BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the Matter of Empire District Electric	**)**	
Company 's 2010 Filing Pursuant to	**)**	**Case No EO-2011-0066**
4 CSR 240 - Chapter 22	**)**	

MISSOURI DEPARTMENT OF NATURAL RESOURCES DIVISION OF ENERGY REVIEW OF EMPIRE DISTRIC ELECTRIC COMPANY INTEGRATED RESOURCE PLAN FILING DATED September 3, 2010

PUBLIC VERSION

** Denotes Highly Confidential Information **

Filed January 3, 2011

The Missouri Department of Natural Resources (MDNR), acting as an intervener in Case No. EO-2011-0066, submits the attached comments on Empire's Integrated Resource Planning (IRP) compliance filing dated September 3, 2010. Empire's filing was submitted pursuant to requirements of 4 CSR 240-22.

MDNR submits these comments pursuant to 4 CSR 240-22.080(6) and (8), which provide that:

> "…within one hundred twenty (120) days after an electric utility's compliance filing… any intervener may file a report or comments based on a limited review that identify any deficiencies in the electric utility's compliance with the provisions of this chapter, any deficiencies in the methodologies or analyses required to be performed by this chapter, and any other deficiencies which …the intervener believes would cause the utility's resource acquisition strategy to fail to meet the requirements identified in 4 CSR 240-22.010(2)(A)–(C)… [The parties] shall work with the electric utility…to reach, within forty-five (45) days of the date that the report or comments were submitted, a joint agreement on a plan to remedy the identified deficiencies."

In the department's view, the process established by 4 CSR 240-22.080(6) - (8) should provide an opportunity for comprehensive review of the utility's resource planning process and resource acquisition strategy.

MDNR prepared these comments with the assistance of the consulting firm GDS Associates, Inc. (GDS). GDS provided a report on Empire's IRP filing which, while comprehensive, focuses particularly on issues related to Empire's load forecasting and demand side management analysis. The consultant's report is being filed simultaneously with MDNR's report and is referenced herein as the "GDS report."

The compliance filing materials submitted by Empire on September 3 consist of five volumes and numerous appendices. The department's comments focus primarily on topics covered in Volumes 2, 4 and 5 and the appendices to Volume 4 of the compliance filing. Empire prepared these three volumes in response to the load analysis and forecasting requirements of 4 CSR 240-22.030, the demand-side analysis requirements of 4 CSR 240-22.050 and the integration and risk analysis requirements of 4 CSR 240-22.060-070.

In addition to these compliance filing documents, MDNR reviewed the following sources of information when preparing these comments:

- Non-Unanimous Stipulation and Agreement filed on May 6, 2008 pursuant to Empire's previous integrated resource planning Case No. EO-2008-0069.
- Stipulation and Agreement filed on May 12, 2010 pursuant to Empire's Rate Case No. ER-2010-0130.
- Empire waiver request pursuant to Case No. EE-2010-0246, approved by the Commission effective on June 16, 2010.
- Empire's response to data requests (DRs) submitted by MDNR and other parties.

MDNR staff also participated in post-filing stakeholder information meetings that Empire presented on October 20-22. Subject matter experts from GDS also participated in portions of these meetings. The department wishes to emphasize that while its comments have been informed by these meetings as well as participation in previous Empire collaborative processes, they are based with one exception[1] on the contents of the documents actually filed in Case No. EO-2011-0066 and other documents listed in the previous paragraph.

[1] The exception is a reference to a stakeholder discussion of customer count that appears in MDNR-Risk-#1.

In these comments, citation of sources is provided as follows:

- The main volumes that were included in Empire's September 3, 2010 compliance filing are cited by volume number, for example, "Volume 1, Page 1."
- The appendices that were included in Empire's September 3, 2010 compliance filing are cited by the appendix number designated by Empire, for example, "Appendix 1A, Page 1."
- Responses to data requests (DRs) are cited based on the party originating the request and a number based on the order in which the party submitted requests, for example, "MDNR DR #1, Page 1."
- The reports prepared by the department's consultant are cited as the GDS Report by page and section name; or alternatively, where GDS enumerated deficiencies, by page and deficiency number.
- Citations of other sources are based on commonly-accepted practice.

MDNR proposes remedies for each of the deficiencies or concerns listed in this report. The proposed remedies are offered for consideration by the parties during the 45-day review period provided by 4 CSR 240-22.080(8). The remedies proposed by MDNR fall into the following general categories:

	Type of issue addressed	Time Frame	Milestones
Supplemental filing	Information or analysis not reported in filing that company can readily supply now	Before or at the time the Stipulation & Agreement (Stip) is signed	Company files the "supplemental" documents in the current docket
Revised filing	Significant deficiencies that must be addressed immediately to provide a credible resource plan	To be filed on date specified in Stip - typically 5 to 10 months after date of Stip, depending on how extensive a revision is required	Company files a revised analysis and resource plan based on timetable and parameters established in Stip
Stakeholder process	Concerns or deficiencies that require a period of stakeholder input or review of progress	Spanning the period between Stip and next filing	Company and stakeholders meet guided by timetable and topics established in Stip
Next filing	Concerns or deficiencies that utility can readily address without a period of stakeholder input or review of progress	September 2013 unless an alternative date is set by Stip or by rule revision	Next regular filing should reflect the company's attentions to the issues identified

MDNR's review of deficiencies and concerns is organized as follows:

These concerns and deficiencies are also discussed in the accompanying analysis report by GDS Associates. GDS Associates provided MDNR technical assistance on this review. All of GDS' deficiencies and concerns about the Empire IRP are discussed in this document, although GDS develops some points more thoroughly. Parties should refer to both MDNR's and GDS' analyses of Empire's filing to understand MDNR's concerns. Appendix B shows a crosswalk of MDNR's and GDS' deficiencies and concerns and references the location of GDS' analysis.

Overview of key deficiencies and concerns

MDNR appreciates the spirit of cooperation that Empire has displayed in collaborative processes and the company's decision to contract with a consultant (AEG) to develop a demand-side potential study, filed in this case as an appendix to Volume 4. MDNR also appreciates the utility's continuing commitment to supply a significant portion of its generation supply mix with renewable wind resources and its willingness to consider retirement of two small units at one of its existing fossil-fired facilities.

However, MDNR has identified two key deficiencies which, in the department's view, are sufficiently significant to require revision of the filing.

