. Reference the most recent Commission approved Competitive Procurement Guidelines.**
- o) **A description of the decommissioning process, costs, and how the utility intends to provide assurance of proper disposal with consideration of material salvage and recycling.**

II) Renewable Resources: The utility shall file data consistent with its renewable energy plan. (For incremental renewable energy beyond the 15% requirement in 2021 and any renewable energy to be constructed or purchased after the conclusion of the 20-year renewable planning period ending in 2029, the utility shall file as set forth below.) Revenue requirement and incremental costs of compliance shall be calculated to include the following:

- a) Capital, operating and maintenance costs for renewable energysystems (including property taxes and insurance for renewableenergy systems).
- b) Financing costs.
- c) Costs that are not otherwise recoverable in base rates includinginterconnection and substation costs.
- d) Ancillary service costs.
- e) Cost of purchased renewable energy credits (RECs) other thanthose purchased for non-compliance.
- f) Cost of Contracts.

- g) Expenses incurred as a result of governmental action including changes in tax or other laws.
- h) Subtract revenues (i.e., transfer price, environmental attributes, interest on regulatory liability, etc.) through 2029.
- i) Recovery to include the authorized rate of return on equity, which will remain fixed at the rate of return and debt to equity ratio that was in effect in base rates when the renewable plan was approved (only through 2029); and
- j) Provide the following information in relation to renewable resource cost recovery:
  - i. Forecast through the end of the renewable plan period of the non-volumetric surcharge; and
  - ii. Forecast through the end of the renewable plan period of the regulatory liability balance.
- k) **Procurement strategy, including power purchase agreements and company owned. Reference the most recent Commission approved Competitive Procurement Guidelines.**
- l) **A description of the decommissioning process, costs, and how the utility intends to provide assurance of proper disposal with consideration of material salvage and recycling.**

III) Energy Waste Reduction: The utility shall provide the following information in relation to ~~demand response programs, energy waste reduction programs, and distributed generation programs~~ cost approval and recovery. For each individual program or group of programs, provide:

- a) Total annual cost including:

- i. Annual O&M cost for each individual portfolio of energy wastereduction, ~~demand response~~, and distributed generation programs;
  - ii. Annual capital cost for each individual portfolio of energy wastereduction, ~~demand response~~, and ~~distributed generation programs~~; and
  - iii. Expected cost-sharing or financial incentive granted to the utility by the Commission;
- b) Total demand reduction potential (MW), including the amount of load reduction and the expected hours of interruption per day, month, and year for each program, if applicable;
  - c) Maximum single event demand reduction;
  - e) Total resource capacity (MW) and type (~~load modifying resource, emergency demand response, etc.~~) reported to the applicable regional transmission organization (RTO)/independent system operator (ISO);
  - e) Total energy reduction achieved (megawatt-hours (MWh)); and
  - f) Description of program, including customer enrollment, technology used, and marketing plan.

**IV) Demand Response and Distributed Generation**

**Programs: The utility shall provide the following information in relation to demand response programs, ~~energy waste reduction programs~~, and distributed generation programs cost approval and recovery. For each individual program or group of programs, provide:**

- a) **Total annual cost including:**
  - i. **Annual O&M cost for each individual portfolio program of ~~energy waste reduction~~, demand response, and distributed generation programs;**
  - ii. **Annual capital cost for each individual portfolio program of ~~energy waste reduction~~, demand response, and distributed generation programs; and**
  - iii. **Expected cost-sharing or financial incentive granted to the utility by the Commission;**
- b) **Total demand reduction potential (MW), including the amount of load reduction and the expected hours of interruption per day, month, and year for each program, if applicable;**
- c) **Maximum single event demand reduction;**
- d) **Total resource capacity (MW) and type (load modifying resource, emergency demand response, etc.) reported to the applicable regional transmission organization (RTO)/independent system operator (ISO);**
- e) **Total energy reduction achieved (megawatt-hours (MWh)); and**
- f) **Description of program, including customer enrollment, technology used, and marketing plan.**

### **Waivers and Process for Smaller and Multistate Utilities**

An electric utility with fewer than 1,000,000 customers in this state may request a waiver to any portion of these IRP filing requirements. Any request for a waiver shall include a discussion and justification outlining why the waiver is warranted and in the best interest of its customers.

