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VOLUME 1

INTEGRATED RESOURCE PLAN (IRP)
EXECUTIVE SUMMARY

THE EMPIRE DISTRICT ELECTRIC COMPANY
(EMPIRE)

4 CSR 240-22

CASE NO. EO-2013-0547

JULY 2013

****Denotes Highly Confidential****

Executive Summary Table of Contents

Executive Summary

The Empire District Electric Company (Empire or Company) has conducted its analysis of future loads and resources for this Integrated Resource Plan (IRP) to comply with the requirements of 4 CSR 240-22 (Rule or IRP Rule) based on Empire's interpretation of the Rule. Under the current Rule, this IRP analysis is conducted once every three (3) years (triennial compliance filing), in conjunction with Empire's normal planning process, assists Empire in making decisions concerning the timing and type of system expansion that should ultimately occur. The results of the IRP analysis documented in this report reflect only current and projected conditions as they were known at the time the results were developed. IRP is a fluid process and involves numerous assumptions about the future. Empire will continually monitor critical uncertain factors and re-examine its decisions as the need for additional resources become more evident. The IRP will be subjected to ongoing evaluation as modeling assumptions change based on evolving business conditions.

1. IRP Objectives

According to the IRP Rule, 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 compliance with all legal mandates, and in a manner that serves the public interest and is consistent with state energy and environmental policies. The fundamental objective requires that the utility shall consider demand-side, supply-side and renewable resources on an equivalent basis, and utilize the minimization of long-run utility costs as a primary criterion while also considering other factors such as risk and rate impacts.

By the end of the IRP process, the utility is required to select a preferred plan and adopt a resource acquisition strategy. The preferred resource plan means the resource plan that is contained in the resource acquisition strategy that has most recently been adopted by the utility decision-maker(s) for implementation by the electric utility. But the IRP process provides more than just a preferred plan; it generates a set of plans that includes contingency plans and other required plans for planning purposes. A contingency resource plan means an alternative resource plan designed to enhance the utility's ability to respond quickly and appropriately to future events or circumstances that could render the preferred resource plan obsolete. During the IRP process the utility is also required to identify and monitor critical uncertain factors which are any uncertain factor that is likely to materially affect the outcome of the resource planning decision.

This executive summary will highlight the steps that the Company has taken to arrive at the selection of the preferred resource plan; describe the other plans studied in the IRP; identify the critical uncertain factors; and present the preferred resource plan and its accompanying implementation plan.

2. Organization of the IRP Filing

This IRP filing contains eight (8) volumes in total. This includes an executive summary; a volume dedicated to the Missouri IRP filing requirements and an index of Rule compliance; and six (6) technical volumes. The ordering and subject matter of the IRP volumes closely correspond to the IRP Rule sections. The technical volumes contain the Rule reference and the Company's response as appropriate. The responses to Special Contemporary Issues can be found in the final chapter of Volume 6: Integrated Resource Plan and Risk Analysis. The eight (8) volumes that comprise the IRP filing can be summarized as follows:

1. Volume 1: Executive Summary
2. Volume 2: Missouri Filing Requirements and an Index of Rule Compliance
3. Volume 3: Load Analysis and Load Forecasting
4. Volume 4: Supply-Side Resource Analysis
5. Volume 4.5: Transmission and Distribution Analysis
6. Volume 5: Demand-Side Resource Analysis
7. Volume 6: Integrated Resource Plan and Risk Analysis
8. Volume 7: Resource Acquisition Strategy Selection

3. Background

Since Empire made its last triennial filing in 2010, the IRP Rule in Missouri has undergone a significant revision (promulgated by the Missouri Public Service Commission (Commission) in June 2011). As a result, this is Empire's first triennial compliance filing utilizing the revised Rule. Empire's previous Missouri triennial compliance filing was made in File No. EO-2011-0066 on September 3, 2010 (2010 IRP). After several post-filing IRP discussions in this case, a non-unanimous stipulation and agreement was reached and filed with the Commission on April 1, 2011. The Commission issued an Order approving the non-unanimous stipulation and agreement and accepting the 2010 IRP on April 27, 2011. A Commission Order closing File No. EO-2011-0066 was issued on June 7, 2011.

IRP Annual Update

One of the new features created by the revised IRP Rule was the annual update process. The purpose of the annual update is to ensure that members of the Missouri stakeholder group have the opportunity to provide input and to stay informed regarding the changing conditions since the last filed triennial compliance (IRP) filing or annual update filing. This includes updates regarding the preferred resource plan; the status of the identified critical uncertain factors; the utility's progress in implementing the resource acquisition strategy; analyses and conclusions regarding any special contemporary issues (pursuant to 4 CSR 240-22.080(4)); resolution of any outstanding deficiencies or concerns (pursuant to 4 CSR 240-22.080(16)); and changing conditions in general. Empire made an IRP annual update presentation and filing on March 27,

2012 in File No. EO-2012-0294. The Commission Order establishing the special contemporary issues list for Empire's 2012 IRP annual update was filed on October 19, 2011 in File No. EO-2012-0040.

Special Contemporary Issues

Another new feature of the revised IRP Rule deals with special contemporary issues. Special contemporary issues is a written list of issues contained in a Commission order with input from staff, public counsel, and intervenors that are evolving new issues, which may not otherwise have been addressed by the utility or are continuations of unresolved issues from the preceding triennial compliance filing or annual update filing. Each utility shall evaluate and incorporate special contemporary issues in its triennial compliance filing or annual update filing. In File No. EO-2013-0105, the Commission issued an order on October 31, 2012 establishing three (3) special contemporary planning issues for Empire to analyze and document in its 2013 triennial Integrated Resource Plan. The responses to these issues can be found in IRP Volume 6.

IRP Stakeholder Advisory Group Process

The agreement reached following Empire's September 2010 IRP filing created the Empire IRP Stakeholder Advisory Group (Advisory Group) in Missouri. Participating members of the Advisory Group included the Commission Staff (Staff), Office of the Public Counsel (OPC), The Missouri Department of Natural Resources (MDNR) and Dogwood Energy, LLC (Dogwood). The Advisory Group met quarterly on nine (9) different occasions between June 30, 2011 and June 17, 2013 in preparation for this triennial IRP filing. The Advisory Group also had an additional meeting on December 18, 2012 to discuss the pre-integration phase assumptions for Empire's 2013 IRP as required by the IRP Rule at 4 CSR 240-22.080(5)(A). The Advisory Group process was intended to assist Empire in its selection of analytic methods and to facilitate Empire's collection and use of this data for the 2013 filing. The Advisory Group has reviewed and provided feedback on the significant assumptions in Empire's 2013 IRP filing.

Filing Schedule and Application for Waiver/Extension

As prescribed by the filing schedule in the revised IRP Rule, Missouri electric utilities are required to make an IRP filing with the commission every three (3) years on April 1, with Empire's first filing under the revised IRP Rule "on April 1, 2013, and every third year thereafter." On February 28, 2012, Empire filed an application for waiver and extension in File No. EO-2013-0405. This application requested a waiver/extension from Commission Rule 4 CSR 240-22.080(1)(B) allowing Empire to make its triennial filing on July 1, 2013. Empire also requested a waiver from Commission Rule 4 CSR 240-22.080(5)(A) (regarding information for the pre-integration stakeholder meeting), subject to providing additional information and otherwise working with stakeholders as described in the application. The parties to the case either supported or had no objection to this request. The Commission issued an Order granting

waiver and an extension of time on March 20, 2013. This established Empire's 2013 IRP filing date until no later than July 1, 2013. Even with the July 1 filing date, Empire will still be filing its 2013 IRP less than three years since its last IRP filing in September 2010. Empire did not seek any other waivers from the technical analysis portion of the IRP Rule for this filing.

Missouri Energy Efficiency Investment Act of 2009 (MEEIA) Filing

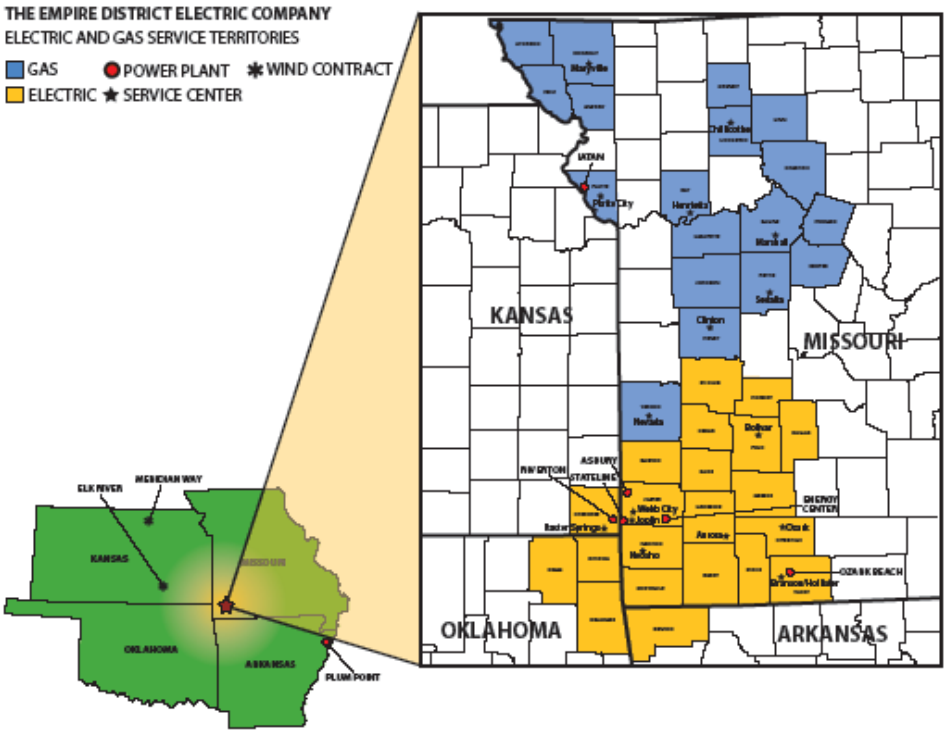
As part of the second nonunanimous stipulation and agreement to the 2010 IRP (EO-2011-0066) that was approved by the Commission on June 27, 2012, Empire agreed to meet with the parties to File Nos. EO-2011-0066 (2010 IRP) and EO-2012-0206 (initial MEEIA filing) within 30 days of its Chapter 22 triennial compliance filing (2013 IRP filing) to discuss any cost effective Realistic Achievable Potential (RAP) demand-side management (DSM) portfolio contained in Empire's 2013 Preferred Plan pursuant to Chapter 22. Empire agreed to make a new MEEIA filing within 90 days of that meeting, unless agreed otherwise by the parties. MEEIA, or the Missouri Energy Efficiency Investment Act of 2009 became law on August 28, 2009 as § 393.1075. The MEEIA rules became effective May 30, 2011. Following are some of the aspects of MEEIA as it relates to investment in demand-side resources:

- Value demand-side and supply-side resources on an equal basis
- Demand-Side program cost recovery (allows utilities to file for a demand-side investment mechanism (DSIM) to recover demand-side costs)
- Ensure utility financial incentives are aligned with helping customers save energy
- Provide for timely earnings opportunities
- Goal of achieving all cost-effective demand-side savings
- Demand-Side programs must be cost effective
- Large customers – who qualify – may opt-out
- Evaluation, measurement and verification (EM&V) of energy and demand savings
- Annual reports to the Commission
- Separate line item on customers' bills for MEEIA charges
- State tax credits, incentives and disclosures

Empire withdrew its initial MEEIA filing (File No. EO-2012-0206) which was made on February 28, 2012, with support of the parties to the case in July, 2012. The withdrawal of the initial MEEIA filing afforded Empire the opportunity to complete its 2013 IRP DSM potential study and use the results of that study to provide for a comprehensive Chapter 22 IRP compliance filing, and follow the IRP filing with a comprehensive MEEIA filing. The 2013 IRP and the resulting portfolio of demand-side resources from the preferred plan and/or contingency plans, serve as an important precursor to the upcoming MEEIA filing. In addition, the results from the upcoming Missouri MEEIA filing will have an important impact on the implementation of the demand-side resources described in the 2013 IRP.

4. Company Description

Founded in October 1909 as a part of Cities Services Company, The Empire District Electric Company is an investor-owned, regulated utility company, based in Joplin, Missouri, that provides electric, natural gas (through its wholly owned subsidiary, The Empire District Gas Company), and water service, with approximately 215,000 customers (total electric, natural gas and water). A subsidiary of the Company also provides fiber optic services. Empire has been listed on the New York Stock Exchange under EDE since 1946. This IRP only applies to the electric business. The electric operation is engaged in the generation, purchase, transmission, distribution and sale of electricity to nearly 168,000 electric customers in parts of Missouri (88.8%), Kansas (5.8%), Oklahoma (2.8%) and Arkansas (2.6%). Empire's electric service territory includes an area of about 10,000 square miles with a population of over 450,000. The electric service territory is located principally in southwestern Missouri and also includes smaller areas in southeastern Kansas, northeastern Oklahoma and northwestern Arkansas. The principal activities of these areas include light industry, agriculture and tourism.



Empire supplies electric service at retail to 119 incorporated communities and to various unincorporated areas and at wholesale to four municipally owned distribution systems. The largest urban area served is the city of Joplin, Missouri (population approximately 50,000), and its immediate vicinity, with a regional population including Joplin of approximately 157,000. Empire's system maximum hourly demand for 2012 was 1,142 MW which occurred on August

2, 2012. The all-time maximum hourly demand of 1,199 MW occurred on January 8, 2010. Empire's 2012 native customer load was 5,233,311 MWH. Empire's electric operating revenues in 2012 were derived as follows: residential 42.2%, commercial 31.2%, industrial 15.5%, wholesale on-system 3.6%, wholesale off-system 3.1% and other 4.4%.