- A serviceable resource acquisition strategy requires the foundation of a credible and reliable load forecast across the 20-year planning horizon. As the GDS report discusses in detail, the load forecast produced in Empire's filing is not credible. The utility's base case forecast is overly optimistic in its expectation of future load growth. The utility's support for its assumptions and statistical models is lacking. Additionally, the basis for Empire's development of its high and low load growth scenarios is unclear and inadequate. A detailed discussion of these issues appears in pages 10-19 of the GDS report and specific issues related to Empire's load analysis and forecast are listed in MDNR-LF #1 through MDNR-LF # 4.
- A key goal for the demand side analysis in this filing should be to identify the energy and peak reductions that can be achieved through cost-effective DSM and to develop plans for meeting the state's policy goal of achieving "all cost-effective demand side savings."[2] At minimum the company's demand-side analysis should treat demand-side resources on an equivalent basis with supply-side resources. However, the analysis in Empire's filing fails this equivalency requirement with respect to scalability and most importantly, with respect to budget constraints that limit identification of potential cost-effective demand side resources and programs. As a result, the DSM design is constrained to arbitrarily low levels of performance with the ultimate result that the integrated analysis fails to use minimization of long-run costs as its primary selection criteria. Another consequence of the constraints placed on the DSM analysis is that Empire's filing does not honor commitments to which it agreed to in resolution of its 2010 rate case; these commitments can be honored only through a revised filing.

The cumulative effect of these deficiencies is to fatally limit Empire's ability to assess resource decisions that should occur prior to its next filing. MDNR is proposing that Empire revise its integrated analysis to include revisions to the DSM and load analysis and to include alternative resource plans that test the full range of options for providing demand-side resources to all customer classes in Empire's service territory. These plans should be analyzed in the same manner as all of the other alternative resource plans.

[2] Section 393.1075(4), RSMo.

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Deficiencies and Concerns Related to Load Analysis & Forecast (LF)

MDNR-LF- #1: Empire's load forecast is not credible

When applying for variances related to load analysis and forecast requirements found in 4 CSR 240-22.030, Empire assured the Commission that by following the alternative methodology it had proposed, the company would provide a "more accurate forecast".

Contrary to these assurances, MDNR has concluded that the company has not produced an accurate forecast. Reasons for this conclusion are described in the GDS report (pp. 20-29) and for reasons specified in MDNR-LF-#2 through MDNR-LF#4.

Because a serviceable resource acquisition strategy rests on the foundation of a reasonably accurate and reliable load forecast, MDNR believes that the flaws in Empire's load forecast constitute a deficiency that "would cause the utility's resource acquisition strategy to fail to meet the requirements identified in 4 CSR 240-22.010(2)(A)–(C)." (4 CSR 240-22.080(6))

Proposed Remedy:

First, Empire should provide a revised filing in which its resource plans are resubmitted to integration and risk analysis with adjusted base case, high case and low case forecasts. The adjustments to the forecasts should be agreed upon by the parties per the proposed remedies for MDNR-LF-#2 and MDNR-LF-#3. MDNR envisions that the revised integration analysis will also incorporate alternative resource plans with new levels of demand side resources per the proposed remedy for MDNR-DSM-#1.

Second, following completion of the revised filing, a stakeholder process to address Empire's load forecast methodology should take place. One topic addressed in this stakeholder process should be Empire's agreement (Volume II, p. 6) to "provide the Missouri Public Service Commission Staff with a plan that addresses the feasibility of changing the Company's forecasting method for the IRP filing that will follow the September 2010 filing."

MDNR-LF-#2: Base Load Forecast

Empire's base case forecast is overly optimistic in its expectation of future load growth. The Company's support for its assumptions and statistical models is insufficient. Support for these statements appears in the GDS report. (§22.030(8)(H))

Proposed Remedy:

MDNR's proposed remedy is a revised filing as in the proposed remedy for MDNR-LF-#1. For purposes of the revised filing, the parties should agree through stakeholder discussion on an adjusted base case forecast that is reasonable. One possible scenario for consideration by the parties is would be to use the low growth scenario from Empire's filing (i.e., **[redacted]**) as the adjusted base case.

MDNR-LF-#3: High and Low Load Forecast

The support for Empire's development of its high and low load growth scenarios is unclear and inadequate. In addition, the basis for the high and low case load forecasts appears to be biased toward stronger growth than can be supported by Empire's analysis. Support for these statements appears in the GDS report. (§22.030(7), §22.060(3), §22.070(2)(A))

Proposed Remedy:

MDNR's proposed remedy is a revised filing as in the proposed remedy for MDNR-LF-#1. For purposes of the revised filing, the parties should agree through stakeholder discussion on an adjusted high case and low case forecasts that are reasonable. One possible scenario for consideration by the parties would be to base the adjusted low case forecast on Empire's historic load growth (i.e., 1.0%) and base the adjusted high case on Empire's proposed base case forecast (i.e., **[redacted]**).

MDNR-LF-#4: Analysis of Economic and Demographic Drivers

In preparing its load forecast, Empire has not considered economic or demographic drivers other than customer growth. It has not has taken into account changes in the price of electricity, price of competitive energy sources, or personal income. Nor has the utility completed the utility analysis required by §22.030(8)(C).

Explicit analysis is required by the following rule provisions, none of which were included in the variances granted to Empire:

- *•§22.030(5)(B)(2)(A). The forecasts of the driver variables for the use per unit shall be specified. The utility shall document how the forecast of use per unit has taken into account the effects of real prices of electricity, real prices of competitive energy sources, real incomes and any other relevant economic and demographic factors.*
- *•§22.030(6). Sensitivity Analysis. The utility shall analyze the sensitivity of the components of the base use forecast for each major class to variations in the key driver variables, including the real price of electricity, the real price of competing fuels and economic and demographic factors identified in section (2) and subparagraph (5)(B)2.A.*
- *§22.030(8)(C) For the forecast of class energy and peak demands, the utility shall provide a summary of the sensitivity analysis required by section (6) of this rule that shows how changes in the driver variables affect the forecast.*
- *§2.060(4)(C) The modeling procedure shall include a method to ensure that the impact of changes in electric rates on future levels of demand for electric service is accounted for in the analysis*

Empire has repeatedly stated, without providing detailed analysis or demonstration, that all relevant economic and demographic variables normally included in utility load forecasting are incorporated into a single variable, customer count.

In a Joint Statement of Position filed by MDNR and Empire in Case No. EE-2010-0246, the company agreed to "describe any assumptions concerning future economic conditions that influenced or were incorporated into the company's specification or assignment of values to variables, coefficients or relationships in the equations used to forecast load over the 20-year planning horizon." MDNR anticipated that the agreed descriptions would clarify the basis of Empire's statements that reliance on customer count would incorporate all relevant economic and demographic variables into its forecast methodology. However, Empire's filing does not include the description which it agreed to in the Joint Statement.