Discussion and justification for the requested waiver shall include a description of the utility's current and forecasted energy and capacity needs, and its plan for meeting those needs over the upcoming ten years.

If the utility requires resolution of a waiver request prior to filing an IRP application, the utility shall file the waiver request no less than 60 days prior to the filing of the IRP application.

An electric utility with fewer than 1,000,000 customers in this state may request approval from the Commission to file an IRP jointly with other smaller utilities. Commission approval is required prior to filing a joint IRP.

A non-multistate Michigan electric utility serving fewer than 1,000,000 customers may elect to file an IRP, based on its specific circumstances, that deviates from these requirements, but that is subject to the Staff's ability to request supplemental information. The filing shall include an explanation of why the deviations are reasonable under its circumstances. The Commission shall review any such filings under the traditional "just and reasonable" standard.

Northern States Power Company-Wisconsin and Indiana Michigan Power Company are utilities located in Michigan that already file multistate IRPs in other jurisdictions. Due to the provisions in MCL 460.6t(4) regarding multistate IRPs, Northern States Power Company-Wisconsin and Indiana Michigan Power Company may utilize the IRP filing requirements of another state in accordance with those provisions.

However, the Commission reserves the right to request additional information to facilitate its review of the IRP as it relates to Michigan.

**IRP Filing, Data, and Documentation ~~Report and Documentation~~**

The utility's IRP filing shall demonstrate compliance with MCL 460.6t and include the following items:

- a) Letter of transmittal expressing commitment to the approved **resource plan** ~~preferred resource plan~~ and resource acquisition strategy and signed by an officer of the utility having the authority to commit the utility to the resource acquisition strategy, acknowledging that the utility reserves the right to make changes to its resource acquisition strategies as appropriate due to changing circumstances;
- b) Technical volume(s) that fully describe and document the utility's analysis and decisions in selecting its **proposed resource plan** ~~preferred resource plan~~ and resource acquisition strategy;
- c) The data and information requested in the Commission's IRP filing requirements included herein; and
- d) Any other information deemed relevant by the utility.

The utility's IRP filing shall include an IRP document(s) that fully describes and documents the utility's analysis and decisions in selecting its **proposed resource plan** ~~preferred resource plan~~ and resource acquisition strategy. To facilitate a similar format for each utility's application, the utility is encouraged to align its **filing report** with this provided outline and include at least the following items:

1) Executive Summary:

An IRP shall include an executive summary, suitable for distribution to the public. The executive summary shall be an informative non-technical description of the **resource plan proposed by the utility** ~~preferred resource plan~~ and resource acquisition strategy.

The executive summary shall summarize the contents of the IRP document and shall include the following:

- a) An overview of the planning period examined in the IRP analysis and application; and
- b) A brief introduction describing the utility, its existing facilities, existing purchase power arrangements, existing demand-side programs, existing demand-side rates, and the goal to be achieved by its proposed course of action and implementation strategy.

II) Table of Contents: Shall be provided **for the contents of the filed case.**

III) Table of Figures: Shall be provided **for the contents of the filed case.**

IV) Introduction:

The utility shall describe resource plans to satisfy at least the objectives and priorities identified in MCL 460.6t. The utility may identify and/or describe additional planning objectives that the resource plan will be designed to meet. The utility shall describe and document its additional planning objectives and its guiding principles to design alternative resource plans that consider the planning objectives and priorities. The introduction shall include the following:

- a) General description of the utility's existing energy system, including:
  - i. Net present value of utility revenue requirements,<sup>21</sup> with and without any financial performance incentives for demand-side

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<sup>1</sup> <sup>2</sup>The assumed discount rate shall be included along with a justification for the assumed discount rate. Results should be presented in nominal dollars

- resources;
- ii. Revenue requirement of existing generation and power purchase agreements;
- iii. Summary of existing generation and power purchase agreements by fuel type;
- iv. Utility's existing capacity resource mix;
- v. Utility's service territory and breakdown of customer class composition; and
- vi. Description of planning period analyzed;
- b) Statement of power need;
- c) Identify and explain the basis for the forecasted price of energy, capacity, and fuels, and of peak demand and energy requirements, for each year of the analysis used in each scenario and sensitivity evaluated by the utility as part of the IRP process;
- d) Market and regulatory environment influencing resource planning decisions:
  - i. RTO market and state regulation structure if a multistate utility;
  - ii. Potential changes to RTO capacity market;
  - iii. Electric customer choice;
  - iv. Transmission expansion;
  - v. Environmental;
  - vi. Renewable portfolio standards; and
  - vii. Other;
- e) IRP planning process; and
- f) Stakeholder report.