Empire serves parts of twenty-one counties: sixteen (16) in Missouri, one (1) in Kansas, three (3) in Oklahoma and one (1) in Arkansas.

Counties in Empire's Electric Service Territory

State	Counties (Alphabetical Order)
Missouri	Barry, Barton, Cedar, Christian, Dade, Dallas, Greene, Hickory, Jasper, Lawrence, McDonald, Newton, Polk, St. Clair, Stone, Taney
Kansas	Cherokee
Oklahoma	Craig, Delaware, Ottawa
Arkansas	Benton

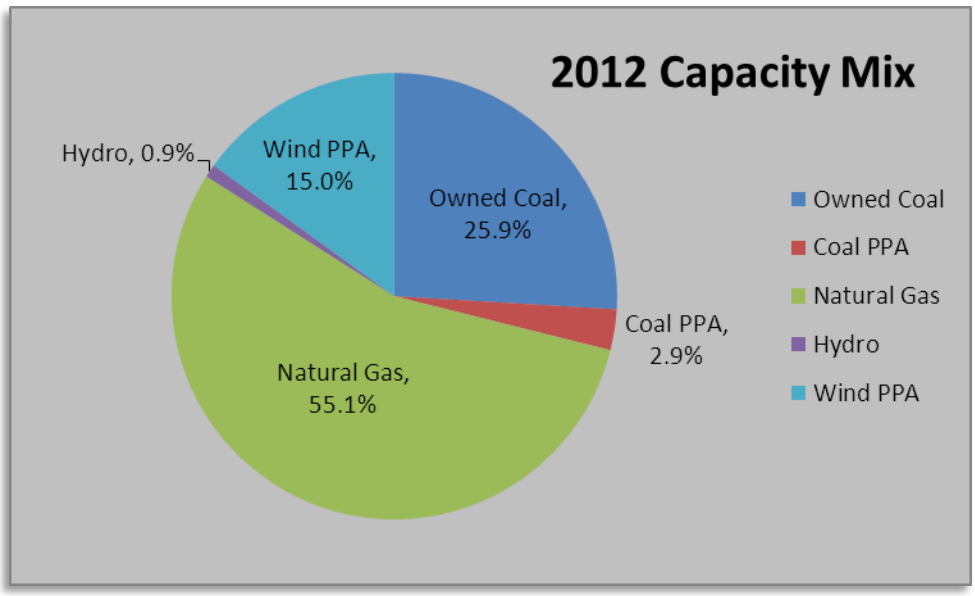
The following table offers some quick facts about Empire as of the end of 2012.

Category	At Dec-31-2012
Population of Service Area	Over 450,000
Cities and Towns Served/Electric	119
Cities and Towns Served/Gas	48
Electric Customers	167,688
Gas Customers	43,991
Average Yearly Residential Usage (KWH)	13,163
Average Residential Price per KWH	$0.1159
Average Commercial Price per KWH	$0.1019
Average Industrial Price per KWH	$0.0766
Employees	756
Owned Capability	1,391 MW
Purchased Capacity	65 MW
Operating Revenues (000)	$557,097
Operating Income (000)	$96,221
Net Income (000)	$55,681
Earnings per Average Common Share	$1.32
Dividends Paid	$1.00
Gross Plant (000)	$2,284,022
On-System Electric Sales (MWH)	4,912,970
On-System Gas Sales (000) (Mcf)	7,392

Electric Generating Facilities

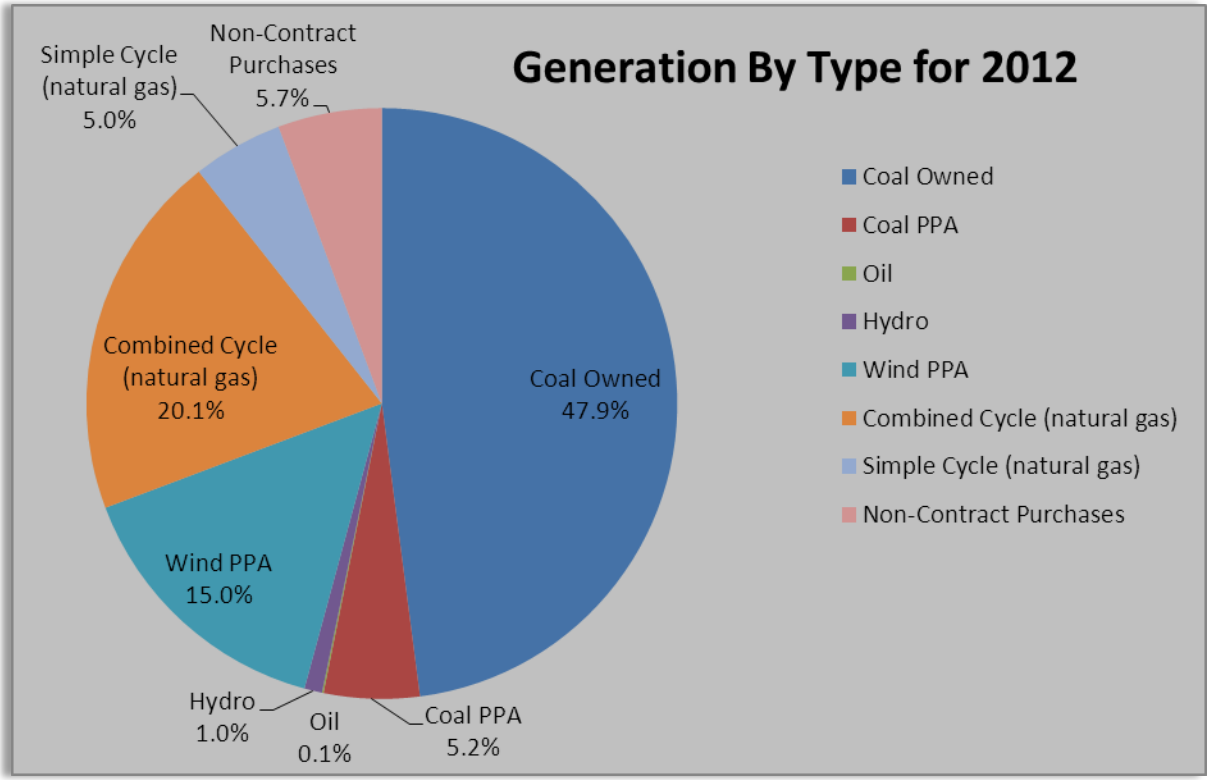
Empire owns and operates a diverse generating portfolio which includes wholly owned units, jointly owned units and power purchase agreements (PPA) to meet customer energy requirements. This includes units that can operate on coal, natural gas, fuel oil (as a secondary fuel), hydro and wind.

Generating Resources By Type 2012		
Type	**Capacity (MW)**	**%**
Owned Coal	440	25.9%
Coal PPA	50	2.9%
Natural Gas	935	55.1%
Hydro	16	0.9%
Wind PPA	255	15.0%
Total	1,696	100.0%



The following table and pie chart depicts the generation mix (where the energy came from) by type for year 2012.

Type	MWH	%	
Coal Owned	2,854,682	47.9%	
Coal PPA	311,472	5.2%	(53.17% Total Coal (Own + PPA))
Oil	4,842	0.1%	
Hydro	57,719	1.0%	
Wind PPA	895,238	15.0%	
Combined Cycle (natural gas)	1,197,335	20.1%	
Simple Cycle (natural gas)	294,821	5.0%	(25.1% Total Natural Gas (CC + SC))
Non-Contract Purchases	338,530	5.7%	
Total MWH NSO	5,954,639	100.0%	



A portion of renewable attributes are sold via renewable energy credits (RECs).

Existing Demand-Side Resources

Over the past few years Empire has offered a demand-side portfolio in each of the four states that it serves. Customer programs have been available in Missouri since mid-2006, Arkansas since October 2007, Oklahoma since early 2010 and on a pilot basis in Kansas since June 2010. The Kansas three-year energy efficiency pilot program concluded on June 30, 2013 with no plans of renewal. Currently, Empire has an energy efficiency cost recovery rider in all states with the exception of Missouri. In Missouri Empire has a pre-MEEIA energy efficiency cost recovery charge per KWh that was added to non-opt out customer bills effective April 1, 2013 (File No. ER-2012-0345).

Demand-Side Programs by State

Missouri	Arkansas
•High Efficiency Central Air Conditioner Rebate Program	•Arkansas Weatherization
•ENERGY STAR® New Homes	•High Efficiency Central Air Conditioner Rebate Program
•Home Performance with ENERGY STAR®	•Small Appliance Rebate program
•Low-Income New Homes	•Commercial and Industrial Rebate Program
•Low-Income Weatherization	•CFL Promotion
•Get Energy Active	•School Energy Education Program
•Commercial and Industrial Rebate Program	•On-line Tools and Resources
•Building Operator Certificate	
•Energize Missouri	
Oklahoma	**Kansas (Pilot Program Ends June 2013)**
•High Efficiency Central Air Conditioner Rebate Program	•High Efficiency Central Air Conditioner Rebate Program
•AC Tune-Up Program	•AC Tune-Up Program
•Low-Income Weatherization	•Low-Income Weatherization
•Commercial and Industrial Rebate Program	•Building Operator Certificate
	•Commercial and Industrial Rebate Program

5. Load Analysis and Load Forecasting

Empire has revised its load forecast methodology since the last IRP compliance filing in 2010. Following Empire's last IRP filing and the subsequent revision to the Commission's IRP rules, Empire presented a proposal covering the implementation of a new load forecast methodology to Empire's Advisory Group. This new forecast method can be described as a Statistically Adjusted End-Use (SAE) model for the Residential and Commercial classes. As part of the new forecast methodology, Empire's other customer classes rely on econometric models that include weather and economic drivers. The SAE models rely upon technology saturations and efficiencies developed by the Energy Information Administration (EIA). The SAE models also utilize weather, the price of electricity and economic drivers. The forecasts contain the impacts of existing DSM, increased efficiency standards as well as conservation trends, but exclude the impacts associated with future DSM.

Over the next 20 years (2013 to 2032), Empire's net system input is forecast to grow from 5,324 GWh to 6,285 GWh (about a 0.88% compound growth rate) and its net peak (managed peak) is forecast to grow from 1,179 MW to 1,378 MW (about a 0.82% compound growth rate) excluding the impact of future DSM. This forecast is developed using revenue class energy models, revenue class load profiles, and a system peak model. Load profiles are calibrated to both class energy and system peak forecasts resulting in both energy and coincident peak forecasts for all classes and the system. The forecast method employs historic load data from 2001 forward and historical weather data from the past 30 years. Combined with economic and end-use data, these data are used to develop econometric models which forecast through 2032. The forecasts have been developed by Itron, an Empire Load Forecast consultant, with the MetrixND and MetrixLT software.

As required by the IRP Rule, Empire has also produced two (2) additional normal weather load forecasts, a high-growth case and a low-growth case, that bracket the base load forecast; and an extreme weather forecast.

The following table and graph show the 2013 IRP base, high and low managed peak (demand) forecast for the IRP planning horizon. This includes the impacts of Empire's existing DSM. Also presented is Empire's base forecast less estimated future DSM based on the realistically achievable potential (RAP) case from Empire's preferred resource plan. The actual values in the graph are not weather normalized.

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Similarly, the following table and graph show the 2013 IRP base, high and low net system input (NSI) or energy forecast for the study horizon. This includes the impacts of Empire's existing DSM. Also presented is the base forecast less estimated future DSM based on the realistically achievable potential (RAP) case from the preferred resource plan. The actual values in the graph are not weather normalized.

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The major forecasting classes for this IRP are the Residential, Commercial and Other Industrial classes. The following graphs show the forecasted energy (NSI) and peak for these three major classes, with and without the estimated impacts of the realistically achievable (RAP) DSM portfolio.

Residential, Commercial and Other Industrial Energy Forecast

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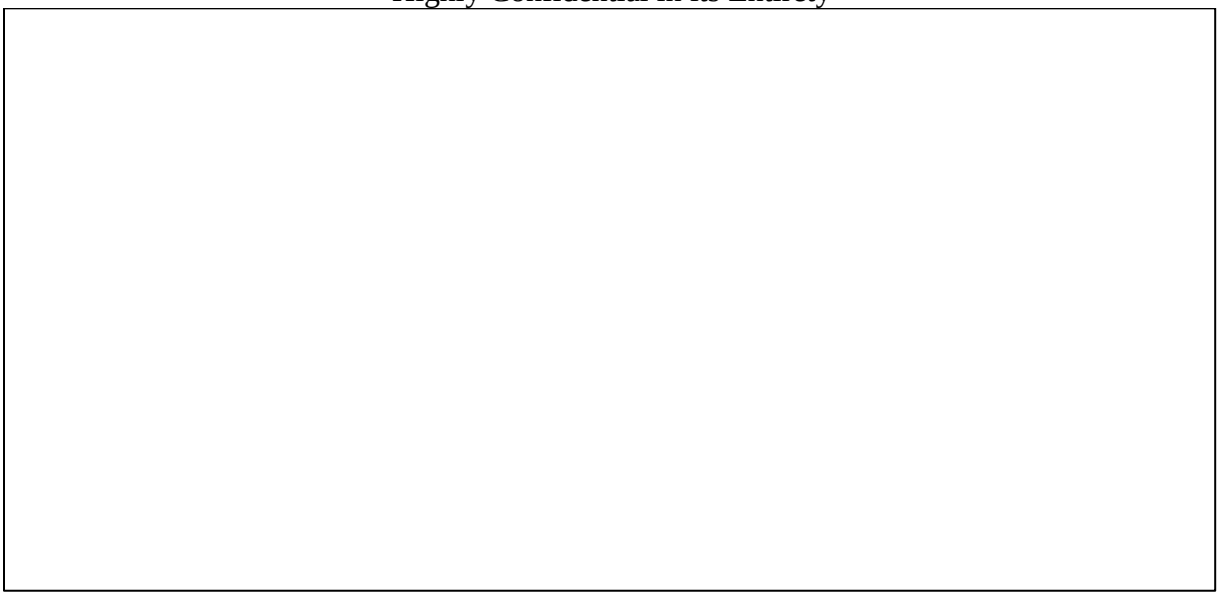

Residential, Commercial and Other Industrial Peak Forecast

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6. Supply-Side Resource Analysis

The supply-side resource analysis section of the IRP involves an analysis of the existing supply-side resources followed by the formation of a diverse list of candidate supply-side resources that the utility can reasonably expect to use, develop, or acquire during the planning horizon. The utility must also develop the assumptions associated with the candidate resources, such as capital costs, fuel and purchased power costs, probable environmental costs, fixed and variable O&M costs, transmission and distribution (T&D) costs and other operational data. A preliminary resource screening may be conducted. Empire developed screening curves but did not eliminate any candidate resources from consideration by the capacity expansion modeling. In other words, all supply-side candidates were passed on to the integration analysis phase of the IRP process for consideration.