Proposed Remedy:

First, in a supplementary filing, Empire should provide the descriptions to which it agreed in the Joint Statement, should also identify all economic and demographic drivers that the company believes influence or otherwise are incorporated into the company's forecast of customer count, and should describe the company's analysis or assumptions of the impact of these drivers on customer count over the panning horizon. The supplementary filing, in draft or final form, should be made available to parties in a timely manner prior to agreeing on the adjusted base case, high case and low case forecasts to be used in the revised filing per the proposed remedies for MDNR-LF-#1, #2 and #3.

Second, all other issues described in MDNR-LF-#4 should be addressed in a stakeholder process prior to Empire's next regularly scheduled integrated resource filing. These could be addressed in the stakeholder process referenced in the proposed remedy (point 2) for MDNR-LF-#1.

Deficiencies and Concerns Related to Demand Side Analysis (DSM)

MDNR-DSM- #1: Failure to analyze demand side resources on an equivalent basis.

Analysis of demand-side and supply-side resources on an equivalent basis is required by the IRP rule in 4 CSR 240-22.010(2) as follows:

> *Citation from Chapter 22:*
>
> > *(2) The fundamental objective of the resource planning process at electric utilities shall be to provide the public with energy services that are safe, reliable and efficient, at just and reasonable rates, in a manner that serves the public interest. This objective requires that the utility shall—*
> >
> > *(A) Consider and analyze Demand-Side efficiency and energy management measures on an equivalent basis with Supply-Side alternatives in the resource planning process;*
> >
> > *(B) Use minimization of the present worth of long run utility costs as the primary selection criterion in choosing the preferred resource plan…*

Empire's filing fails to treat demand-side management resources ("DSM") on an equivalent basis. Empire's DSM portfolio was budget constrained to be no greater than 1% of Empire's 2009 electric revenues. Further, Empire's analysis failed the equivalence requirement with respect to scalability. As a consequence, it is likely that low-cost resources were arbitrarily excluded from integrated analysis and that Empire therefore failed to select the plan that minimizes long-run costs (NPVRR), identified by the IRP rule as the primary selection criterion.

Empire limited the budget for its DSM portfolio to no greater than 1% of Empire's 2009 Missouri jurisdictional electric revenues, as documented by Empire's response to OPC's Data Request 2004. Empire's response states that on April 21, 2010 Sherry McCormack of Empire sent an email to Robert Obeiter of AEG specifying the budget level: "I like the bottom-up approach to develop a portfolio budget and, as we discussed, adding a sensitivity for a budget at 1% of MO jurisdictional sales revenue. Missouri's retail gross sales revenue as of 12/31/2009 was $356,876,557."

This issue is fully discussed in the GDS report, pp. 25-47. In addition, further information on the budget constraint and its impact appears in MDNR-DSM-#3.

Additional rule citations related to this issue include §22.060(4)(D), §22.060(3) and §22.070(2)(K).

Proposed Remedy:

First, Empire should provide a revised filing that meets these conditions:

- The company should estimate demand-side program potential with budget constraints that reflect current best-practice, with DSM spending greater than one percent of incremental annual sales.
- The company should submit a revised set of alternative resource plans to revised integrated analysis, risk analysis and strategy selection. Included in this set of alternative resource plans, at least two plans should include demand side resources that reflect the revised estimate of demand side program potential. Furthermore, the alternative resource plans should project investments in DSM over a time period equivalent to that projected for investments in supply.
- The company should also incorporate into the integration analysis, risk analysis and strategy selection the revised base, high and low load forecasts described in the remedies or MDNR-LF-#1, #2 and #3.

MDNR-DSM-#2: Limited bottom-up analysis

In general, 4 CSR 240-22(050) prescribes a bottom-up demand-side analysis in which a reasonably comprehensive set of demand side measures is identified and screened, measures that pass screening are combined into programs designed based on best practices, the programs are screened and all programs that are found to be cost-effective are incorporated into at least one alternative resource plan. A critical aspect of the bottom-up approach to program screening is estimating program participants ((§22.050(7)(A)). The rule does not contemplate that this estimate will be budget constrained. Empire made no waiver requests related to the provisions of 4 CSR 240-22(050) and claims to have filed a plan based on "bottom-up" demand-side analysis. However, Empire's estimates of program participation appear to be severely budget restrained, contrary to the intent of the rule. Detailed discussion of this issue is provided on pages 38-39 of the GDS report.

Proposed Remedy:

Empire should conduct the revised filing described in MDNR-DSM-#1, estimating program participation and potential demand savings based on budget constraints that reflect current best-practice, with DSM spending greater than one percent of incremental annual sales.

MDNR-DSM-#3: Failure to Honor DSM Commitments from Case ER-2010-0130

The level of DSM savings screened and included in the alternative resource plans analyzed in Empire's IRP filing does not meet requirements of the stipulation and agreement reached in Case No. ER-2010-0130.

Specifically, the level of DSM is based on a budget constrained spending level of 1% of Missouri jurisdictional sales. Empire's demand side and integrated analysis constrains DSM savings at a constant level, rather than determining the achievable level of savings based on the cost-effectiveness of programs. In this respect, the filing does not meet requirements to which the company agreed in resolution of Case ER-2010-0130.

Discussion:

As discussed in MDNR-DSM-#1 and #2, Empire's filing is deficient by virtue of the budget constraints placed on the DSM portfolio. Empire's analysis did not include DSM portfolios agreed to in Case ER-2010-0130. In the stipulation and agreement for this case Empire agreed to the following:

> **7. Demand Side Management.** There shall be no changes in Empire's demand side management ("DSM") programs in conformity with the *Empire Experimental Regulatory Plan Stipulation*. ***In its next Chapter 22 Resource Planning Filing ("IRP") due September of 2010, Empire agrees to model and fully analyze two demand-side management program portfolios (moderate and aggressive), with a goal of achieving annual electric energy (sales) and demand savings (peak) equivalent to 1% by 2015 and 2% by 2020***. "Fully analyze" means the alternative portfolio(s) will be treated as resources available for selection in the determination of critical uncertain factors and in the identification of alternative resource plans and at least one of the alternative portfolios will be included in an alternative resource plan included in the integration analysis. The aggressive portfolio (2%) shall be based on maximum achievable potential and the moderate portfolio (1%) shall be based on realistic achievable potential. (Non-Unanimous Stipulation And Agreement: 4 Emphasis Added)

Empire reached this agreement several weeks after Sherry McCormack's April 21, 2010 email instruction to Robert Obeiter of AEG, referenced in MDNR-DSM-#1. The company should therefore have notified AEG in a follow-up communication that the company's newly signed agreement superseded Ms. McCormack's previous instruction to AEG. However, Empire did not report any such follow-up communication in response to OPC Data Request 2004 and therefore we must conclude that it did not take place.