V) Analytical Approach:

- a) Describe the modeling process, including the duration of the study;
- b) Describe and provide a justification for the risk



analysis approach adopted from the Risk Assessment Methodology section:

- i. The utility shall describe and document its quantification of the risk that affects the evaluation of the various ~~preferred~~ resource plan options;
  - ii. The utility shall provide a tabulation of the key quantitative results of that analysis and a discussion of how those findings affected its decision on a resource plan;
  - iii. **If multiple forms of risk assessment are presented the utility shall explain why certain risk variables could not be included in or are unsuited for one type of risk assessment or another. Considering a risk variable under multiple forms of risk assessment is not discouraged.**
- c) The utility shall describe and document the identification of risk variables and/or combinations of risk variables selected, their ranges, probabilities, ranking, and/or weighting that defines the risk quantification which the various ~~preferred~~ resource plan options were judged; describe how these risk variables were judged to be appropriate and explain how these were determined; and describe the modeling tools and data sources employed during the capacity expansion, and other modeling processes.
- d) **Interactions between risk variables should be captured to the extent that it is practical. Evaluation of variables in isolation is acceptable so long as there exists a comprehensive evaluation of resource plans**

**risks that captures interactions and shows overall risk of appropriate build plans. A comprehensive risk assessment should at least include optimized build plans from the required MIRPP scenarios for the proposed resource plan and any alternative resource plans presented by the utility.**

VI) Integrated Resource Plan Scenarios and Sensitivities:

- a) Include a detailed description of all scenarios and sensitivities;
- b) In addition to the utility's own scenarios and assumptions, the inclusion of the established modeling scenarios and assumptions in the MIRPP approved by the Commission in Case No. U-XXXXX, or as revised by subsequent Commission orders related to IRP modeling parameters and requirements.

VII) Existing Supply-Side (Generation) Resources:

Detailed account of projected energy and capacity purchased or produced by

the utility's owned and contracted resources, including cogeneration resources. Include data regarding the utility's current generation portfolio, including the age, capacity factor, licensing status, and remaining estimated time of operation for each facility in the portfolio:

- a) Overview;
- b) Fossil-fueled generating units;
- c) Nuclear generating units;
- d) Hydroelectric generating units;
- e) Renewable generating units;
- f) Energy storage facilities;
- g) Power purchase agreements: energy and capacity purchased

or produced by the utility from a contracted resource, including any cogeneration resource;

- h) RTO capacity credits and modeling of existing units (such as capacity factor, heat rate, outage rate, in-service and retirement dates, operating costs, etc.);
- i) Spot market purchases and off-system sales.

VIII) Demand-Side Resources:

Historical and projected load management and demand response programs for the utility in terms of MW and Midcontinent Independent System Operator, Inc., Zonal Resource Credits (ZRCs) and the projected costs for those programs.

- a) Provide data on projected enrolled capacity and demand response events for each program. The following items are to be included:
  - i. Description of current demand response and load management programs for the IRP study horizon, including the amount of load reductions and the expected hours of interruption per day, month, and year for each program;
  - ii. **Historic performance of existing demand-side programs and how the utility used such information in its demand response resource decisions;**
  - iii. Describe the utility's method for determining whether to purchase energy rather than relying on demand response;
  - iv. A description of any other programs the utility is considering that could potentially expand demand response resources, including expected load

reductions and operating parameters.

IX) Renewables and Renewable Portfolio Standards Goals:

Projected energy purchased or produced by the utility from renewable energy resources.