The following chart shows Empire's existing supply-side resources. All unit ratings and environmental retrofit information described in this IRP represent ratings and assumptions in effect at the time the IRP was in the process of being completed. Units are rerated from time to time and all assumptions are subject to change.

Existing Supply-Side Resource	Primary Fuel	Current Rating EDE Share (MW)	Ownership Percentage
Asbury 1-2	Coal	203	100%
Iatan 1	Coal	85	12%
Iatan 2	Coal	102	12%
Plum Point (ownership)	Coal	50	7.52%
Riverton 7	Natural Gas	38	100%
Riverton 8	Natural Gas	54	100%
Riverton 9	Natural Gas/Oil	12	100%
Riverton 10	Natural Gas	16	100%
Riverton 11	Natural Gas	17	100%
Riverton 12	Natural Gas	142	100%
Energy Center 1	Natural Gas/Oil	82	100%
Energy Center 2	Natural Gas/Oil	82	100%
Energy Center 3	Natural Gas/Oil	49	100%
Energy Center 4	Natural Gas/Oil	49	100%
State Line 1	Natural Gas/Oil	94	100%
State Line Combined Cycle	Natural Gas	297	60%
Ozark Beach	Hydro	16	100%
Plum Point PPA	Coal PPA	50	
150 MW Elk River Wind Farm PPA	Wind PPA	7	
105 MW Meridian Way Windfarm PPA	Wind PPA	8	

Environmental Compliance Plan

In order to comply with forthcoming and recent environmental regulations, Empire is taking actions to implement its compliance plan and strategy (Compliance Plan). This Compliance Plan is already in action and largely follows the preferred plan presented in the 2010 IRP (EO-2011-0066) with an update to that IRP which was presented in Empire's 2012 IRP Annual Update (EO-2012-0294). The Compliance Plan calls for the installation of a scrubber, fabric filter, and powder activated carbon injection system at the Asbury plant (collectively referred to as the Asbury air-quality control system or AQCS) by early 2015 at a cost ranging from $112 million to $130 million. The Asbury plant, located near Asbury, Missouri consists of two coal-fired units totaling 203 MW. Unit 1 (189 MW) was installed in 1970 and Unit 2 (14 MW) was installed in 1986. The Asbury AQCS and turbine project is currently in progress as of the filing of this IRP. At the end of 2012 a new chimney and foundations for the project were in place. The addition of this air quality control equipment will require the retirement of Asbury Unit 2, a small 14 megawatt (MW) steam turbine that has been used for peaking purposes. The Compliance Plan also called for the transition of the Riverton Units 7 (38 MW) and 8 (54 MW) from operation on coal to full operation on natural gas. The transition to natural gas was accomplished in 2012 and the Riverton coal delivery/handling system has been retired. Riverton Units 7 and 8 last burned coal on September 18, 2012, ending a roughly 60-year run of coal-fired production from these two units and ending about a 107-year run of coal-fired production at the Riverton, Kansas site. As part of the Compliance Plan, Riverton Units 7 and 8, along with Riverton Unit 9, a small

combustion turbine that requires steam from Unit 7 for start-up, will be retired upon the conversion of Riverton Unit 12, a recently installed simple cycle combustion turbine, to a combined cycle unit. The conversion of Riverton 12 is currently scheduled for the 2016 timeframe and was included as a committed resource for this IRP compliance filing. This project is discussed in more detail in the next section.

Riverton 12 Combustion Turbine (CT) Conversion to Combined Cycle (CC)

Riverton Unit 12 is a natural gas-fired Siemens V84.3A2 combustion turbine that was installed at the Riverton power plant in Riverton, Kansas in 2007. It is currently rated at 142 MW for the summer peak season and it is primarily used as a peaking unit. When this unit was originally constructed adequate natural gas piping and electrical transmission were designed and built to accommodate its conversion to a combined cycle unit at some point in the future. The Riverton 12 project will add about 100 additional MW to the system, making the Riverton combined cycle around a 250 MW unit upon completion. The Riverton combined cycle project will utilize existing site infrastructure and will incorporate the existing Riverton Unit 12 combustion turbine as part of the combined cycle unit. A heat recovery steam generator (HRSG) will be installed along with a new steam turbine and a cooling tower to provide cooling water for the condenser. A new control room and control system will also be installed to operate the unit.

The Riverton 12 conversion to a combined cycle unit (Riverton combined cycle project) was considered as a candidate resource in the last IRP (2010 IRP). In all 17 plans that were studied in the last IRP, including the preferred plan, the Riverton combined cycle project was selected as the first supply-side resource addition. Following the 2012 IRP annual update, Empire evaluated another proposal for its 2016 resource need and met to discuss the proposal with interested members of the Advisory Group on February 6, 2013. In the application for waiver and extension regarding the 2013 IRP (EO-2013-0405), Empire agreed to further evaluate the supply-side resource proposal prior to completion of the 2013 IRP with the help of an outside consultant. Ventyx, an ABB Company (Ventyx), who was already retained by Empire for work on the 2013 IRP, conducted the 2016 resource analysis. As part of the agreement, Empire provided a statement of work for this study, and it was reviewed and amended by the interested parties. Ventyx performed the study by utilizing the 2013 IRP assumptions and the methodology reviewed by all parties in the scope of work statement as amended based on stakeholder input. A study report was supplied to the interested parties on April 5, 2013 and a meeting to discuss the results was held on April 23, 2013. The study showed that the Riverton conversion project was the lowest cost and lowest risk resource option for Empire for its 2016 resource need. In addition, there were several other key factors such as operational issues, transmission and congestion cost risks and unit age that favored the Riverton 12 conversion option. Empire concluded, and expressed to the interested parties, that the Riverton 12 conversion is the lowest cost 2016 supply alternative, should continue to be treated as a committed resource in its 2013 IRP and that Empire would move forward with the Riverton combined cycle project.

Empire worked with the engineering firm Black and Veatch (B&V) to develop a specification for the project to support the release of a request for proposal (RFP). The RFP was issued to six bidders in January 2013, and four bids were returned in response. Empire performed a rigorous evaluation of the bids, and after interviewing the two highest scoring proposals, is in the final selection and negotiation process. Empire has begun acquiring the necessary permits for the construction and operation of the Riverton Combined Cycle unit. At this time, construction is expected to begin in the summer of 2014, with the unit available for service in mid-2016.

Plum Point PPA Option to Convert to Ownership

The Plum Point Energy Station is a 665 MW, sub-critical coal-fired generating facility located near Osceola, Arkansas. Empire is a joint owner of the unit at the 7.52%, or approximately 50 MW level. In addition, since September 2010, Empire has a 30-year PPA for roughly an additional 50 MW of capacity from this unit and has an option to purchase an undivided ownership share of the 50 MW covered by the PPA in 2015. For purposes of this IRP, the Plum Point PPA was not converted to ownership in any of the plans studied. From a resource planning perspective, the capacity level would not be altered during the 20-year planning horizon of this IRP based on the decision to continue with the PPA versus converting to ownership.

During the IRP development process, Empire analyzed the option to purchase the 50 MW of Plum Point capacity currently under PPA. The analysis indicated that under certain circumstances the conversion to ownership was a low cost long-term supply-side option for Empire. The decision to exercise the purchase option also has to take into consideration undefined issues that were not reflected in the IRP modeling. While Empire intends to maintain an ownership interest in the plant for the life of the asset (i.e. well in excess of 30-years), risks of taking on an even larger ownership interest in the plant must be further analyzed. Several risk factors including the plant ownership structure, availability of operating personnel, operation by a third party, plant equipment redundancy, and availability restrictions due to location, make this plant unique when compared to Empire's other singly- and jointly-owned units. Empire must weigh the risks and costs associated with increased ownership, as well as the components of the purchase price, versus the guarantees and costs allowed in the PPA. Due to these uncertainties and other capital projects Empire is undertaking in the same timeframe, the timing of the conversion to ownership in 2015 may not be optimal. For these reasons, Empire will continue to explore options with the PPA holder, Plum Point Energy Associates.

Renewable Energy Standard (RES)

Empire operates in two (2) states, Missouri and Kansas, which currently have a renewable energy standard (RES) or Renewable Portfolio Standard (RPS) requirement that pertain to Empire. The Missouri requirement is based on a minimum percentage of renewable *energy*, while the Kansas requirement is based on a minimum percentage of renewable *capacity*. As the

optimal build outs were determined in the integration phase of this IRP, it was initially conducted based on lowest cost plan without regard to the RES mandates. Thus, Plan 1 in this IRP represents the baseline case without meeting the RES requirement. All other plans in this IRP were modeled to meet Empire's RES requirement (including Empire's solar exemption). The following table shows the current Missouri RES. It is based on a percentage of a utility's sales. Two percent of this requirement must be solar. However, Empire has an exemption from the solar requirement. Some or the entire requirement may be satisfied by the purchase of Renewable Energy Credits (RECs). Each eligible KWH of energy generated within the state of Missouri count as 1.25 KWH.

Missouri Renewable Energy Standard

Dates	RES Energy (no less than)
2011-2013	2%
2014-2017	5%
2018-2020	10%
Beginning in 2021	15%

There are risk factors associated with Empire's Missouri RES compliance. For example, in Missouri there has been an attempt to change the definition of "renewable energy" so that it would no longer include Empire's Ozark Beach hydro facility. To meet the RES requirements for this IRP, energy credits from Ozark Beach were included with the additional 0.25 bonus credits for Missouri-generated energy. Additionally, if Empire's solar exemption would be successfully challenged, Empire would need to meet the Missouri RES with two percent of the energy requirement from solar. If both of these issues transpire, they would raise the cost of Empire's RES compliant plans.

The following table represents the Kansas RPS requirement where the percent calculated is based on the average demand of the prior three years.

Kansas Renewable Portfolio Standard

Years	Utility Peak Capacity
2011-2015	10%
2016-2019	15%
2020 and onward	20%

Existing Units and the 2013 IRP

The analysis of the existing supply-side resources and current supply-side projects, some of which have been discussed in this section, has led to the existing unit parameters for this IRP. The following list summarizes these existing unit parameters for purposes of this IRP.

Summary of Existing Unit Parameters for the 2013 IRP

- Asbury air quality control system (AQCS) and turbine project
    - Scrubber, fabric filter, powder activated carbon injection system
    - Asbury Unit 2 (14 MW used as a peaking unit) will retire
    - Asbury 1 gains efficiencies and increases capacity from 189 MW to 194 MW
    - Expected completion in early 2015
- Riverton units transitioned to natural gas; Unit 7 (38 MW) and Unit 8 (54 MW)
    - Last date to burn coal was September 18, 2012
    - No costs to transition these units to burn natural gas only
- Riverton combined cycle (CC) project
    - Convert Riverton Unit 12 CT (142 MW) into a 250 MW CC unit
    - Adds about a net 100 MW to the system
    - 2016 timeframe
- Riverton unit retirements
    - Riverton units 7, 8 and 9 (104 MW total) retire in 2016 prior to the completion of Riverton CC project
- Plum Point PPA
    - For purposes of this IRP, this 30-year PPA is assumed to remain a PPA for the entire planning horizon
- Wind PPA
    - 150 MW Elk River 20-year PPA expires December, 2025; but can be extended 5 years at Empire's option
    - 105 MW Meridian Way 20-year PPA expires December, 2028
- Energy Center 1 (82 MW)
    - Assumed to retire for purposes of this IRP near the end of the planning horizon in 2032

Supply-Side Resource Candidates

As mentioned earlier, the 2013 IRP assumes that the Asbury AQCS project and the Riverton unit 12 conversion to a combined cycle unit are committed resources. Based on the existing portfolio, committed resources and the load growth assumptions, no new supply-side resources are required until sometime in the second half of the 20-year IRP study period. The following lists the conventional and renewable resources that were considered as candidate resources for future capacity needs in the integration phase of the IRP. Some but not all of these types of resources were selected for the various plans that were studied.