Empire's filing contains no evidence that the company has honored its agreement:

- The filing provides no indication that Empire or AEG undertook the analysis to which the company agreed in ER-2010-0130, namely, to model program portfolios that achieve annual incremental demand-side savings of 1% by 2015 and 2% by 2020. Not only does the potential study provided by AEG model lower levels of potential savings, it addresses potential savings over a two-year period (from 2011 to 2013), while the stipulation in this case anticipates a much longer time frame.
- Moreover, as documented in MDNR-DSM-#4, projected incremental savings for the entire DSM portfolio and for the set of approved energy efficiency programs is consistently below 1% of projected load over the 20-year planning horizon.

<u>Proposed Remedy:</u>

First, Empire should conduct the revised filing described in MDNR-DSM-#1, including in the revised filing alternative resource plans whose demand-side resources comply with the agreement reached in ER-2010-0130 with respect to the programs included in the portfolio and the level of savings each portfolio will achieve.

Second, Empire should consult with the parties and attempt to reach consensus concerning standard definitions and methodology for estimating incremental and cumulative savings. Empire should consult with the parties concerning standards for transparent and unambiguous reporting of incremental and cumulative demand side savings from evaluations, forecasts and potential studies, including both energy savings (sales) and demand savings (peak) across a given reporting or planning horizon. The methodology should be capable of demonstrating whether the requirements of the agreements in ER-2010-0130 have been met and capable of supporting comparison of the results of Empire's potential studies to other available studies.

<u>MDNR-DSM-#4: Estimate of Maximum Achievable Potential</u>

In response to MDNR DR # 89, Empire identified that AEG's estimate of maximum achievable potential energy savings are presented in the final columns of Tables ES-1 and ES-2 of the AEG potential study.

Under standard definitions, maximum achievable potential is not subject to budget constraints. This is reflected not only in the National Action Plan for Energy Efficiency (NAPEE) report on standard practices for potential studies but also in the AEG potential study itself.

Empire provided contradictory Reponses to an MDNR data request (MDNR DR#88) that asked whether AEG's estimate of maximum achievable potential was constrained by budget. Regardless of Empire's response to this data request, a close comparison of the savings attributed to maximum achievable potential (Tables ES-1 and ES-20) and the savings attributed by AEG to budget-constrained program-potential leads MDNR to conclude that AEG's estimate of maximum achievable potential is indeed constrained by budget. A detailed demonstration of this conclusion is provided on pages 27- 28 of the GDS report.

Given that AEG's estimates of maximum achievable potential were constrained by a budget, MDNR concludes that the potential study is deficient in that is did not address the amount of cost-effective demand-side savings that could be obtained.

Proposed remedy:

First, Empire should conduct a revised demand-side analysis per the proposed remedy for MDNR-DSM-#1. This revised analysis shall include an estimate of maximum achievable potential that adheres in all respects to standard definitions, including freedom from budget constraints.

Second, Empire should consult with the parties and attempt to reach consensus concerning standard definitions and methodology for estimating maximum achievable potential. Empire should consult with the parties concerning standards for transparent and unambiguous reporting of maximum achievable potential, including both energy savings (sales) and demand savings (peak) across a given reporting or planning horizon. The methodology should be capable of demonstrating whether the requirements of the agreements in Part 1 of this proposed remedy have been met and capable of supporting comparison of the results of Empire's potential studies to other available studies..

MDNR-DSM-#5: Low Levels of Planned Demand-Side Savings (Concern)

MDNR calculated incremental energy and demand savings for both Empire's entire DSM portfolio and Empire's set of approved energy efficiency programs over the 20-year planning horizon.[3] The results are presented in Appendix A.

The calculated cumulative energy savings, presented in Table A.1, show that the energy savings by 2029 are **[redacted]** of total energy for the entire DSM portfolio and **[redacted]** of total energy for the energy efficiency programs. The incremental (annual) energy savings, presented in Table A.2, are **[redacted]** of total energy for the entire portfolio in 2029. These savings peak at **[redacted]** of total energy in 2025.

[3] The projected savings values for Empire's DSM portfolio over the 20-year time frame were calculated by Ventyx, using the MIDAS model, and provided to Staff. Based on these forecast level of savings, MDNR calculated incremental energy and demand savings as percentage of load for Empire's Preferred Resource Plan (Plan 4). Cumulative values for energy and demand forecasts and projected DSM savings were provided in the original document. MDNR calculated incremental values for a given year as the difference between that year's cumulative value and the previous years' value. The tables in Appendix A summarize these results.. Tables A.1 and A.2 present cumulative and incremental energy savings and Tables A.3 and A.4 present cumulative and incremental demand savings. These tables separate savings values for the portfolio as a whole and for each type of program (Energy Efficiency, Energy Assistance and Demand Response) separately.

The demand savings, presented in Tables A.3 and A.4, show that the cumulative demand savings in 2029 are **[redacted]** of load but the incremental (annual) demand savings in 2029 are **[redacted]** of total demand. The projected incremental (annual) demand savings reach their highest point, **[redacted]** of total demand, in 2016 and 2017.

MDNR is concerned that the load reductions from demand side savings being considered by Empire are significantly lower than those achieved by a number of other utilities, as documented in the GDS report, pp. 32-33. These comparisons raise doubts concerning the credibility of Empire's effort to fulfill the state goal of achieving all cost-effective demand side savings.

Proposed Remedy:

First, Empire should complete a revised filing per MDNR-DSM-#1. This will involve analyzing demand-side programs that are not subject to a program budget constraint of one percent of revenues and complying with the agreement reached in ER-2010-0130 with respect to the programs included in the portfolio and the level of savings each portfolio will achieve.

Second, Empire should consult with the parties concerning the standard definition and methodology for estimating maximum achievable potential and should strive to reach consensus on standards for transparent and unambiguous reporting of incremental and cumulative savings associated with estimates of maximum achievable potential, including both energy savings (sales) and demand savings (peak) across a given reporting or planning horizon. The methodology should be capable of demonstrating whether the requirements of this agreement have been met and supporting comparison of the results of Empire's potential studies to other available studies.

Additional DSM Deficiencies and Concerns

The issues in this section - with the exception of the final one listed (MDNR-DSM-#16) - are developed and documented in GDS report in the section titled "Volume IV."

MDNR-DSM-#6: End-Use Measures Considered.

Empire's portfolio does not include any program directed at consumer electronics or plug loads. Empire's filing is deficient in that its DSM portfolio after 2017 does not include a residential lighting program, even though lighting accounts for about 15% of residential sales. Significant emphasis is placed on load control measures that have minimal impact on kWh usage. (§22.050(6))

Proposed Remedy:

In the revised filing or stakeholder process, Empire should explain why no residential lighting program is included after 2017. It should justify its omission of measures directed at consumer electronics and plug loads and explain its preference for load control measures.