- a) Describe how the electric provider will meet existing renewable energy standards. If the level of renewable energy purchased or produced is projected to drop over the planning periods, the utility must demonstrate why the reduction is in the best interest of ratepayers;
- b) Specify whether the number of MWh of electricity used in the calculation of the renewable energy credit portfolio will be the previous 12-month period of weather-normalized retail sales or based on the average number of MWh of electricity sold by the electric provider annually during the previous three years to retail customers in this state;
- c) Include the expected incremental cost of compliance with existing renewable energy standards for the required compliance period;
- d) A description of how the electric provider's plan is consistent with the renewable energy goals required by the Michigan Legislature (e.g. 35% combined renewable energy and energy waste reduction goal by 2025);
- e) Describe the options for customer-initiated renewable energy that will be offered by the electric provider and forecast sales of customer-initiated renewable energy;
- f) Describe how the electric provider will meet the demand for customer-initiated renewable energy.

The following non-exhaustive list suggests several elements that

may be included:

- a) Sales forecast through 2021 for compliance with the renewable energy standard, through 2025 toward meeting the 35% goal, and through the study period;
- b) Detailed resource plan:
  - i. Describe the utility's planned renewable energy credit portfolio;
  - ii. Forecast RECs obtained via Michigan incentive RECs;
  - iii. Forecast expected compliance levels by year to meet the renewable portfolio targets;
  - iv. Identify key assumptions used in developing these forecasts and the proposed resource portfolio;
  - v. Identify risks which may drive performance to vary.

X) Peak Demand and Energy Forecasts:

A long-term forecast of the utility's sales and peak demand under various reasonable scenarios. Include details regarding the utility's plan to eliminate energy waste, including the total amount of energy waste reduction expected to be achieved annually, and the cost of the plan:

- a) A forecast of the utility's peak demand and details regarding the amount of peak demand reduction the utility expects to achieve, and the actions the utility proposes to take in order to achieve that peak demand reduction;
- b) Subsections:
  - i. Key variables used to develop forecast;
  - ii. Long-term forecasting methodology;
  - iii. Forecasting uncertainty and risks;

- iv. Historical growth in electric sales for the previous five years, including a record of its previous load forecasts (can be supplied in workpapers);
- v. **Base Case Business as Usual** deliveries and demand forecast;
- vi. Alternative forecast scenarios and sensitivities in accordance with the Commission's final order in Case No. **U-XXXXX**, or subsequent Commission orders relating to IRP modeling parameters and requirements.
- vii. **Include detailed information about how the forecasts used for IRP modeling align with forecasts used for distribution planning.**
- viii. **Detail information about distributed energy resource adoption and operation, including distribution connected generation and storage.**
- ix. **Detail electric vehicle adoption assumptions and impacts to overall peak demand and energy forecasts.**
- x. **Detail additional electrification adoption assumptions and impacts to overall peak demand and energy forecasts.**

XI) Capacity and Reliability Requirements:

The utility shall indicate how it complies, and will comply, with all applicable state, federal, ISO, RTO capacity and reliability regulations, laws, rules and requirements, (such as planning reserve margins, system reliability and ancillary service

requirements) including the projected costs/revenues of complying with those regulations, laws, and rules. The utility shall include data regarding the utility's current generation portfolio, including the age, capacity factor, licensing status, and remaining estimated time of operation for each facility in the portfolio.

XII) Transmission Analysis:

In accordance with MCL 460.6t(5)(h), the utility shall include an analysis of potential new or upgraded electric transmission options for the utility. The utility's analysis shall include the following information:

- a) The utility shall assess the need to construct new, or modify existing transmission facilities to interconnect any new generation and shall reflect the estimated costs of those transmission facilities in the analyses of the resource options;
- b) **Include an analysis of any transmission system benefits associated with transmission interconnected storage**
- c) A detailed description of the utility's efforts to engage local transmission owners ~~in~~ **throughout** the utility's IRP process. **In an effort to inform the IRP process and assumptions, a meeting schedule should be set in advance.** The filing should **include the pre-decided meeting schedule, any documentation that supports requested extensions of the initial pre-decided timing, and including** a summary of meetings that **ultimately took** place;
- d) **Detailed meeting minutes for utility/transmission owner meetings should include any requested**

**studies, discussions about assumptions and any conclusions made during the meeting, alternatives that were reviewed, any other pertinent information that can be made public or provided through typical contested case confidentiality agreements.**