Summary of Supply-Side Resource Candidates for the 2013 IRP

- Super-Critical Coal
    - Joint-ownership
    - Power purchase agreement options (PPA)
    - With and without carbon capture and sequestration (CCS)

- Combustion Turbines (CT)
    - Aero-derivative CT
    - Frame CT
- Combined Cycle
    - With and without CCS
- Integrated Gasification Combined Cycle (IGCC)
- Reciprocating Internal Combustion Engine (RICE)
- Distributed Generation (DG)
- Small Modular Nuclear (SMN)
- Traditional Nuclear (only PPA options)
- Wind
    - Ownership
    - PPA Options
- Biomass
- Landfill Gas
- Utility Scale Solar photovoltaic (PV)

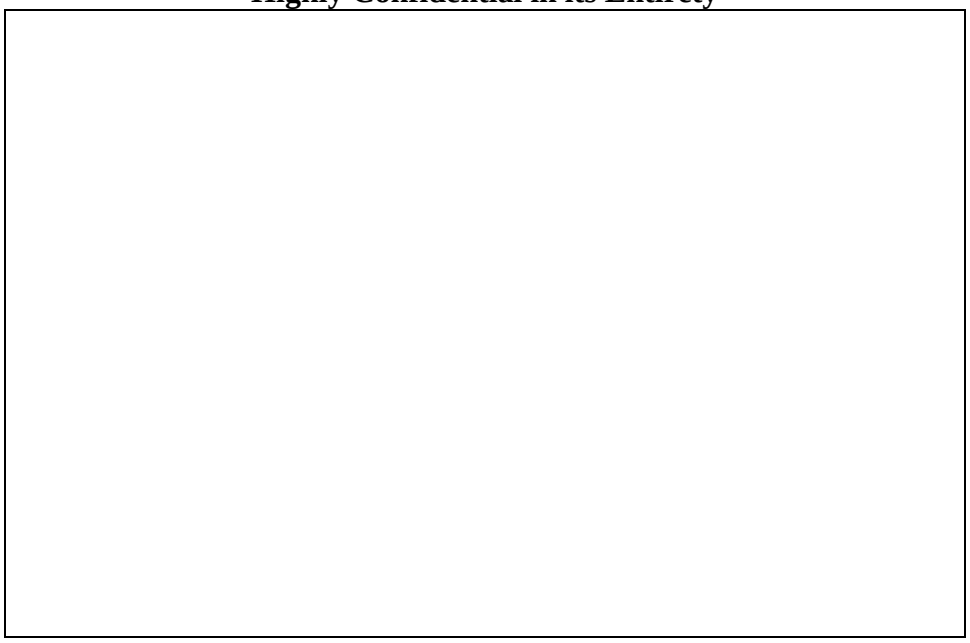
Fuel Price Forecasts

The coal price forecast for the first five years of the IRP for the Asbury, Iatan, and Plum Point facilities were derived by Empire fuel personnel and reflect contract knowledge over those years. The values for subsequent years use escalators based on the U.S. Department of Energy's Energy Information Administration's (EIA) June 2012 projections. Generic coal prices were based on Iatan and Plum Point prices. A base, high and low forecast was developed. Additional coal prices were developed to be consistent with the probable environmental cases.

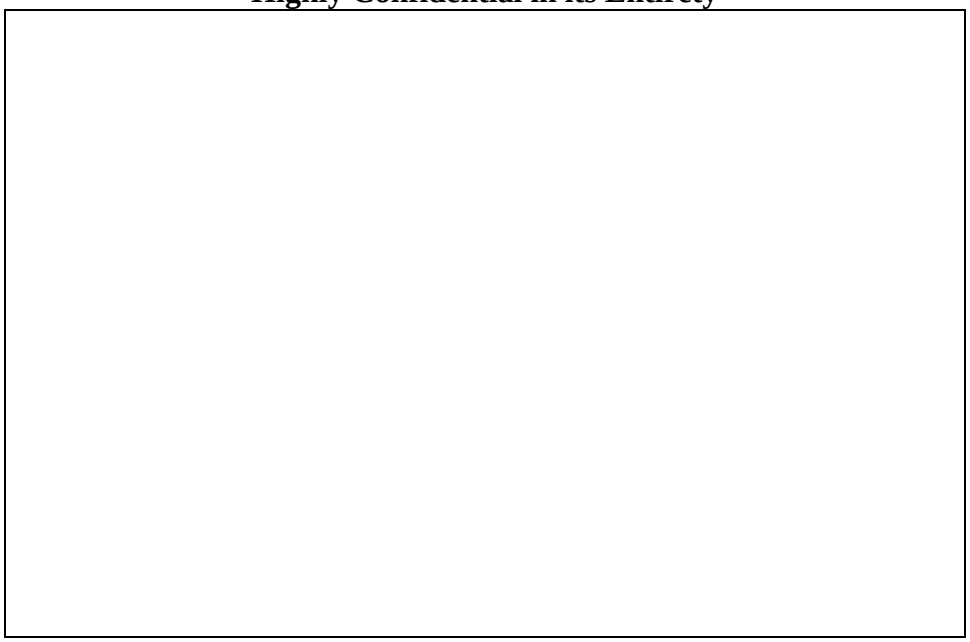
The Henry Hub gas price forecast used for this IRP was developed from the Ventyx Spring 2012 Power Market Advisory database. Ventyx used CO_2 projections starting in 2021 (Moderate) and 2015 (High) to develop correlated gas prices by using their integrated Power and Fuels Module. Base, high and low natural gas forecasts were developed for each of the probable environmental cases. The Henry Hub prices were adjusted to Southern Star Central Gas Pipeline (SSCGP) prices where Empire takes delivery. The SSCGP prices were used in the modeling. The following two graphs show the Henry Hub base, high and low forecasts for the base or no CO_2 scenario, and the Henry Hub Natural Gas Base Forecast for all three CO_2 Scenarios.

Fuel oil (No. 2 oil) prices for the IRP were also supplied by Ventyx. They were derived from The Ventyx West Texas Intermediate (WTI) Reference Case Forecast. Ventyx produces its WTI Reference Case based on NYMEX future prices for WTI Oil and Fuel Oil #2, product price relationships between fuel oils and long-term supply and demand analysis of the WTI and global crude oil markets.

Henry Hub Natural Gas Forecast for Base (No) CO_2 Scenarios (Nominal $/MMBtu)
****Highly Confidential in its Entirety****



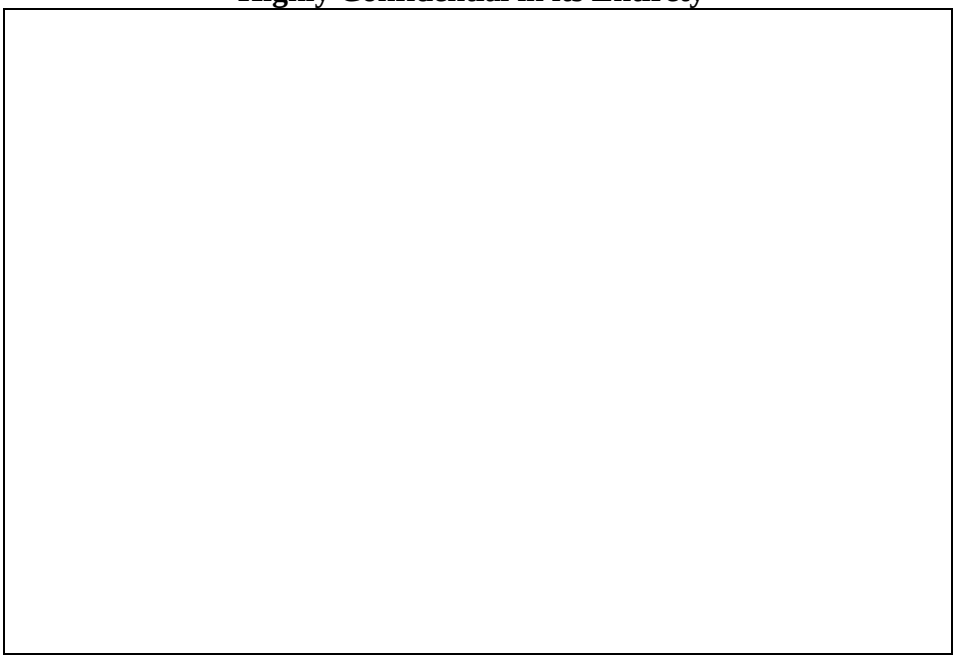
Henry Hub Natural Gas Base Forecast for CO_2 Scenarios (Nominal $/MMBtu)
****Highly Confidential in its Entirety****



Probable Environmental Costs

The IRP assumed three levels of possible future carbon cost scenarios. The descriptions and probabilities are: (1) the base environmental case assumed no future carbon cost during the planning horizon (50%); (2) the moderate environmental case assumed carbon costs would begin in 2021 (40%); and (3) the high environmental case assumed carbon costs would begin in 2015 (10%). The following graph shows the carbon emission cost for the three scenarios.

CO_2 Prices ($/Ton)
****Highly Confidential in its Entirety****

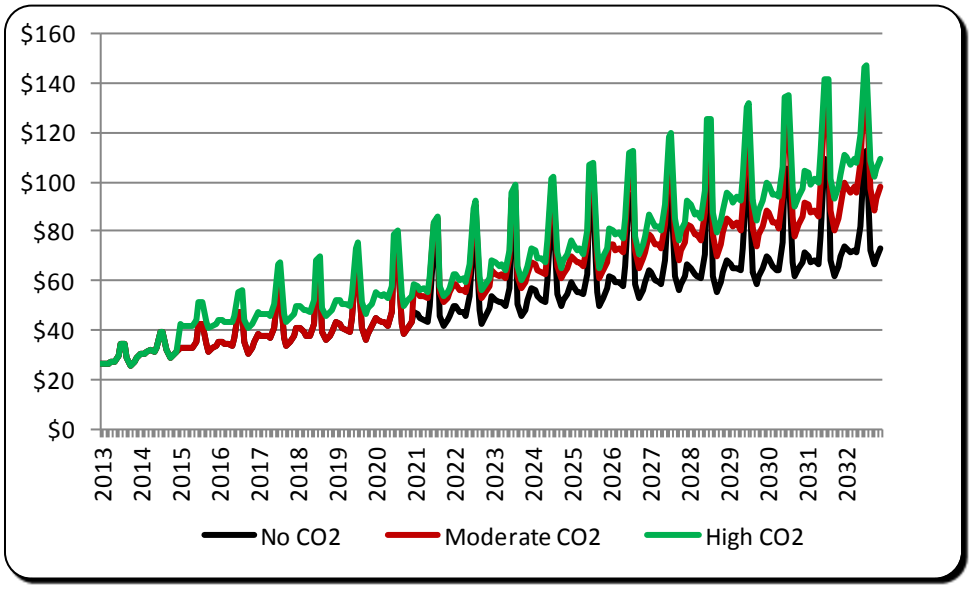


In addition to carbon emission costs, Empire also modeled emission cost allowances for NOx and SO_2 and adjusted these costs based on the environmental scenario in order to have internally consistent plans.

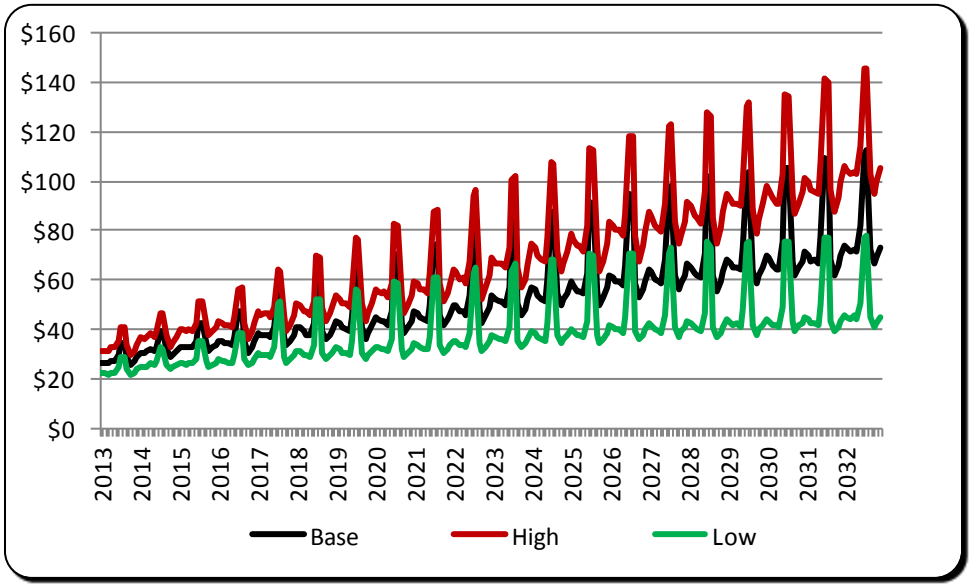
Market Price Forecasts

Ventyx generated a forward market view of the SPP-KSMO pricing hub specifically for the Empire IRP utilizing the most recent market information available. Prices were created for an 8,760 hourly view to generate prices on- and off-peak. The following figures illustrate Empire's price forecast for the base assumptions under the three environmental scenarios as well as for high and low fuel price uncertainty scenarios for each of the environmental scenarios.