MDNR-DSM-#7: Interactive Effects

Empire has not provided details of any analysis of interactive effects conducted within the technical potential study. (§22.050(6)(B))

Proposed Remedy:

In the revised filing or stakeholder process, Empire should provide an analysis of interactive effects along with the measure assumptions used to develop the technical potential estimates.

MDNR-DSM-#8: Probable Environmental Benefits Test

A stand-alone Probable Environmental Benefits Test was not used to screen end-use measures. (22.050(3)(G))

Proposed Remedy:

Empire should provide the results of the Probable Environmental Benefits Test for all end-use measures in a supplemental filing.

MDNR-DSM-#9: End-Use Measure Assumptions

Empire has not estimated the technical potential of each end-use measure that passes the probable environmental benefits screening test. Further, it should be noted that the estimates submitted in response to MDNR Data Request 39 were provided without the supporting calculations or assumptions. (§22.050(4))

Proposed Remedy:

Empire should provide the results of a stand-alone Probable Environmental Benefits Test for all end-use measures in a supplemental filing. Empire should also provide a description of all assumptions about end-use measures used to develop the technical potential.

MDNR-DSM-#10: End-Use Measure Technical Potential

Empire has not provided any worksheets or other documentation that show the assumptions that AEG made or how it developed its assessment of the technical, economic and achievable potential for efficiency improvements. Further, the achievable potential in the AEG study was limited by a budget constraint. The potential study is deficient in this regard. (§22.050(5))

Proposed Remedy:

Empire should be required to provide the assumptions that AEG made to develop the estimates of technical, economic, maximum achievable and achievable potential used in the potential study and describe how AEG developed its assessment of the technical, economic or maximum achievable potential in a supplemental filing.

MDNR-DSM-#11: Marketing Plans

The general delivery plan in the IRP is not comprehensive and does not provide the information required for a detailed marketing plan. (§22.050(6)(D))

Proposed Remedy:

In supplemental filings and stakeholder process or collaborative Empire should be required to complete and submit comprehensive program marketing plans for programs that it expects to offer.

MDNR-DSM-#12: Evaluation Plans.

The evaluation plans described at the end of each program summary in Volume IV of the compliance filing are not adequate for the purpose of conducting process or impact evaluation plans of the demand-side programs associated with its preferred resource plan. (§22.050(9))

Proposed Remedy:

In supplemental filings and stakeholder process or collaborative Empire should complete and submit comprehensive evaluation plans for programs that it expects to offer.

MDNR-DSM-#13: Participation Assumptions

Empire has not clearly defined whether residential tenants and commercial lessees are eligible to participate in its DSM programs. (§22.050(1)(B))

Proposed Remedy:

This is an issue of concern that should be addressed in a stakeholder process prior to the next utility resource filing.

MDNR-DSM-#14: User-sited Renewable Resource Analysis

Although Empire did consider residential solar photovoltaic and wind renewable energy programs in its technical potential analysis, the Company's analysis is deficient in that the same measures were not considered in the commercial and industrial sector analysis. (§22.050(1)(D))

Proposed Remedy:

This is an issue of concern that should be addressed in a stakeholder process prior to the next utility resource filing.

MDNR-DSM-#15: Sensitivity Analysis

It is not clear that Empire has performed any sensitivity analysis related to utility marketing and delivery costs for demand-side programs. (§22.070(2)(L))

Proposed Remedy:

This is an issue of concern that should be addressed in a stakeholder process prior to the next utility resource filing.

MDNR-DSM-#16: Documentation of Market Potential Studies

Paragraph 4 CSR 240-22.050(5) – Empire has not provided any worksheets or other documentation that show the assumptions that AEG made or how it developed its assessment of the technical, economic and achievable potential for efficiency improvements.

Proposed Remedy:

These materials should be provided in a supplementary filing and also should be provided for any revised potential studies completed for the revised filing per MDNR-DSM-#1.

MDNR-DSM-#17: Uneven Treatment of Customer Classes (Concern)

The IRP rule (4 CSR 240.22.050(1)(A)) contemplates that the utility will design and develop demand side resources that serve all customer classes on an equitable basis. Empire's proposed DSM portfolio does not provide savings to all customer classes on a consistent and equitable basis over the 20 year planning horizon, particularly in the first five years.

As Table MDNR-4 indicates, the projected savings values for Empire's DSM portfolio over the 20-year time frame were calculated by Ventyx and provided to Staff. This analysis separates the portfolio by Residential and Commercial/Industrial classes. Table MDNR-4 shows that the classes are not represented equally over the 20-time horizon. Prior to 2018, virtually all of the DSM savings comes from the residential class. After 2018, the contribution of the Commercial and Industrial class to the total DSM savings slowly increases over the time period.

MDNR is concerned that the imbalance and temporal inconsistency in the demand side programs proposed in the preferred plan is a design flaw that will impede the company's ability to assure customers that its programs are equitable and reliable or to develop partnerships for market transformations efforts.

In addition, it is not credible that no demand side savings are available in the commercial and industrial sectors until 2015. Unless these are captured entirely by codes and standards or self-directed programs, it is difficult to avoid the conclusion that some lowest-cost resources are not being tapped and that a plan that took advantage of these resources would be lower cost (minimize NPVRR) compared to the plan that the company has adopted.

Table MDNR-4: Forecast DSM savings by major class, 2011-2029

	Total Forecast DSM Savings (MWh)	Residential Portfolio (MWh)		Commercial and Industrial Portfolio (MWh)	
Year	Savings	Savings	Percentage	Savings	Percentage
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
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[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

Source: "Empire DSM Energy and Demand Savings.xlsx" provided by Ventyx through Staff

Proposed Remedy:

Empire should analyze and present an analysis of DSM savings that balance the savings from the major classes and serves all classes across the 20-year planning horizon.

Deficiencies and Concerns Related to Risk Analysis and Strategy Selection

MDNR-Risk-#1: Failure to consider Customer Count as an Uncertain Factor

In its review of Empire's analysis of risk and uncertainty, MDNR has concluded that Empire should have identified customer count as an uncertain factor and should have should have included customer count in its sensitivity analysis of uncertain factors.

The relevant rule provisions are as follows.

- Definition of an uncertain factor (4 CSR 240-22.020 (56):

  Uncertain factor means any event, circumstance, situation, relationship, causal linkage, price, cost, value, response or other relevant quantity which can materially affect the outcome of resource planning decisions, about which utility planners and decision makers have incomplete or inadequate information at the time a decision must be made.

- Requirement to test for critical uncertain factors (4 CSR 240-22.070 (2):

  *Before developing a detailed decision-tree representation of each resource plan, the utility shall conduct a preliminary sensitivity analysis to identify the uncertain factors that are critical to the performance of the resource plan. This analysis shall assess **at least** the following uncertain factors: (Emphasis added)*

The reasons for MDNR's conclusion are as follows.