- e) Current transmission system import and export limits as most recently documented by the RTO and any local area constraints or congestion concerns;
- f) Any information provided by the transmission owner(s) indicating the anticipated effects of fleet changes proposed in the IRP on the transmission system, including both generation retirements and new generation, subject to confidentiality provisions;  
Any information provided by the transmission owner(s), including cost and timing, indicating potential transmission options that could impact the utility's IRP by: (1) increasing import or export capability; (2) facilitating power purchase agreements or sales of energy and capacity both within or outside the planning zone or from neighboring RTOs; (3) transmission upgrades resulting in increasing system efficiency and reducing line loss allowing for greater energy delivery and reduced capacity need; and (4) advanced transmission and distribution network technologies affecting supply-side resources or demand-side resources; **(5) estimated interconnection costs for new resources (6) potential siting locations that may provide transmission system benefits.**
- g) **Any information regarding (1) identification of system locations or regions where energy resources can interconnect to the transmission system with minimal**



**transmission investment, (2) recent studies that indicate ways in which the capacity import or export capabilities can be increased or may change and the resulting impacts to the local clearing requirement.**

**h) Any transmission studies that support the resource plan proposed by the utility.**

**i) Include an analysis of transmission costs for access to out of state resources conducted by either the RTO, transmission owner(s), and/or utility.**

**j) Provide RTO reports or web links to report locations that contain information relied upon to support model assumptions or other IRP decisions.**

### XIII) Fuel

The utility shall include the following:

- a) Overview;
- b) Natural gas price forecasts under the various scenarios;
- c) Oil price forecasts under the various scenarios;
- d) Coal price forecasts under the various scenarios;
- e) Delivered natural gas prices to existing and new utility-owned generating plants;
- f) Delivered oil prices to existing and new utility-owned generating plants;
- g) Delivered coal prices to existing and new utility-owned generating plants;
- h) Projected annual fuel costs under the various scenarios; and
- i) The projected long-term firm gas transportation contracts or natural gas storage the utility will hold to provide an adequate supply of natural gas to any new

and existing generation facility.

XIV) Resource Screen:

Describe the utility's options of resources, including combinations of resources **constructed as a single facility (such as storage combined with a generation source)**, to serve future electric load such as utilizing existing and planned ~~generation~~ resources, build a new facility, purchasing capacity from the market on a short-term basis, and purchasing capacity through a power purchase agreement. The following sections shall discuss each option in detail and options shall be considered in combination to serve future electric load. As described below, workpapers with information on the costs of each resource option and combination of resource options shall be provided with the utility's filing:

- a) Existing and planned **resources** ~~generation~~;
- b) New build:
  - i. New generation technology and operating assumptions;
  - ii. New generation development costs;
  - iii. New energy integration of storage technology and operating assumptions, **including both long and short duration storage**;
  - iv. New energy storage development costs;
  - v. **Development costs and operating assumptions for combinations of resources constructed as a single facility.**
- c) Distributed generation:
  - i. Solar photovoltaic (including solar plus storage);
  - ii. Biogas;
  - iii. Energy storage;
  - iv. Other distributed generation;

- d) Market capacity purchases:
  - i. Regional market supply outlook;
  - ii. Availability of market capacity;
  - iii. Market capacity price assumptions;
- e) Long-term power purchase agreements;
- f) Transmission resources:
  - i. Overview;
  - ii. Existing import and export capability;
  - iii. Transmission network upgrade assumptions for the IRP;  
and
  - iv. Import and export impact on resource strategy.

#### XV) Modeling Results:

An analysis of the capital costs, energy production, energy production costs, fuel costs, energy served, capacity factor, emissions (levels and costs), and viability of all reasonable options available to meet projected energy and capacity needs, including, but not limited to, existing electric generation facilities in this state.

The following suggest specific items to be included.

They are not necessarily exhaustive.