SPP-KSMO 7x24 Base Market Prices for Environmental Scenarios (Nominal $/MWH)



SPP-KSMO 7x24 Market Prices for Base Environmental Scenarios (Nominal $/MWH)



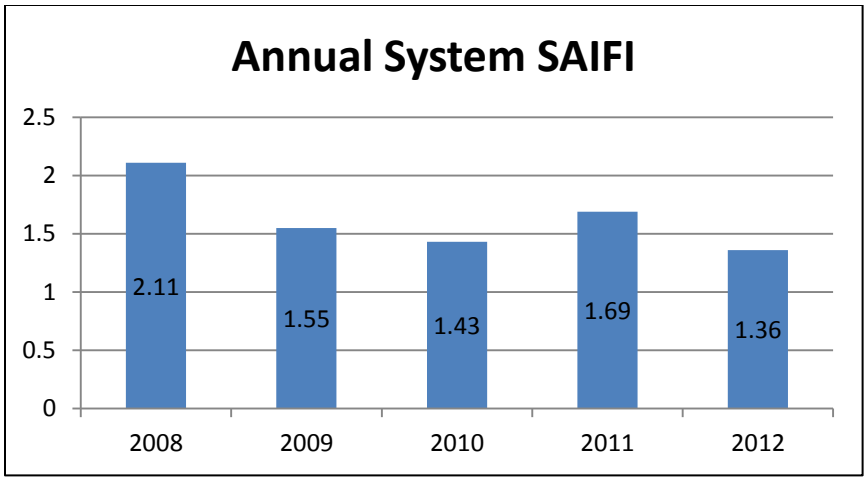
7. Transmission and Distribution Analysis

Transmission and distribution (T&D) analysis is a new IRP section introduced by the Commission's revised IRP Rule. It requires the utility to assess the adequacy of the existing T&D system; consider opportunities to reduce T&D losses; consider interconnection of new generation facilities; consider the potential incorporation of advanced T&D network technologies; develop avoided T&D capacity costs for demand-side analysis; and describe participation with the utility's regional transmission organization (RTO). Empire is a member of the Southwest Power Pool (SPP) and, as such, is reliant on the SPP's determination of which transmission lines will be built and on what schedule. As a member of SPP, Empire is assigned a cost sharing allocation of all lines that are built in the SPP. That cost allocation varies per line. The IRP filing describes and provides copies of the RTO transmission expansion plan; describe the utility-specific T&D projects; and identifies and describes any transmission projects under consideration by SPP for Empire's service territory.

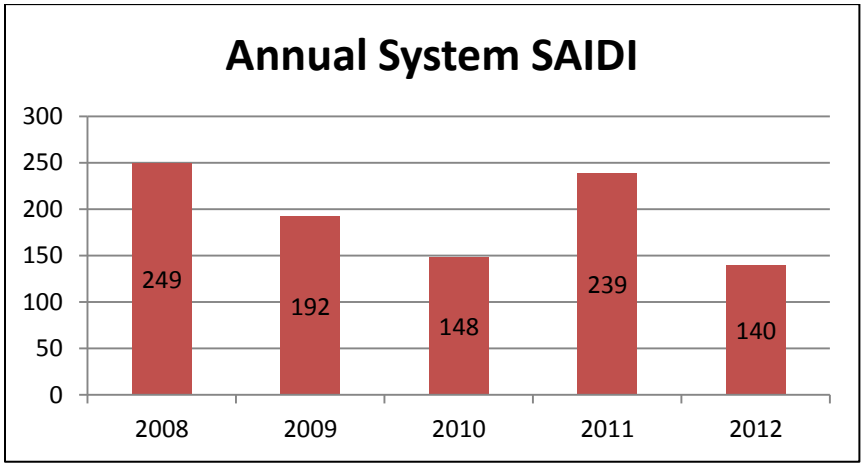
Project Operation Toughen Up

A long-term $100 million initiative known as Operation Toughen Up is currently in progress at Empire to strengthen the T&D delivery system. Operation Toughen Up is a multi-year effort, planned for 2012 through 2021 which encompasses much of the 20-year planning horizon considered by this IRP. During this time Empire will be performing a variety of upgrades to physical assets in the transmission and distribution areas to improve system performance. The objective is to improve reliability of Empire's electrical delivery system and shorten outage duration time as measured by reliability indices SAIDI and SAIFI. Empire's goal is to achieve a System Average Interruption Frequency Index (SAIFI) of 1.00 and a System Average Interruption Duration Index (SAIDI) of 100.

In 2012, Empire experienced an excellent year in terms of service reliability as illustrated in the graphs below. Since 2008, outage frequency has been reduced by more than 35 percent and outage duration has declined by over 43 percent. These positive results can largely be attributed to Operation Toughen Up coupled with enhanced vegetation management practices. Throughout the duration of Operation Toughen Up, Empire will continue to work toward the SAIDI and SAIFI goals.



SAIFI: an index of 1.3 means the average customer experienced 1.3 outages during the year.



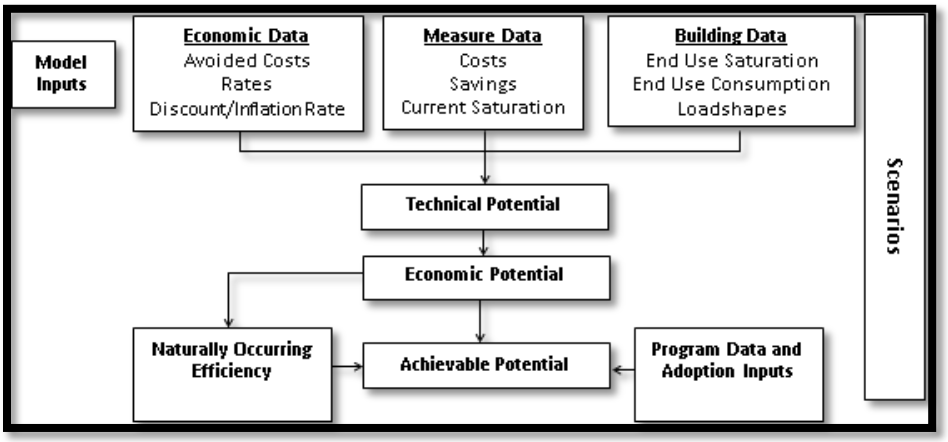
SAIDI: An index of 140 means the average customer experienced a total of 140 outage minutes during the year.

8. Demand-Side Resource Analysis

The demand-side resource analysis section of the IRP involves the development of candidate demand-side resources for all major classes and end-uses with the goal of achieving all cost-effective demand-side savings. The initial steps require a potential study which is an estimation of technical potential, economic potential, maximum achievable potential (MAP), and realistic achievable potential (RAP). The Commission's revised IRP rules require the utility to review DSM programs implemented by other utilities with similar characteristics and to consider jointly delivered programs and statewide marketing and to assess how advanced metering and distribution technologies can impact the delivery of DSM programs. The analysis shall also consider demand-side rates for each market segment to reduce consumption or modify the timing of use.

The generation of candidate DSM resources requires the development of avoided energy and capacity costs for the demand-side screening analysis. The total resource cost (TRC) is calculated to evaluate cost effectiveness and the utility cost test is calculated for comparison purposes. Cost effective alternatives are passed to the integration phase for consideration. For the demand-side portfolio that is part of the preferred resource plan, the utility designs a marketing and delivery plan. The analysis must also consider the uncertainty associated with the load impact of estimates of DSM.

Empire contracted with Applied Energy Group (AEG) to help with the IRP demand-side analysis. The following graphic helps to illustrate the conceptual overview of the Potential Study process.



High-Level Description of the Types of Demand-Side Potential

- **Technical Potential.** Total feasible savings using all efficient technologies and design practices, unconstrained by budgets or cost-effectiveness.
- **Economic Potential.** Feasible savings unconstrained by budgets, using only cost-effective efficient measures.
- **Achievable Potential**.
    - **Maximum Achievable Potential (MAP)**. Hypothetical upper-boundary of achievable potential, as it presumes ideal conditions not typically observed.
    - **Realistic Achievable Potential (RAP)**. Realistic savings targets a utility can expect to achieve through its demand-side programs.

The technical and economic potential were estimated utilizing a top-down approach. Annual technical and economic factors were gleaned from a 2010 Market Potential Study for Ameren Missouri. The maximum and realistic achievable potential were estimated utilizing cost-effectiveness screening and portfolio scenarios. A comprehensive list of DSM measures for residential and non-residential classes were screened for cost-effectiveness utilizing four (4)

different avoided energy cost scenarios based on the IRP probable environmental cost assumptions:

1. **Base Scenario:** assumes no carbon cost
2. **Moderate Scenario:** assumes carbon costs begin in 2021
3. **High Scenario:** assumes carbon costs begin in 2015
4. **Weighted Scenario:** weighted average of the cost scenarios assuming 50% Base, 40% Moderate and 10% High.

Measures were screened for cost-effectiveness (a total resource cost (TRC) of at least 1.0). Measures that were cost-effective on a stand-alone basis were bundled into DSM programs and rescreened for cost-effectiveness. Several DSM portfolio scenarios were considered based on the cost-effective measures. The following eleven (11) DSM portfolio scenarios were utilized in the 2013 IRP.

DSM Portfolio Scenarios in the 2013 IRP

1. **Base Portfolio (RAP) (assumes no carbon costs).** The realistically achievable portfolio (RAP) candidates that passed to the integration phase for all "base" no carbon scenarios. This portfolio was screened with the base environmental avoided costs which assumed no carbon costs in the planning horizon.

2. **Moderate Environmental Portfolio (assumes carbon costs begin in 2021).** The realistically achievable portfolio candidates passed to the integration phase for all "moderate" carbon scenarios. This portfolio was screened with the moderate environmental avoided costs.

3. **High Environmental Portfolio (assumes carbon costs begin in 2015).** The realistically achievable portfolio candidates that passed to the integration phase for all "high" carbon scenarios. This portfolio was screened with the high environmental avoided costs.

4. **RAP + Portfolio.** This portfolio is based on participation levels 1/3 between the base portfolio realistically achievable potential (RAP) and the maximum achievable potential (MAP).

5. **RAP ++ Portfolio.** This portfolio is based on participation levels 2/3 between the base portfolio realistically achievable potential (RAP) and the maximum achievable potential (MAP).

6. **Moderate Portfolio**. Alternative demand-side portfolio designed to achieve 1% incremental energy and demand savings by 2015. This portfolio was screened with the weighted avoided costs based on 50% base (no carbon costs), 40% moderate (carbon costs begin 2021) and 10% high (carbon costs begin 2015). This alternative was addressed in the Agreement reached in Empire's last IRP.

7. **Aggressive Portfolio**. Alternative demand-side portfolio designed to achieve 2% incremental energy and demand savings by 2020. This portfolio was screened with the weighted avoided costs based on 50% base (no carbon costs), 40% moderate (carbon costs begin 2021) and 10% high

(carbon costs begin 2015). This alternative was addressed in the Agreement reached in Empire's last IRP.

8. **Aggressive Capacity Portfolio**. Alternative demand-side portfolio designed to utilize only demand-side resources to meet future capacity needs. This constitutes the aggressive demand-side resource plan for planning purposes (required by the revised IRP rule 4 CSR 240-22.060 (3) (A) 3). This portfolio was screened with the weighted avoided costs based on 50% base (no carbon costs), 40% moderate (carbon costs begin 2021) and 10% high (carbon costs begin 2015).

9. **MEEIA Portfolio**. Alternative demand-side portfolio designed to achieve the MEEIA energy and demand savings goals, as outlined in 4 CSR 240-20.094. This portfolio was screened with the weighted avoided costs based on 50% base (no carbon costs), 40% moderate (carbon costs begin 2021) and 10% high (carbon costs begin 2015).

10. **RAP Minus (RAP -) Portfolio**. Alternate demand-side portfolio based on 55% of the RAP portfolio participation. This portfolio was developed to help address the uncertainty associated with the load impact estimates of DSM.

11. **No Additional DSM Case**.

Demand-Side Resource Candidates

The following list represents the demand-side resource candidates that were passed on to the integration phase for consideration. All of the demand-side resources were selected for the most aggressive demand-side cases. Other portfolios contained some, but not all of these resources.

- Residential Products (efficient lighting and appliances)
- Residential Appliance Recycling
- Residential High Efficiency HVAC
- Whole House Efficiency
- Home Energy Comparison Reports
- Low Income Weatherization
- Low Income New Homes
- School Kits (energy education)
- Residential Direct Load Control
- Residential Peak Time Rebate
- Residential Critical Peak Pricing
- Residential Solar (PV)
- Residential Wind Turbine
- Small Business Lighting
- Commercial & Industrial (C&I) Custom Rebate
- C&I Prescriptive
- Building Operator Certificate
- Interruptible Service Rider
- Commercial Direct Load Control

- Commercial Critical Peak Pricing
- Commercial Solar (PV)
- Commercial Wind Turbine

9. Integrated Resource Plan and Risk Analysis

Load forecasting, supply-side analysis and demand-side analysis represent the data development portion of the IRP process. Candidate resource options are passed on to the integrated resource analysis phase and combined with loads to determine a series of optimal resource plans, where the combinations of resources are designed to perform best under the plan's set of assumptions. Integrated Resource Plan and Risk Analysis can be summarized as follows:

- Design alternate resource plans (required plans and utility selected plans)
- A goal is to develop a set of alternate plans based on substantively different mixes of demand-side and supply-side resources and variations in timing to assess their relative performance
    - In other words, plans should have an appropriate combination of demand-side and supply-side resources
- Provide performance measures and financial ratios for each plan
- Select critical uncertain factors, document and assign subjective probabilities
    - Empire chose to utilize a decision tree approach (stochastic and deterministic analysis with the calculation of an expected value)
- Provide a statistical evaluation of risk

Alternate Resource Plans

Empire developed eighteen (18) resource plans for this IRP. This includes base plans, contingency plans and required plans. The plans to be studied in the integration phase can be categorized as follows:

- Base Scenarios
    - With and without RES requirements
    - Base DSM portfolio (RAP) and RAP+ and RAP++, RAP minus DSM portfolios
- Load Growth Scenarios
    - High and low
- Environmental Scenarios
    - High and moderate (with corresponding DSM portfolios)
- Fuel Cost Scenarios
    - High and low
- Additional DSM and renewable scenarios for planning purposes
    - Moderate, aggressive DSM (2), MEEIA level and no DSM
    - Aggressive renewable

The following table summarizes the 18 alternate plans.