This provisions of 4 CSR 240-22.070 (2) imply that in addition to the uncertain factors explicitly listed in 4 CSR 240-22.070(2)(A) through (L), the utility should identify and consider other uncertain factors that might influence the utility's ability to provide adequate power. Empire actually did identify and consider two additional uncertain factors (energy efficiency standards and smart grid developments) that are not explicitly listed in 4 CSR 240-22.070(2) (A) through (L). Furthermore, additional uncertain factors have been identified in every other IRP case in which MDNR has intervened. Therefore, Empire is not limited by the rule from considering customer count as an uncertain factor if it chooses to do so.

Empire should have identified customer growth as an independent uncertain factor because of its volatility and its significant role in Empire's load analysis and forecasting. In its load analysis, Empire conducted a regression analysis that used customer count at its primary independent variable (see Volume 2, Page 15, Figure 2-3). Empire states that "…customer growth is not just a driver variable, but a variable that captures the economic impacts of the service territory." (Volume II, Page 37) Given the prominence that Empire has given customer growth as a driver of its load, Empire's decision not to highlight customer growth as an independent uncertain factor is surprising.

An examination of the average month-to-month change in customer count shows how volatile this factor can be. The materials in Table MDNR-5 show the number and the percentage change in customer count from January 2000 and June 2009. The source data for this table is "Customer Growth Analysis.xls" provided by Empire in its load forecasting work papers. This table shows positive growth in customer count in 2000 increased **[redacted]** and a similar peak in customer count above **[redacted]** in 2005 and 2006, but the growth rate fell to below **[redacted]** in 2007 and 2008 and a reduction in customer count is seen in the first six months of 2009, the last period of available data. Changes in the number of residential customers drives this change; the percentage change in the number of commercial and industrial customers is never larger than **[redacted]**.

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Table MDNR-5 Empire month-to-month differences in customer count, January, 2000 to June, 2009

Year	Period	All Customers		Residential Customers		Commercial and Industrial Customers	
		Difference	Percent Change	Difference	Percent Change	Difference	Percent Change
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

Source: "Customer Growth Analysis.xls" provided by Empire in its load forecasting work papers

<u>Proposed Remedy:</u>

Empire should, in discussion with stakeholders, conduct a sensitivity analysis of customer count to determine if it should be treated as a critical uncertain factor. If so identified, Empire should incorporate the newly identified critical uncertain factor into its integration analysis, identifying high, base and low customer growth scenarios, assigning subject probabilities to each scenario and testing Empire's preferred resource plan in light of these different growth scenarios, and including the factor in its contingency monitoring per the provisions of 4 SR 240-22.070(10)(E).

<u>MDNR-Risk-#2: Failure to Test Smart Grid Development</u>

Empire's filing discusses its current efforts to assess the possible impact of Smart Grid developments in its service territory (Volume 7, pp. 25-26) but does not provide any analysis of whether this is a critical uncertain factor.

In stakeholder meetings on October 21, Empire staff discussed the difficulty they had formulating a clear definition of Smart Grid that is susceptible to sensitivity testing as required by 4 CSR 240-22(070)(2). However, this is not documented in the filing; instead, the rule requirement is not addressed.

Proposed Remedy:

In a supplemental filing, Empire should document issues it has identified in assessing whether Smart Grid developments are a critical uncertain factor. This uncertain factor should be included in sensitivity testing in Empire's next regularly scheduled resource filing and should be discussed in a stakeholder process prior to that filing.

MDNR-Risk-#3: Failure to Test Other Possible Candidates for Critical Uncertain Factors

On pages 49-50 of its report to MDNR, GDS develops the case that "Empire has not considered all of the risks associated with new or more stringent environmental laws or regulations that may be imposed at some point within the planning horizon,"

GDS reviews several such factors in its review of Empire's risk analysis in its that are potentially critical but were not addressed in Empire's filing. Two of the most significant are price of electricity and the possible effect s of SB 376.

On page 49 of its report, GDS note that Empire has not addressed the impact of future rate increases on the demand for electricity. GDS comments, based on Empire's response to MDNR Data Request#13, that Empire does not deny that its customers are sensitive to changes in the price of electricity but has concluded that it would be too time consuming to incorporate price elasticity into its analysis.

At the time of the Empire's IRP filing, September, 2010, the final rules for Section 393.1075, RSMo were being deliberated by the Commission. The rules submitted to the Secretary of State's office envisioned a process where utilities proposed a cost recovery mechanism, a lost revenue recovery mechanism and a performance incentive mechanism in a "Demand Side Investment Mechanism" (DSIM).[4] The details of the DSIM are subject to the utility's decision making process, input from various other parties, and the approval of the Commission. As a whole, this process represents multiple uncertainties that will impact the design and implementation of DSM programs. Empire did not discuss these uncertainties in its plan.

See the section in the GDS report titled "Volume V" as well as pages 7-8 of the GDS Executive Summary.

Proposed Remedy:

These uncertain factors should be included in sensitivity testing in Empire's next regularly scheduled resource filing and should be discussed in a stakeholder process prior to that filing.

MDNR-Risk-#4: Inadequate Testing of Energy Efficiency Resource Standard

Empire's filing contains a brief general discussion of energy efficiency resource standards (EERS) in Volume 7, pp. 26-27, but does not assess the possible affect of a federal or state EERS its resource plan.

In its subjective screening assessment of uncertain factors, Empire considers energy efficiency standards as a possible critical uncertain factor but dismisses them with the following argument:

[4] See Proposed Rule 4 CSR 240-20.093 for a description of the DSIM.

> Empire considered EERS as an uncertain factor, but it was not chosen as a critical uncertain factor since none of the jurisdictions that Empire serves currently has an EERS. (Volume 5, p. 26)

This argument is fallacious. First, if an EERS actually existed in a jurisdiction served by Empire it would not be an uncertain factor. It is precisely because it is uncertain whether Empire will face an EERS at some time in its 20-year planning horizon that Empire should consider EERS as an uncertain factor. Second, while Empire mentions that EERS has been considered at the federal level, its discussion emphasizes state-level EERS and its argument seems directed to the possibility of a state EERS. In MDNR's judgment, a federal EERS is at least as likely as a state EERS and Empire's sensitivity analysis should be modeled assuming a federal EERS.

<u>Proposed Remedy:</u>

This uncertain factor should be included in sensitivity testing in Empire's next regularly scheduled resource filing and should be discussed in a stakeholder process prior to that filing.