- a) Description of IRP portfolio design strategy (portfolio optimized for least cost, value maximization, reliability, risk minimization, environmental specification etc., or a particular combination);
- b) ~~Scenario and sensitivity~~ **Results for all MIRPP required scenarios and sensitivities, additional utility scenarios and sensitivities, and the proposed resource plan that** include annual revenue requirements, present value of annual revenue requirements and net present value of revenue requirements, and portfolio capacity including additions and retirements. Include

monthly and annual energy pricing, and resource capacity and load factors;

- c) ~~Business as usual/reference~~ **Base** case portfolios options to be selected from;
- d) Analysis of IRP results; and
- e) Risk assessment **presented with graphics and data that illustrate stochastic risk analysis results in such a way that the probability distributions are clearly conveyed along with relative positions of the distributions so that plans can be directly compared on a single graph. The use of a box and whisker plot and/or efficient frontier plot is recommended.**

#### XVI) **Proposed**

##### **Resource Plan:**

Include a detailed description of:

- a) The type of energy resource generation technology proposed for a generation facility **or combination of resources constructed as a single facility** contained in the plan and the proposed capacity of the generation facility **or combination of resources constructed as a single facility**, including projected fuel costs under various reasonable scenarios;
- b) Plans for meeting current and future capacity needs with the cost estimates for all proposed construction and major investments, including any transmission or distribution infrastructure that would be required to support the proposed construction or investment, and power purchase agreements;
- c) The projected long-term firm gas transportation contracts or natural gas storage the utility will hold to

provide an adequate supply of natural gas to any new generation facility; and

- d) How the utility will meet local, state, and federal laws, rules, and regulations under the proposed course of action.

The utility shall describe the process used to select the **proposed resource plan** ~~preferred resource plan~~, including the planning principles used by the utility to judge the appropriate tradeoffs between competing planning objectives and between expected performance and risk. The utility shall describe how its ~~preferred resource plan~~ **proposed resource plan** satisfies the following:

- a) Strike an appropriate balance between the various planning objectives specified;
- b) Utilize renewable, **storage** and demand-side resources to comply with existing laws and goals and, in the judgment of the utility, are consistent with the public interest and achieve state energy policies; and
- c) In the judgment of the utility, the **proposed resource plan** ~~preferred plan~~, in conjunction with the deployment of demand response measures, has sufficient resources to serve load forecasted for the implementation period.

The utility shall develop an implementation plan that specifies the major tasks, schedules, and milestones necessary to implement the **proposed resource plan** ~~preferred resource plan~~ over the implementation period. The utility shall describe and document its implementation plan, which shall contain:

- a) A schedule to report the status of an approved plan in accordance with MCL 460.6t(14);
- b) A schedule and description of actions to implement ongoing

- and planned demand-side programs and demand-side rates;
- c) A schedule and description of relevant supply-side resource research, engineering, retirement, acquisition, and construction;
  - d) A net present value revenue requirement comparison of its proposal and reasonable alternatives over the planning period utilized in the analysis. It shall also include the calculation and comparison of the net present value revenue requirement of the utility's proposed **resource** plan and **any** alternative resource plans including the alternative resource plans resulting from the Commission-approved modeling scenarios. In addition, the utility shall provide support for its chosen discount rate and discuss how the results of its analysis would change with different discount rate assumptions.
  - e) **A detailed analysis of any benefits from resources that provide co-benefits to distribution or transmission planning such as distributed energy resources when those benefits are unable to be captured through capacity expansion modeling runs, to the extent that the co-benefits were relied upon for justification of resource decisions.**
  - f) **A description of how, to the extent practical, the construction or investment in new resources in this state will be completed using a workforce composed of residents of this state.**
  - g) **A description of, to the extent practical, the construction of new resources in this state will be completed using materials sourced from this state.**

XVII) Rate Impact and Financial Information:

Projected year-on-year impact of the proposed **resource plan**

~~course of action~~ (and other feasible options) for the periods covered by the plan, covering the following accounts:

- a) Revenue requirement;
- b) Rate base;
- c) Plant-in-service capital accounts;
- d) Non-fuel, fixed operations and maintenance accounts;
- e) Non-fuel, variable operations and maintenance accounts;
- f) Fuel accounts;
- g) Emissions cost;
- h) Effluent additive costs; and
- i) Projected change in generation plant-in-service.

The utility shall describe the financial assumptions and models used in the plan. The **resource** plan shall include, at a minimum, the following financial information, together with supporting documentation and justification:

- a) The general rate of inflation;
- b) The allowance for funds used during construction rates used in the plan;
- c) The cost of capital rates used in the plan (debt, equity, and weighted) and the assumed capital structure;
- d) The discount rates used in the calculations to determine present worth;
- e) The tax rates used in the plan;
- f) Net present value of revenue requirements for the plan;
- g) Nominal revenue requirements by year; and
- h) Average system rates per kWh by year.