Alternate Resource Plans

Plan	Plan Description	Plan Type	DSM Portfolio	RES Requirement	Carbon Costs for DSM Screening
1	Base Case	Base Plan	Base Portfolio (RAP)	None	None
2	Base Case (meets RPS)	Base Plan	Base Portfolio (RAP)	15 to 20% by 2021	None
3	Moderate Environmental	Other Contingency Plan	Moderate Env Portfolio (higher avoided costs)	15 to 25% by 2021	Begin 2021
4	High Environmental	Other Contingency Plan	High Env Portfolio (highest avoided costs)	15 to 25% by 2021	Begin 2015
5	RAP + DSM	Base Plan	Participation 1/3 between RAP & MAP	15 to 20% by 2021	None
6	RAP ++ DSM	Base Plan	Participation 2/3 between RAP & MAP	15 to 20% by 2021	None
7	Moderate DSM	Required Plan	Moderate (1% savings by 2015)	15 to 20% by 2021	Weighted
8	Aggressive DSM	Required Plan	Aggressive (2% savings by 2020)	15 to 20% by 2021	Weighted
9	MEEIA Level DSM	Required Plan	Designed to meet MEEIA savings goals	15 to 20% by 2021	Weighted
10	Aggressive Capacity DSM	Required Plan	Only DSM utilized to meet future capacity needs	15 to 20% by 2021	Weighted
11	No DSM	Base/Contingency Plan	None	15 to 20% by 2021	None
12	RAP - DSM	Base/Contingency Plan	55% of RAP participation	15 to 20% by 2021	None
13	High Fuel	Other Contingency Plan	Base Portfolio (RAP)	15 to 20% by 2021	None
14	Low Fuel	Other Contingency Plan	Base Portfolio (RAP)	15 to 20% by 2021	None
15	High Load	Other Contingency Plan	Base Portfolio (RAP)	15 to 20% by 2021	None
16	Low Load	Other Contingency Plan	Base Portfolio (RAP)	15 to 20% by 2021	None
17	High Fuel (no future coal)	Other Contingency Plan	Base Portfolio (RAP)	15 to 20% by 2021	None
18	Aggressive Renewable	Required Plan	None	Only renewables utilized	None

The Integration Process

Ventyx, an ABB Company (Ventyx) was retained by Empire to provide analytical services in support of the 2013 IRP. Ventyx and Empire undertook a detailed analysis of the performance of the resource plans. Multiple alternative resource plans with demand-side and supply-side "build outs" were developed with the Capacity Expansion Model (CEM). All plans were then subjected to full financial modeling including the calculation of net present value of revenue requirements (PVRR) in the Strategic Planning model powered by MIDAS Gold (MIDAS). Additionally, all plans were evaluated in the decision analysis phase, represented by a decision tree in the MIDAS model. From this modeling, a detailed risk analysis was performed for each of the 18 plans.

This process can be considered as a three phase approach. Both candidate demand-side and supply-side resources were considered as available resources in the IRP's integration process. During Phase 1 (capacity expansion modeling), specific optimized resource plans were developed based on the lowest present value of revenue requirements (PVRR) for each of the different scenarios with a capacity expansion model. Each set of resources were developed specifically to perform the best under the assumptions made about the possible future for each plan. These plans may not be directly comparable since the assumptions about the future may vary significantly between the plans.

In Phase 2 (deterministic analysis), each plan that was developed during Phase 1 was evaluated against the base case assumptions. Hourly dispatch of the units and full financial modeling was performed over the planning horizon. Deterministic PVRRs are calculated to compare plans against each other. In Phase 3 (stochastic/risk analysis), each plan was subjected to decision analysis (with the critical uncertain factors), again, with full financial modeling over the planning

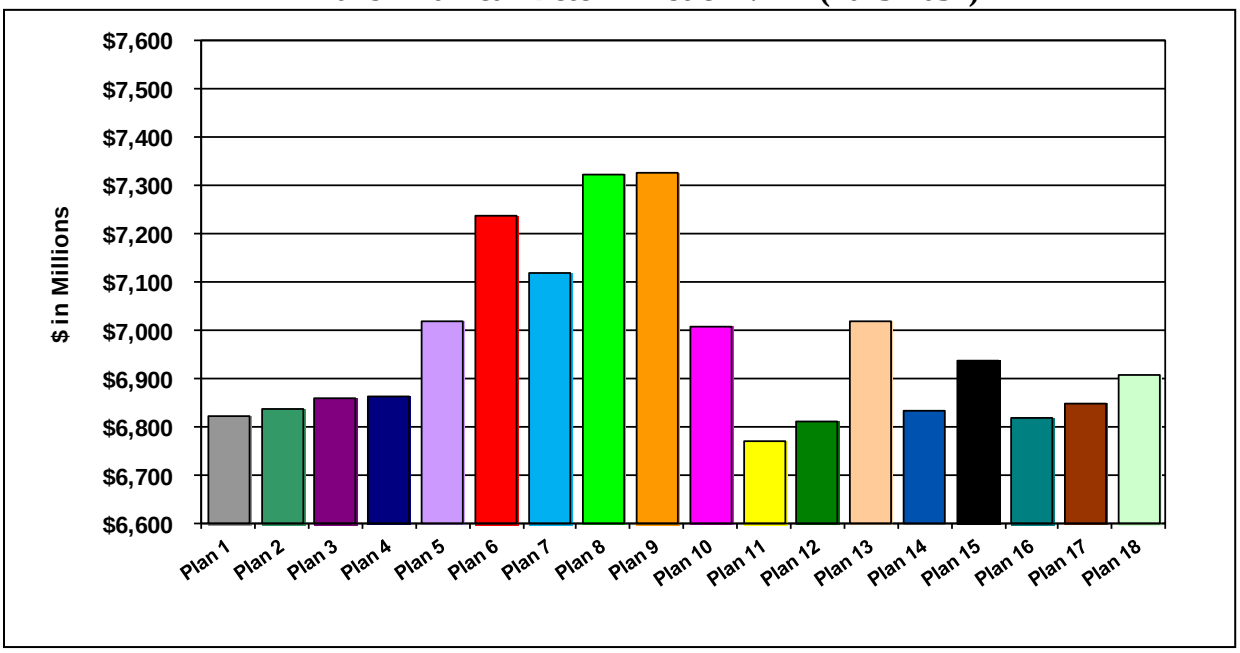
horizon. These stochastic runs generated 54 endpoints for each of the plans analyzed. The results from this phase were used to develop risk profiles and tornado charts across all plans. Ventyx performed risk analyses to evaluate Empire's portfolio under varying conditions, identifying a wide range of possible outcomes. All of these analyses and the objectives of the IRP Rule were considered by Empire's decision makers during the development of the preferred plan. The preferred plan represents a balance between the planning objectives, planning risks, and financial impacts examined using the deterministic, stochastic, and risk analyses.

The demand-side inputs were supplied to Ventyx from AEG. Ventyx developed load shapes for distributing energy savings for the integration modeling. The demand-side programs are essentially a modification to the load forecast inputs. The CEM model did not optimize demand-side resources. CEM optimized supply-side resources around the demand-side resource modified load. In addition to demand-side energy and coincident peak savings, AEG also provided all program costs and the information required to calculate a net shared benefit. The costs associated with the demand-side resources, including the net shared benefit, were input into the MIDAS model and assumed to be recovered in a timely manner through customer rates.

Present Value of Revenue Requirements (PVRR)

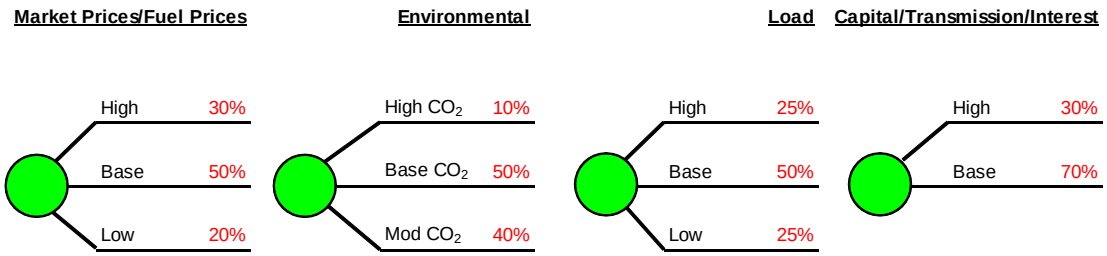
Minimization of PVRR is a primary criterion for the selection of the preferred plan. The following graph shows the PVRR of all 18 plans *utilizing the base assumptions* prior to introducing uncertainty represented by the decision tree (the deterministic case).

All Plans – 20 Year Deterministic PVRR (2013-2032)

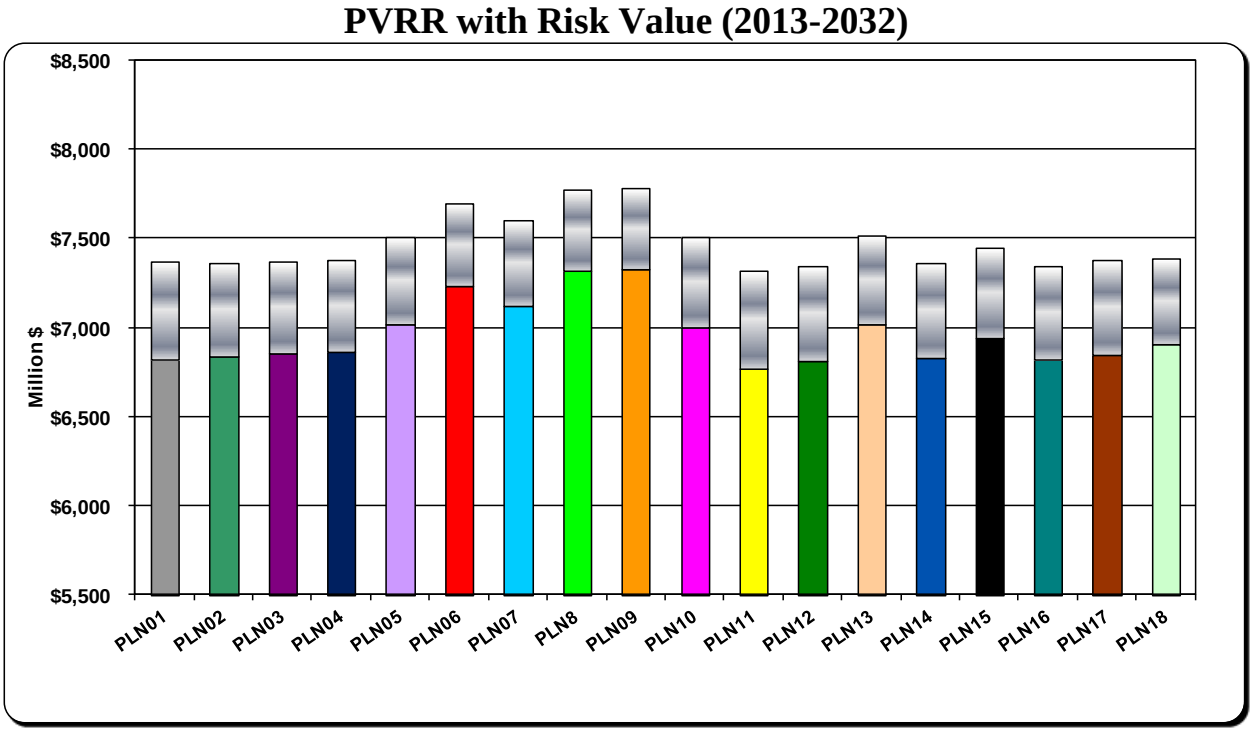


Critical Uncertain Factors

A critical uncertain factor is any uncertain factor that is likely to materially affect the outcome of the resource planning decision. The critical uncertain factors that Empire has identified include environmental costs, market prices/fuel prices, load, and capital/transmission/interest costs. As part of the normal course of business, these factors are monitored very closely by Empire personnel in coordination with senior management. It is important to consider how variations in these factors impact the plans.