<u>MDNR- Risk-#5: Failure to Test Uncertain Factors Using Sensitivity Analysis</u>

4 CSR 240-22(070)(2) states:

> *Before developing a detailed decision tree representation of each resource plan, the utility shall conduct a preliminary sensitivity analysis to identify the uncertain factors that are critical to the performance of the resource plan. This analysis shall assess at least the following uncertain factors:*

Rather than developing a sensitivity analysis, Empire conducted a subjective screening assessment to identify critical uncertain factors. The screen is documented in Volume 7, pp.20-27. Empire requested no variance from the rule requirement.

<u>Proposed Remedy:</u>

In its next regularly scheduled filing, Empire should conduct a sensitivity analysis to identify critical uncertain factors per 4 CSR 240-22(070)(20. This issue should be further addressed in a stakeholder process prior to the next regularly scheduled filing.

<u>MDNR-Risk-#6: Failure to Identify Limits of Preferred Plan</u>

The relevant requirement appears in 4 CSR 204-22.070(10)C, which requires the utility to "develop, document and officially adopt a resource acquisition strategy" one of whose components is:

> *(C) A specification of the ranges or combinations of outcomes for the critical uncertain factors that define the limits within which the preferred resource plan is judged to be appropriate and an explanation of how these limits were determined;*

Empire identifies Volume 5, Section 6 as its officially adopted resource acquisition strategy. Empire's response to the rule requirement appears in subsection 6.5, titled "Range of Outcomes." This subsection contains two types of response:

First, this subsection provides examples of critical factors that the utility will monitor in specific circumstances to determine whether the existing plan is still appropriate. These examples fall short of the rule requirement in two respects. First, they are anecdotal rather than comprehensive; and second, Empire does not provide the values that would trigger a decision to change plans as required by 4 CSR 240-22(10)(C).

Second, this subsection states that "Empire will determine the range of outcomes within which the Preferred Plan is judged to be appropriate in accordance with 4 CSR 240-22.070." Empire's response to the rule requirement is deficient in two respects:

(1) Empire's response does not provide the range of outcomes that the rule requires the utility to provide in its resource acquisition strategy. Empire provides only a non-specific promise to develop these in the future.

(2) Empire's response provides no specific commitment concerning when the utility will provide the range of outcomes and no plan for developing this range of outcomes. A plan would indicate who is responsible for developing the range of outcomes, the timetable for doing so, methodology and a proposal for stakeholder participation.

(3) The response does not acknowledge that Empire may face unique methodological issues in developing the required range of outcomes due to its decision to bundle uncertain factors into aggregate critical uncertain factors. For further discussion, see MDNR-Risk-#8 and MDNR-Risk-#9.

<u>Proposed Remedy:</u>

In a supplemental filing, Empire should propose a plan for providing the range of outcomes required by the rule in a comprehensive manner. The supplemental filing should also discuss the methodological issues raised in MDNR-Risk-#8 and MDNR-Risk-#9 and its plan for addressing this deficiency.

<u>MDNR-Risk-#7: Failure to Identify Contingency Options</u>

The relevant requirement appears in 4 CSR 204-22.070(10)(D), which requires the utility to "develop, document and officially adopt a resource acquisition strategy" one of whose components is:

> *(D) A set of contingency options that are judged to be appropriate responses to extreme outcomes of the critical uncertain factors and an explanation of why these options are judged to be appropriate responses to the specified outcomes; and*

Empire indicates (Volume 7, Table 1-3) that its compliance with this rule requirement is contained in Volume 7, Section 6. However, no reference to contingency options appears in that section and none of the discussion in that section clearly sets out contingency options as described in the rule. Empire does provide three examples of specific project decisions that may change with future information. In MDNR's judgment, these three instances do not constitute the systematically developed set of contingency options envisioned in the rule.

<u>Proposed Remedy:</u>

In a supplemental filing, Empire should present its plan for complying with the requirements of 4 CSR 240-22.070(10)(D). The plan would indicate who is responsible for developing the contingency options, the timetable for doing so, methodology and a proposal for stakeholder participation.

<u>MDNR-Risk-#8: Failure to Explain Aggregation of Uncertain Factors (Concern)</u>

Empire does not sufficiently explain its methodology or explore and analyze the consequences of bundling the discrete uncertain factors identified in the rule into aggregate critical uncertain factors.

For the purpose of the sensitivity analysis required by the rule, Empire combines the uncertain factors listed in the rule into aggregate groupings. Empire provides insufficiently detailed explanation of the process used to aggregate the required factors and provides no analysis of how the resulting loss of granularity affects the sensitivity analysis required by the rule.

Page 28 of Volume 5 lists the results of the screening process but does not discuss the criteria used to identify which uncertain factors are critical and which are not. When considering the twelve uncertain factors in 4 CSR 240-22.070 (2), Empire aggregated nine of the uncertain factors listed into the four critical uncertain factors (Volume 4, pages 31 and 32) and analyzed the aggregated groupings. These four aggregated factors were identified as critical. The remaining three uncertain factors that had not been included in the aggregated groupings (Factors (I), (J) and (M) from 4 CSR 240-22.070 (2)) were not classified as critical. Empire did not discuss the criteria used to develop the four aggregated factors or identify a common set of principles used to conduct the required sensitivity analysis to identify critical uncertain factors.

Proposed Remedy:

Empire should address the issues raised above in a supplementary filing. The issues should be discussed in a stakeholder meeting prior to the next regularly scheduled filing.

MDNR-Risk-#9 - Critical Uncertain Factors too Broadly Defined (Concern)

MDNR is concerned that the four critical uncertain factors identified by Empire - namely, environmental costs, market prices for fuel, load, and capital, transmission and interest rate costs - may be too broadly defined to serve the contingency planning and other function intended by the rule.

The critical uncertain factors may mask important costs that should be considered separately. For example, proposing a single aggregate factor that combines construction, transmission and interest rate costs, assumes that all three costs are tightly linked. Empire fails to describe the assumptions on which it based the decision to group independent factors into aggregates. If Empire is assuming that the factors tend to move in the same direction, that assumption clearly does not reflect the current economic conditions, where construction costs are constant, but interest rates have an effective rate near zero. Additionally, depending on the expectations about federal interest rate policy over the near term (which may keep interest rates low) and expectations about the future inflation rate (which may push interest rates up), interest rates may fluctuate greatly, while construction costs and transmission costs may lag behind or anticipate interest rate changes. The current structure of critical uncertain factors would tend to discount differences between these three types of costs.

One key purpose of critical uncertain factors is to provide a basis for contingency planning and monitoring. The use of aggregate factors may complicate compliance with the rule's requirement to monitor " outcomes for the critical uncertain factors." If the utility takes a quantitative approach to this requirement, it may be necessary to develop a single index that reflects the multiple factors. If the utility takes a qualitative approach, it may be necessary to develop a weighting scheme that balances the movement of the factors.