XVIII) Environmental **Considerations and Environmental Justice:**

Describe how the utility's **resource plan and any alternative**

**resource plans presented in the application** ~~proposed IRP~~ will comply with all applicable local, state, and federal environmental regulations, laws, and rules:

- a) Include a list of all environmental regulations that are applicable to the utility fleet. Identify which regulations apply to which resources;
- b) Include all capital costs for compliance with new and reasonably expected environmental regulations for existing fleet assets in the utility IRP.
- c) **If the Company is proposing retirement of an existing resource, clearly identify the capital cost for environmental regulations and other capital investments in the facility that is avoided capital cost, becomes cost of removal, or is truly avoidable cost.**
- d) ~~Provide an annual projection of the following emissions for the study period differentiating between existing and new resources within the proposed IRP:~~
  - i. ~~Tons of sulfur oxides;~~
  - ii. ~~Tons of oxides of nitrogen;~~
  - iii. ~~Tons of carbon dioxide;~~
  - iv. ~~Tons of particulate matter; and~~
  - v. ~~Pounds of mercury.~~
- e) ~~Provide the total projected emissions of the items listed below through the study period for the utility's proposed plan, as well as the scenarios identified in the MIRPP as approved in Case No. U 18418, or modified by Commission order:~~
  - i. ~~Tons of sulfur oxides;~~
  - ii. ~~Tons of oxides of nitrogen;~~
  - iii. ~~Tons of carbon dioxide;~~
  - iv. ~~Tons of particulate matter; and~~



v. ~~Pounds of mercury.~~

- f) **Hold a technical conference with MPSC and EGLE staff within 30 days of the filing to discuss the environmental and emission related data included in the filing testimony, exhibits, and workpapers.**
- g) **Identify, quantify, and provide testimony that compares the expected changes in criteria pollutants, mercury, VOCs, and GHG emissions of the proposed resource plan in the base case to the previously approved build plan in the base case. Illustrate how the proposed resource plan will comply with state and federal GHG goals.<sup>2,3</sup> The previously approved build plan may include a refresh that takes into account the updated load forecast and additional resources to meet any increase in load, but leave the previous base generation assumptions in place. The Company will use a proxy to determine the emissions from MISO purchases and will run the base case scenario with two build plans: the previously approved base build plan and the proposed resource plan.**
- h) **Analyze multiple build plans, including the proposed resource plan and the optimal build plan from the MIRPP required scenarios to identify and both qualitatively and quantitatively assess the potential impacts to vulnerable communities. This assessment should address water quality, water use, water discharge, waste disposal, air emissions, public health, climate, environmental justice, early retirement, and other considerations that were taken into account in the Company's decision. The Michigan Environmental Justice Screening Tool or equivalent should be used for the identification of vulnerable areas.**
- i) **Identify and assess the impact of the proposed resource plan to any non-attainment areas within the electric utility service territory and qualitatively support in testimony. Impacts should consider SO<sub>2</sub> and ozone, as well as their precursors NO<sub>x</sub> and PM<sub>2.5</sub>.**

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<sup>2</sup> Governor Gretchen Whitmer signed Executive Directive 2020-10 (ED 2020-10) on September 23, 2020, regarding the urgent threat to the environment, economy, and the health and well-being of Michigan's residents posed by climate change and its implications. ED 2020-10 committed Michigan to pursuing a reduction of at least 26 to 28 percent in Greenhouse Gas (GHG) emissions below 2005 levels by 2025 and economy-wide carbon neutrality to be achieved no later than 2050 and maintained thereafter.

<sup>3</sup> President Joe Biden announced carbon reduction targets for the United States building upon carbon reductions to date. The new targets call for an economy-wide net GHG reduction of 50 to 52 percent from 2005 levels by 2030 and net zero GHG emissions economy-wide by no later than 2050.