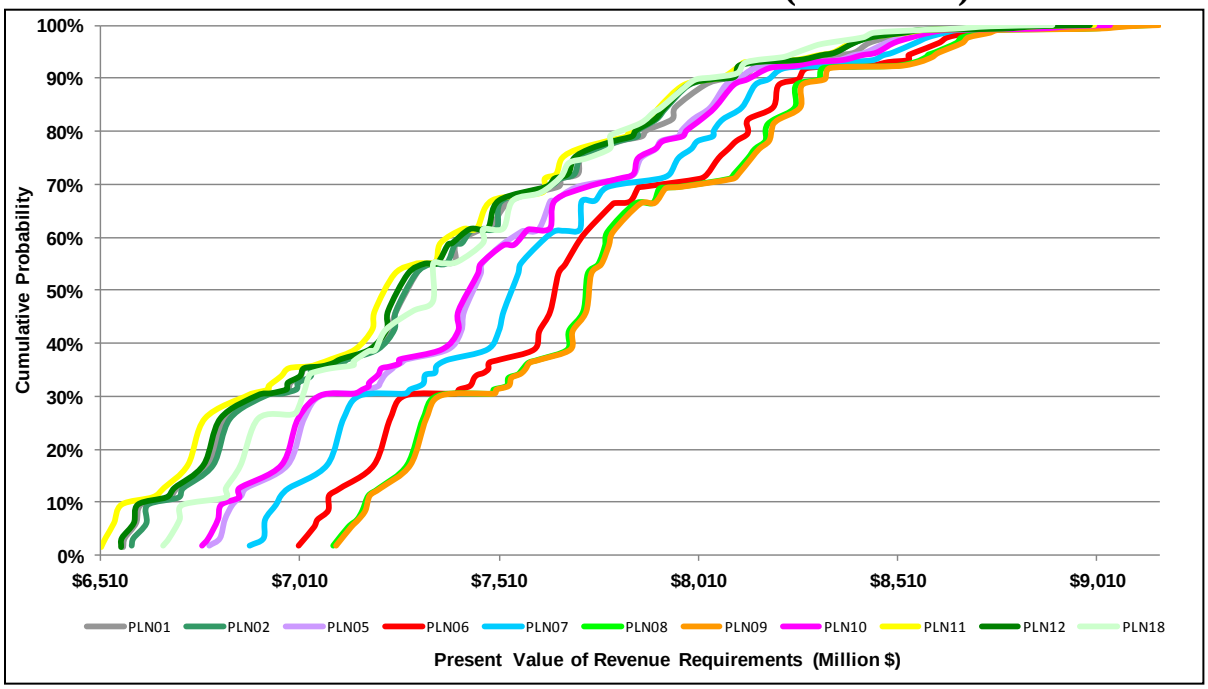
These critical uncertain factors form the nodes of the decision tree. Since the future is unknown, each plan is run through the decision tree generating 54 endpoints (or variable results) for each of the 18 plans for a total of 972 total endpoints. The subjective probabilities, or weighting, applied to each branch of the tree allow for the calculation of an expected value. The following graph expands on the previous PVRR graph by including a risk value representing the expected value of PVRR for each plan. This represents the stochastic case.



Risk Profiles

Ventyx utilized the MIDAS Risk Module to develop cumulative probability distributions which are also known as Risk Profiles. Risk Profiles provide the ability to visually assess the risks associated with a decision under uncertainty. From the following risk profile chart, one can view the risk profile to determine the probability that PVRR will be at a particular value and the range of outcomes.

All Base Scenarios – Risk Profiles (2013-2032)



10. Resource Acquisition Strategy Selection

This section of the rule requires the utility to select a preferred resource plan, document the process, develop an implementation plan, and officially adopt a resource acquisition strategy. The rule also requires the utility to prepare contingency plans. Empire's internal IRP team met on June 7, 2013 to review the results of the 2013 IRP and to select the preferred resource plan. Empire met with its IRP Stakeholder Advisory Group on June 17, 2013 to review Empire's preferred plan and the selection process.

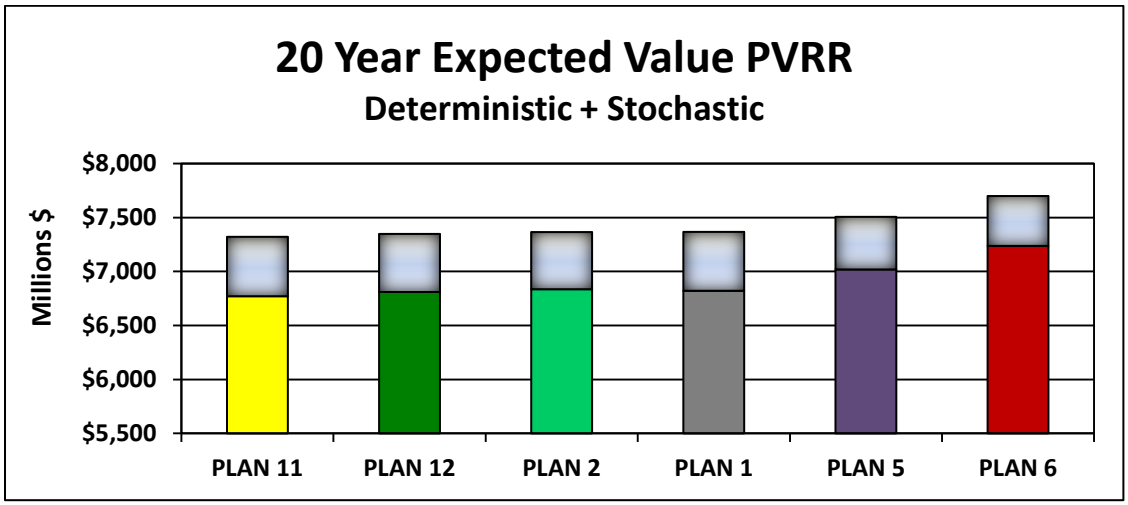
Preferred Plan Selection Criteria

All of the IRP analyses and the objectives of the IRP Rule were considered by Empire's decision makers during the preferred plan selection process. The preferred plan represents a balance between the planning objectives, planning risks, resource diversity, rate impacts and financial measures that were examined using the information generated by the deterministic, stochastic,

and risk analyses of this IRP. As reviewed by the Empire IRP team, the following summarizes the preferred plan selection guidance as supplied by the IRP Rule.

- Provide the public with energy services that are safe, reliable, and efficient, at just and reasonable rates, in compliance with all legal mandates, and in a manner that serves the public interest and is consistent with state energy and environmental policies
- Analyze demand-side, renewable energy and supply-side resources on an equivalent basis (subject to legal mandates)
- Minimize the present worth of long-run utility costs as the *primary criterion* in selecting a preferred plan
- Identify, analyze and document other considerations to the preferred plan selection such as risks associated with the critical uncertain factors, risks associated with new or more stringent legal mandates and rate increases
- Strike an appropriate balance between the various planning objectives
- Invest in advanced T&D technologies unless not in the public interest
- Utilize demand-side resources to the maximum amount that comply with legal mandates, and are consistent with the public interest and achieve state energy policies

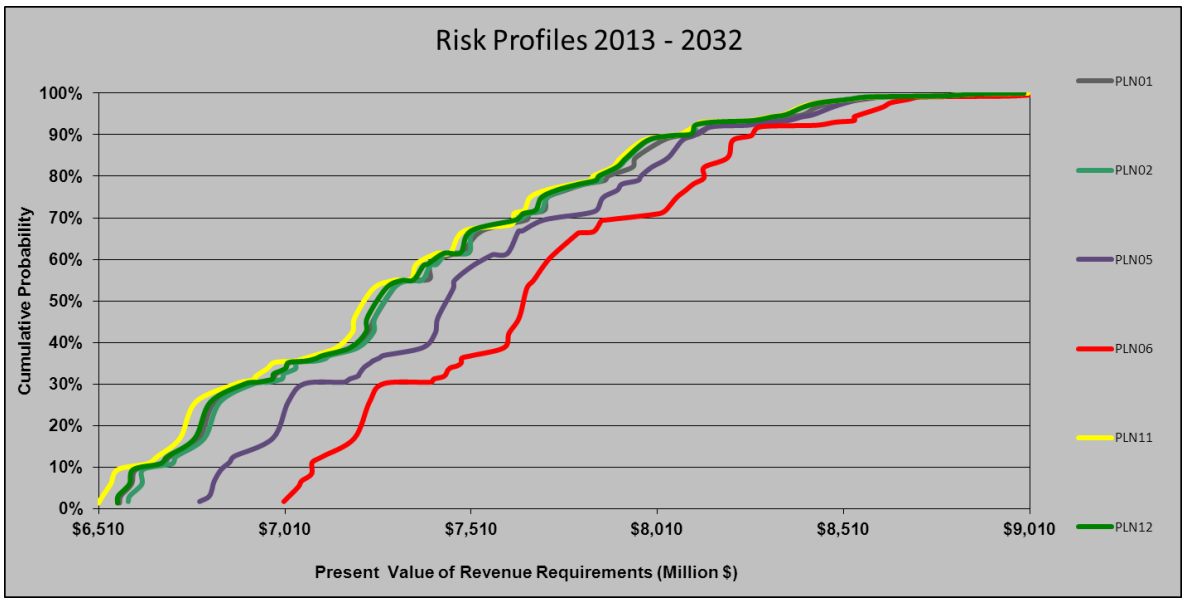
Since finding a low cost plan is a primary—but not the only—objective; Empire focused on a set of low cost plans that were variations of the base case plan and included a wide range of demand-side portfolios (RAP, RAP minus, RAP + and RAP ++ and no DSM) as shown in the graph below.



Plan	Base Plan Description
1	Base Case
2	Base Case (meet RPS)
5	RAP + DSM
6	RAP ++ DSM
11	No DSM
12	RAP minus DSM

Plan 1 (base case), while included among the group of low cost plans, was eliminated from preferred plan consideration since it did not meet the renewable energy standard (RES) requirements following the expiration of Empire's current wind PPA contracts near the end of the planning horizon. The plans with the highest levels of DSM—Plan 5 (RAP + DSM) and Plan 6 (RAP ++ DSM) were eliminated because they were the two highest cost plans from this group of plans. These plans were created to test for the "correct" RAP DSM level, but they do not appear to "fit" as well with Empire's system with the current IRP assumptions that includes low avoided energy costs due to low natural gas and market power prices; low avoided capacity costs; low load growth; and no uncommitted supply-side resource needs until the latter part of the study period.

Plan 11 (No DSM), Plan 12 (RAP minus DSM) and Plan 2 (RAP DSM) are all very close with regard to PVRR. More specifically, Empire looked at the difference in the 20-year PVRR among these plans and found that they were within 1% of each other. On a 40-year PVRR basis, the plans are all within 0.5% of each other. With all of the assumptions and future unknowns in an IRP process, the PVRR of these three plans can be judged to be nearly identical for preferred plan selection purposes. Additionally, these plans have similar rate impacts and similar risk profiles. The risk profile graphic for the plans considered is shown below.



Therefore, considering all of the preferred plan selection criteria, and attempting to strike a balance over all of the planning objectives, Empire has selected Plan 2 with the RAP DSM level as the preferred plan. Plan 12 (RAP minus DSM)—which contains the same demand-side programs, but lower customer participation levels to account for demand-side load impact uncertainty—and Plan 11, which contains no DSM, are considered contingency plans depending on the outcome of Empire's upcoming MEEIA filing.

Plan 2 contains the DSM portfolio that AEG screened as the realistic achievable potential (RAP) for Empire. Having some level of DSM with appropriate cost recovery increases resource diversity, is aligned with state energy policy and offers a better hedge against future environmental uncertainty as compared to a plan with no DSM. Additionally, Empire agreed to bring forward as part of a follow on MEEIA filing any cost effective realistic achievable potential (RAP) DSM portfolio from the 2013 IRP's preferred plan. Empire agreed to make the follow on MEEIA filing within 90 days of a meeting with the Advisory Group to Empire's IRP, unless agreed otherwise by the parties. Therefore, while Empire selects Plan 2 as the preferred plan in its 2013 IRP, the selection and implementation of the DSM included in the preferred plan and the demand-side investment mechanism (DSIM) required to support that level of DSM investment will be the subject of Commission review and approval in the upcoming MEEIA filing.

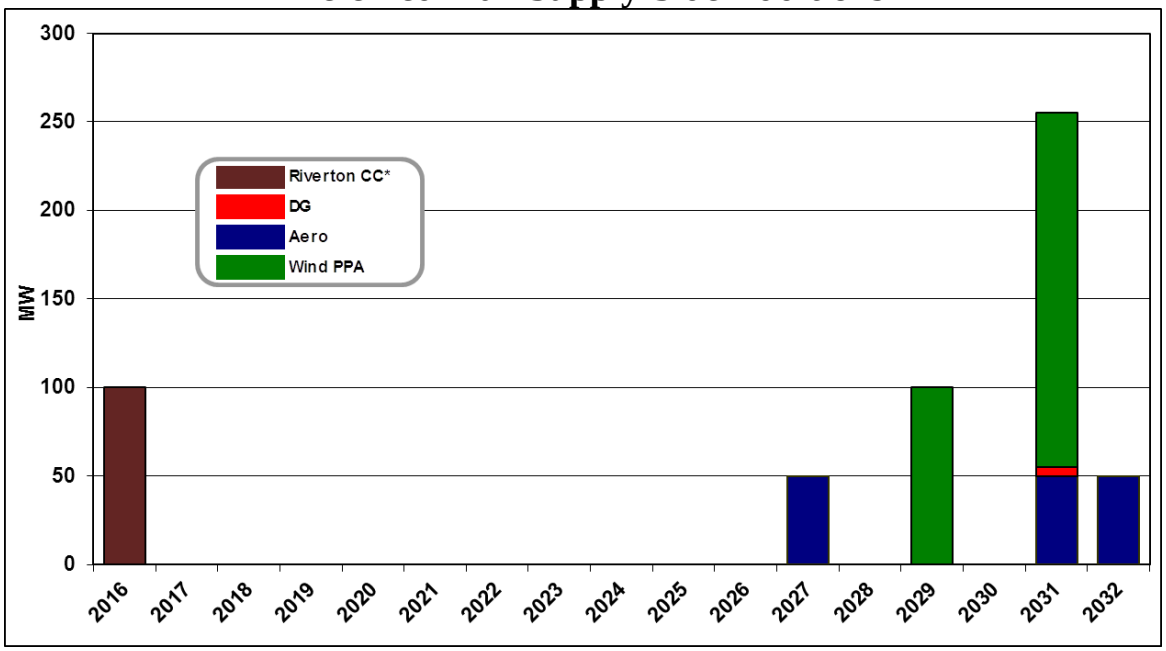
The Preferred Plan

Alternate Plan 2, which is the base case that meets the RES requirement, contains the RAP DSM portfolio and assumes no carbon costs over the planning horizon, is Empire's 2013 IRP preferred resource plan. The following table contains the highlights of the preferred plan.