Furthermore, MDNR is concerned that offsetting movement by the discrete components of the aggregate critical uncertain factors that the company has identified may complicate or hinder appropriate planning and monitoring for conditions that depart from those anticipated in the company's preferred resource plan.

Proposed Remedy:

Empire should address the issues raised above in a supplementary filing. The issues should be discussed in a stakeholder meeting prior to the next regularly scheduled filing.

Deficiencies and Concerns Related to Supply Side Analysis

Further discussion of the following issues appears in the section of the GDS report titled "Volume III."

MDNR-Supply-#1: Generation Options

Utility scale photovoltaic (PV) options were not considered in the utility's supply-side resource analysis. Empire's treatment of biomass options is very limited.

In addition, a more thorough analysis of both PV and biomass generation should have been performed. (§22.040(1))

Finally, Volume 4 does not document any screening of utility-scale combined heat and power (CHP) installations; nor does Volume 3 document any screening of customer-based CHP installation.

Proposed Remedy:

This is an issue of concern that should be addressed in a stakeholder process prior to the next utility resource filing.

MDNR-Supply-#2: Accuracy of Price Forecasts

Empire has provided no evidence that it has considered the accuracy of previous fuel price forecasts prepared by Ventyx as a criterion for selecting that firm as a provider of fuel price forecasts. While the utility relied on Ventyx for most fuel prices, it also relied on EIA for coal data. Thus, Empire also needs to consider EIA assumptions and examine its use (or non-use) of the EIA alternative cases. (§22.040(8)(A)(2))

Proposed Remedy:

This is an issue of concern that should be addressed in a stakeholder process with focus on interim use of these forecast sources as well as its use in the next filing.

MDNR-Supply-#3: Critical Uncertain Factors Related to Fuel Prices.

Empire has not provided sufficient documentation related to how each fuel price forecast was prepared, nor has it clearly identified the critical uncertain factors that drive the price forecasts (from Ventyx and the EIA) and the range of forecasts it has offered. (§22.040(8)(A)(2))

Proposed Remedy:

This is an issue of concern that should be addressed in a stakeholder process with focus on interim use of these forecast sources as well as its use in the next filing.

Appendix A

Highly Confidential in its Entirety

Table A.1: Cumulative DSM energy savings as a percent of forecast load, 2011-2029, Preferred Resource Plan (Plan 4)

[redacted]									
		[redacted]		[redacted]		[redacted]		[redacted]	
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
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[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

Source: “Empire DSM Energy and Demand Savings.xlsx” provided by Ventyx through PSC Staff

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Table A.2: Incremental DSM energy savings as a percent of forecast load, 2011-2029, Preferred Resource Plan (Plan 4)

[redacted]									
		[redacted]		[redacted]		[redacted]		[redacted]	
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
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[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
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[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

Source: “Empire DSM Energy and Demand Savings.xlsx” provided by Ventyx through PSC Staff

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Table A.3: Cumulative DSM demand savings as a percent of forecast load, 2011-2029, Preferred Resource Plan (Plan 4)

[redacted]									
		[redacted]		[redacted]		[redacted]		[redacted]	
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
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Source: “Empire DSM Energy and Demand Savings.xlsx” provided by Ventyx through PSC Staff

HC

Table A.4: Incremental DSM demand savings as a percent of forecast load, 2011-2029, Preferred Resource Plan (Plan 4)

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Source: “Empire DSM Energy and Demand Savings.xlsx” provided by Ventyx through PSC Staff

Appendix B

GDS Report Discussion of Deficiencies/Concerns Identified by MDNR

	Deficiencies/Concerns Identified By MDNR	GDS Report Discussion
1	MDNR-LF- #1: Empire's Load Forecast Is Not Credible	3, 11-17
2	MDNR-LF-#2: Base Load Forecast	3, 11-15
3	MDNR-LF-#3: High And Low Load Forecast	3,15-17
4	MDNR-LF-#4: Analysis Of Economic And Demographic Drivers	4, 12
5	MDNR-DSM- #1: Failure To Analyze Demand Side Resources On An Equivalent Basis.	4, 8, 29-33, 48 and throughout GDS review of Empire Volume III (19-50)
6	MDNR-DSM-#2: Limited Bottom-Up Analysis	4, 38-39
7	MDNR-DSM-#3: Failure To Honor DSM Commitments From Case ER-2010-0130	
8	MDNR-DSM-#4: Estimate Of Maximum Achievable Potential	25-30, 45
9	MDNR-DSM-#5: Low Levels Of Planned Demand-Side Savings (Concern)	31-38
10	MDNR-DSM-#6: End-Use Measures Considered.	5, 35, 46
11	MDNR-DSM-#7: Interactive Effects	5, 13, 45
12	MDNR-DSM-#8: Probable Environmental Benefits Test	5, 25, 29, 41-43, 45
13	MDNR-DSM-#9: End-Use Measure Assumptions	5
14	MDNR-DSM-#10: End-Use Measure Technical Potential	6
15	MDNR-DSM-#11: Marketing Plans	6, 43
16	MDNR-DSM-#12: Evaluation Plans.	6, 44
17	MDNR-DSM-#13: Participation Assumptions	6, 39

	Deficiencies/Concerns Identified By MDNR	GDS Report Discussion
18	MDNR-DSM-#14: User-Sited Renewable Resource Analysis	6, 40
19	MDNR-DSM-#15: Sensitivity Analysis	7, 51
20	MDNR-DSM-#16: Documentation Of Market Potential Studies	
21	MDNR-DSM-#17: Uneven Treatment Of Customer Classes (Concern)	
22	MDNR-Risk-#1: Failure To Consider Customer Count As An Uncertain Factor	
23	MDNR-Risk-#2: Failure To Test Smart Grid Development	51
24	MDNR-Risk-#3: Failure To Test Other Possible Candidates For Critical Uncertain Factors:	7, 12, 49
25	MDNR-Risk-#4: Inadequate Testing Of Energy Efficiency Resource Standard	50
26	MDNR- Risk-#5: Failure To Test Uncertain Factors Using Sensitivity Analysis	
27	MDNR-Risk-#6: Failure To Identify Limits Of Preferred Plan	
28	MDNR-Risk-#7: Failure To Identify Contingency Options	
29	MDNR-Risk-#8: Failure To Explain Aggregation Of Uncertain Factors (Concern)	
30	MDNR-Risk-#9 - Critical Uncertain Factors Too Broadly Defined (Concern)	
31	MDNR-Supply-#1: Generation Options	8, 45
32	MDNR-Supply-#2: Accuracy Of Price Forecasts	8. 45
33	MDNR-Suppy-#3: Critical Uncertain Factors Related To Fuel Prices.	8, 45