- j) **Using the areas identified as vulnerable by the Michigan Environmental Justice Screening Tool, or equivalent (see h) above) complete a more comprehensive evaluation of PM2.5 impacts to these communities, describing expected air quality impacts, including the effect of an early retirement. Conduct dispersion modeling for PM2.5 using standard permit modeling protocols and methods. The base case emissions should be used to establish a baseline modeling demonstration by which to compare the previously referenced least emitting and potential early retirement scenarios in the area where emissions are expected to occur.**
- k) **Include metrics to quantify health benefits related to air emission reductions in the scenarios listed above. The following EPA reports and tools provide guidance and are listed in order of preference: the Environmental Benefits Mapping and Analysis Program – Community Edition (BenMAP-CE), the [“Co-Benefits Risk Assessment \(COBRA\) Health Impacts Screening and Mapping Tool”](#) and [“Quantifying the Emissions and Health Benefits of Energy Efficiency and Renewable Energy”](#).”.**
- l) **Identify, quantify and provide evidence in the filing that shows progress in meeting any state, federal or utility announced carbon reduction goals. Illustrate how each optimized build plan for each MIRPP scenario, the proposed resource plan, and the previously approved plan perform in meeting those goals throughout the planning period.**

XIX) Exhibits and Workpapers:

The filing shall include exhibits and workpapers as outlined below, subject to any license or other confidentiality restrictions that are unable to be resolved by issuance of a protective order.

- a) **The Company shall include an exhibit containing a table that designates where each filing requirement is included within its testimony, exhibits, and workpapers with appropriate page and section numbers.**
- b) Any workpapers used in developing the application, supporting testimony, and IRP. Such workpapers

shall, when possible, be provided in electronic format with formulas intact;

- c) Any modeling input and output files used in developing the application, supporting testimony, **resource plan and any alternative plans** ~~and IRP~~. Such modeling input and output files shall, when possible, be provided in electronic format with formulas intact. The utility shall also identify each modeling program used, and provide information for how interested parties can obtain access to such modeling program. Modeling inputs and outputs in the model-dependent binary format should be made available to parties that obtain a license;
- d) Cost data, ~~and~~ estimates, **and co-benefit analyses** that were used in the resource screening process **or in any other way to determine resource selection of** ~~to~~ evaluate each electric resource that was considered either individually or in combination with other resources **constructed as a single facility**, including **distributed energy resources, storage, and renewable energy resources**. ~~alternatives, such as solar, wind, or solar plus battery storage;~~
- e) A description, including estimated costs of each alternative proposal received by the utility;
- f) A discussion of any differences between its short-term fuel price forecasts and capacity price curve in the IRP filing, and the short-term fuel price forecasts and capacity price curve in its last power supply cost recovery proceeding;
- g) Identification and justification of the forecasted price of energy, capacity, and fuels, and of peak demand and energy requirements used in the IRP. The utility shall identify its base case forecasts and a range of sensitivities for each such factor, and explain how those sensitivities were

identified. If the base case forecast(s) differs from recent previous forecasts submitted by the utility to the Commission in other cases, the utility shall provide an explanation for such differences;

- h) Present an environmental compliance strategy which demonstrates how the utility will comply with all applicable federal and state environmental regulations, laws and rules. Included with this information, the utility shall analyze the cost of compliance on its existing generation fleet going forward, including existing projects being undertaken on the utilities generation fleet;
- i) Estimated annual emissions of carbon dioxide and greenhouse gases, particulates, sulfur dioxides, oxides of nitrogen, and mercury per year and over the life of the facilities included in their IRP;
- j) A comparison of total projected carbon emissions under each scenario and sensitivity analyzed, including quantifying the carbon emissions projected in each sensitivity as a percentage of the carbon emissions presented in the ~~base business as usual~~ case;
- k) The assumed retirement dates of the facilities included in the IRP, with justification provided for the assumed retirement dates;
- l) An analysis that contains an individualized cost estimate for electric resources that were considered, including renewable alternatives, such as solar, wind, or solar plus battery storage, and such cost estimates for all alternative proposals, solicited or unsolicited, received by the utility;
- m) Electricity market forecasts utilized
- n) **A stacked bar chart that includes all existing resources and proposed resources color designated by resource type in each of the planning years with the inclusion of a line**

**representing expected load over the length of the planning period.;** and

- o) Other documents and data underlying the IRP analysis.