Empire 2013 IRP Preferred Resource Plan Highlights		
Year	**Common to All IRP Plans (Applies to Preferred Plan)**	**Plan 2 (Preferred Plan Additions)**
2012	Transition Riverton 7-8 from coal operation to natural gas only operation (completed in September 2012)	
July-2013	file 2013 IRP	
Late 2013	MEEIA filing	
2014	Retire Asbury 2 coal unit (-14 MW with retirement)	RAP DSM portfolio implementation begins
2015	Complete Asbury unit 1 coal unit AQCS & turbine project (+ 5 MW expected)	
2016	Retire Riverton natural gas units 7, 8 & 9 (- 104 MW total with retirement); Complete the conversion of 142 MW Riverton 12 CT to a 250 MW combined cycle (estimated +100 MW addition)	
2017		
2018		
2019		
2020		
2021		
2022		
2023		
2024		
2025		
2026		
2027		50 MW Aero CT addition
2028	Meridian Way 105 MW wind PPA expires (estimated -5 MW with contract expiration based on 5% accredited capacity rating)	
2029		100 MW Wind PPA addition (estimated +5 MW based on 5% accredited capacity rating)
2030	Elk River 150 MW wind PPA expires after 5-year extension (estimated -8 MW with contract expiration based on 5% accredited capacity rating)	
2031		50 MW Aero CT addition; 5 MW Distributed Generation addition; 200 MW Wind PPA addition (estimated +10 MW based on 5% accredited capacity rating)
2032	Energy Center 1 CT assumed to retire for IRP purposes (-82 MW with retirement)	50 MW Aero CT addition

The following graph shows the preferred plan supply-side additions, including the committed Riverton combined cycle project.

Preferred Plan Supply-Side Additions



* The Riverton combined cycle (CC) will be approximately a 250 MW CC. The graph shows a net 100 MW approximate addition after incorporating the existing 142 MW Riverton 12 CT.

The preferred plan's DSM resources are contingent on the outcome of the MEEIA filing that is expected to be made in the last quarter of 2013. As planned, the new Missouri DSM portfolio would consist of the newly authorized DSM programs along with a continuation of some of Empire's existing DSM programs. In addition, Empire's Arkansas operations (about 4,300 customers) and Oklahoma operations (about 4,700 customers) have their own DSM portfolio designs in order to meet customer needs and individual state requirements. In Kansas a pilot DSM program recently concluded and at this time there are no plans to renew the DSM programs in Kansas.

The following list includes the preferred plan demand-side programs. Empire's 2013 IRP assumed that implementation of all programs would occur in year one, but the exact timing will depend on the outcome of the follow on MEEIA filing. At this point, it is assumed that the new Missouri DSM portfolio would be implemented in 2014.

- Residential Products (efficient lighting and appliances)
- Residential Appliance Recycling
- Residential High Efficiency HVAC
- Whole House Efficiency

- Low Income Weatherization
- Low Income New Homes
- School Kits (energy education)
- Small Business Lighting
- C&I Custom Rebate
- C&I Prescriptive
- Building Operator Certificate
- Interruptible Service Rider

The following table shows Empire's preferred plan demand-side program costs, projected energy savings and the projected impact on the system peak. The level of demand-side investment included in the preferred plan, which is expected to be recovered in rates, is about 4.5 to 5 times Empire's existing DSM investment. The DSM in the preferred plan also incorporates an increased emphasis on marketing and third party implementation experts to maximize participation.

Year	Program Costs	Energy Savings (MWH)	Coincident Peak (MW)
2013	4,922,467	18,614	5.98
2014	5,116,862	38,073	9.49
2015	5,227,787	54,840	12.85
2016	5,314,795	71,900	16.34
2017	5,326,030	88,967	19.84
2018	5,326,030	97,040	22.44
2019	5,330,545	104,981	24.96
2020	5,332,023	115,577	27.65
2021	5,306,088	121,208	29.98
2022	5,322,941	126,604	32.30
2023	5,316,221	131,431	34.46
2024	5,333,073	136,114	36.60
2025	4,918,353	140,683	38.70
2026	5,070,398	150,247	41.07
2027	5,087,251	159,799	43.45
2028	5,097,383	164,324	44.72
2029	5,097,383	167,234	45.71
2030	5,114,236	170,001	46.69
2031	5,131,088	171,823	47.21
2032	5,131,088	173,501	47.64

Implementation Plan

The implementation plan contains the descriptions and schedules for the major tasks necessary to implement the preferred resource plan over the implementation period, which is the time interval

between the triennial compliance filings. Thus, it can be considered a short-term implementation plan.

Supply-Side Implementation Plan

The only supply-side resources in the next three years involve the Compliance Plan outlined in section 6 of this report. This would include the Asbury AQCS and turbine project (and the retirement of Asbury 2) and the conversion of Riverton 12 to a combined cycle (and the retirements of Riverton 7, 8 and 9).

- **Riverton Project**

    - In September 2012 the use of coal at Riverton units 7 and 8 was discontinued, and those units are now fired exclusively on natural gas.
    - Monitor carbon dioxide (CO_2) best available control technology (BACT) permitting requirements in the States of Kansas and Missouri and at the Federal level as they relate to permitting the conversion of the Riverton 12 combustion turbine to a combined cycle unit.
    - Undertake a study and collect bids to develop project scope and cost for either decommissioning or dismantling Riverton 7 and 8.
        - In order to develop a scope and determine future costs, Empire will have a study performed considering two alternatives – decommissioning or dismantling. Decommissioning would involve performing the required hazardous material abatement, rendering the facility inoperable and leaving the structure and equipment in place for an indeterminate period of time. Dismantling would involve hazardous material abatement, sale or salvage of equipment, demolition of the structures and finishing of the site.
    - Empire has begun permitting for the Riverton Unit 12 Combined Cycle conversion and expects to receive a final permit in the summer of 2013. Empire personnel will continue to manage the permit process and monitor construction to assure compliance.
        - Among the regulatory agencies having jurisdiction are the Kansas Department of Health and Environment; the U.S. Environmental Protection Agency; the Kansas Division of Water Resources; the Kansas Department of Wildlife, Parks and Tourism; the U.S. Fish and Wildlife Service; and the U.S. Army Corps of Engineers.
    - Empire worked with Black & Veatch (B&V) in 2012 to develop a specification for the Riverton combined cycle project to support the release of a request for proposal (RFP). The RFP was issued to six bidders in January 2013, and four bids were returned in response. Empire performed a rigorous evaluation of the bids, and after interviewing the bidders with the two highest scoring proposals, is in the final selection and negotiation process.
    - Riverton construction is expected to begin in the summer of 2014, with the unit available for service in mid-2016.

- At the time the Riverton Unit 12 Combined Cycle enters commercial operation, Riverton 7, 8 and 9 will be retired.

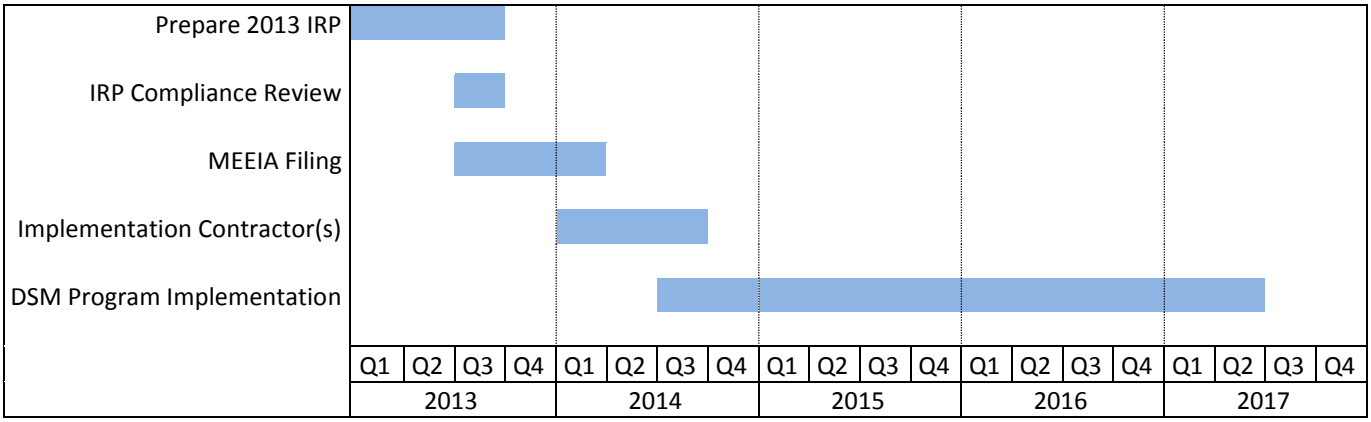
- **Asbury Project**

  - The Asbury AQCS and turbine project is underway.
    - In January 2012, Empire entered into a contract with a joint venture formed by Alberici Constructors and Stanley Consultants for the construction of an AQCS, consisting of a circulating dry scrubber, pulse jet fabric filter and powder activated carbon injection system. This system of equipment will allow Asbury to continue operating in compliance with pending environmental regulations. Construction is in progress, and completion is anticipated in early 2015.
    - Asbury unit 2 will retire in late 2013 or early 2014, so that it's generator step up transformer can be used to supply energy to the AQCS.
    - In the 2014 outage to complete the AQCS tie-in, Empire will install upgraded turbine hardware that will increase the turbine output. This will partially compensate for the retirement of unit 2 and the increased auxiliaries associated with the operation of the new AQCS equipment.
    - Empire contracted with Aquaterra to complete an ash impoundment study to determine potential locations and associated construction and operating and maintenance costs for a new Asbury and/or Riverton landfill to address Empire's existing and future Coal Combustion Residuals (CCR).
      - Based on Aquaterra's report and further study, Empire has moved forward on development of a new CCR landfill at Asbury. A parcel of land adjacent to the plant property was purchased, and site investigations have commenced. Assuming a favorable outcome on the permitting process, the landfill should be available to receive CCR in the third or fourth quarter of 2016.

Demand-Side Implementation Plan

Empire and AEG have prepared a demand-side implementation plan that specifies major tasks, schedules and milestones necessary to implement the preferred demand-side management portfolio over the three-year implementation period. The implementation may be modified, depending on the outcome of this IRP and subsequent MEEIA filing. There is a level of uncertainty surrounding the MEEIA filing, including the Commission's approval of the DSM portfolio and the recovery of DSM costs and benefits. This uncertainty could impact the DSM implementation timeline and Empire's ability to move forward with the proposed DSM Portfolio. Due to the uncertainty around the upcoming MEEIA filing, Empire's DSM implementation schedule will remain flexible. The following table shows a high-level anticipated implementation schedule.

Anticipated Demand-Side Implementation Schedule



At this time, the preferred plan DSM portfolio implementation is assumed to begin on June 1, 2014. The proposed DSM Portfolio is comprised of a combination of new and existing programs. However, the existing programs have updated incentives, participants and budgets. Implementation of the proposed DSM Portfolio will require the selection of implementation contractors (anticipated 3 to 6 months). Once the DSM tariffs have been approved by the Commission, Empire will work with the implementation contractors to finalize the program design, develop a marketing plan and determine a reporting schedule. The implementation contractor will primarily be responsible for:

- Designing and executing marketing materials.
- Establishing and maintaining relationships with trade allies/retailers/etc.
- Processing incentives.
- Tracking program data.

Empire will develop a system for monitoring the progress of the DSM Program implementation. At a minimum, the implementation contractors will provide quarterly status reports for the DSM Advisory Group meetings. Empire will engage an EM&V contractor(s) to conduct a process and impact evaluation of the program. Process evaluations will be conducted for each program at the end of the first year and will examine program processes, customer awareness and retailer/customer satisfaction with the program. Impact evaluations will be conducted during the second or third year of the program and will determine the program's energy and demand impacts and the program's market effects. Empire and the DSM Advisory Group may identify additional evaluations. Additionally, AEG has developed implementation guidelines for each program.

Preferred Plan Performance Measures

As required performance measures of the preferred resource plan for each year of the planning horizon are presented. This includes the following: estimated annual revenue requirement;

estimated level of average retail rates and percentage of change from the prior year; and estimated company financial ratios.

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11.The IRP Planning Horizon 2013-2032

Planning for future resources in the electric utility industry involves the consideration and evaluation of many uncertainties. Those uncertainties have increased in number and magnitude over the last several decades. With long-term planning and potential for change, it is difficult and a bit daunting to attempt to forecast the future for the next twenty years. Therefore, the IRP filing is reevaluated once every three years; the process involves the consideration of risk and uncertainty; contingency plans are required; and utilities consider resources that they can reasonably expect to use, develop, or acquire during the planning horizon at the time the study is performed. The following is a list of some, but not all of the important factors that may play a significant role in resource planning over the next twenty years:

- Climate change
- The future of coal generation
- Carbon capture and sequestration
- Environmental regulatory requirements
- Nuclear power technologies
- Advanced T&D technologies

- Plug-in hybrid electric vehicles
- Energy efficiency resource standards
- Decoupling or other rate mechanisms
- Battery storage
- Horizontal drilling and hydraulic fracturing to access shale gas
- State or Federal mandates
- Commission decisions
- Solar generating technologies
- Other emerging technologies

As required, Empire's 2013 IRP considers a twenty-year planning horizon. With all of the uncertainties discussed above, the resource planning process is a difficult and complex task. The IRP process, while rigorous, is built on a large set of planning assumptions that are always changing. The plan is subject to the ongoing need to reevaluate modeling assumptions based on changing business conditions. The plans presented in this IRP are based on the best information available at the time that the analysis was conducted. It is a plan. Requests for proposals, further analysis, and, in some instances, regulator support are needed to turn aspects of the plan into actual projects.