VOLUME 1

EXECUTIVE SUMMARY

KANSAS CITY POWER & LIGHT COMPANY (KCP&L)

INTEGRATED RESOURCE PLAN

4 CSR 240-22.010

APRIL, 2015

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SECTION 1: INTRODUCTION

The fundamental objective of the resource planning process 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 and is consistent with state energy and environmental policies. This objective requires that the utility shall:

- Consider demand-side resources, renewable energy, and supply-side resources on an equivalent basis
- Use minimization of the present worth of long-run utility costs as the primary selection criterion
- Identify and where possible, quantitatively analyze any other considerations which are critical to meeting the fundamental objective of the resource planning process

1.1 IRP REPORT STRUCTURE

Nine (9) separate volumes comprise this IRP filing:

1. Volume 1: Executive Summary
2. Volume 2: Missouri Filing Requirements including 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

9. Volume 8: Filing Schedule and Requirements

1.2 IRP DEVELOPMENT

In developing the IRP filing, KCP&L has endeavored to meet all requirements of Missouri's IRP rules covered under 4 CSR 240-22. KCP&L's IRP spans the 2015-2034 planning horizon. Data necessary to complete evaluations were derived from recognized industry sources, consultants, publications and other sources as appropriate. Data sources are noted in the text of the report or in the appendices of a volume.

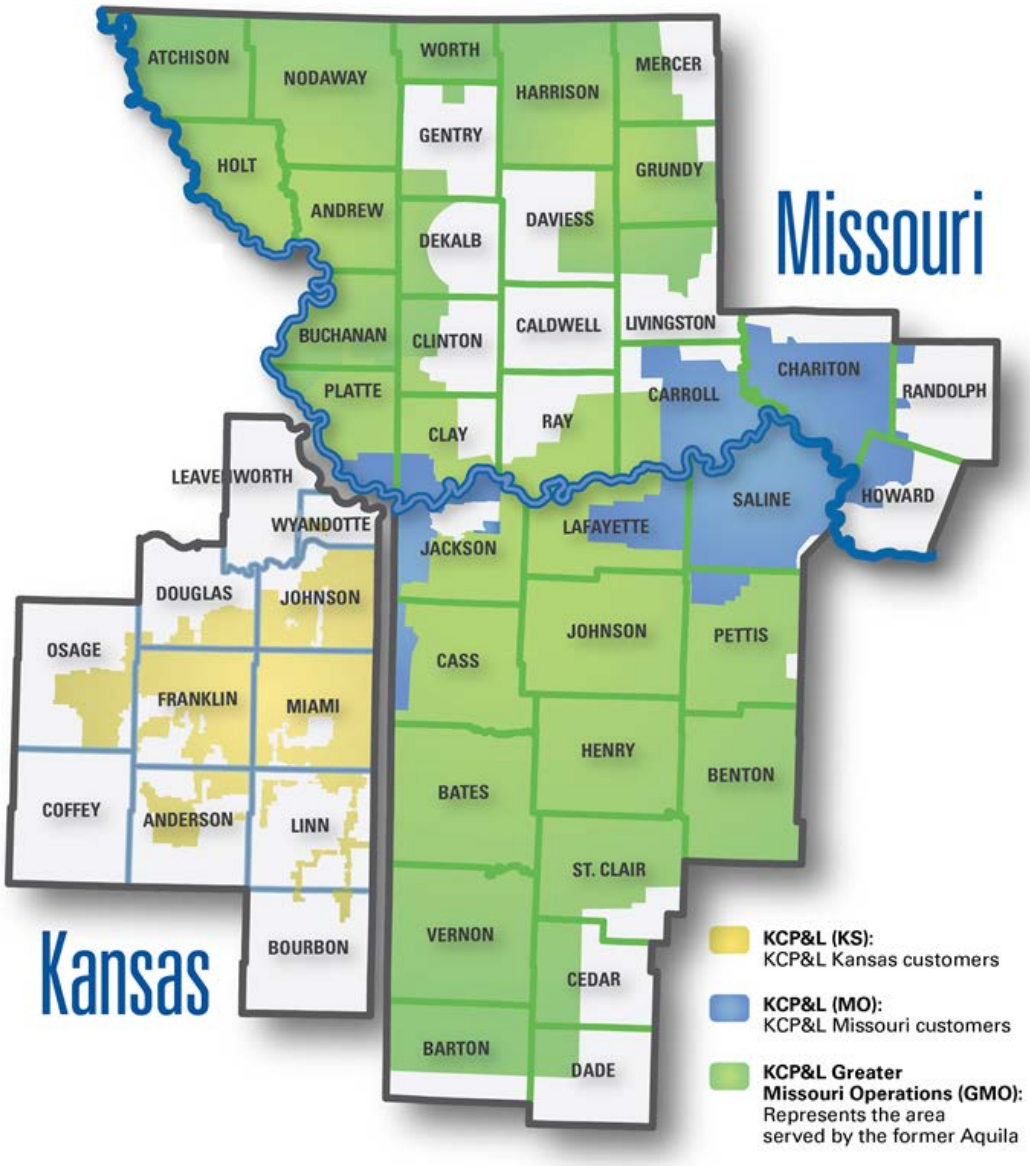
Several distinct tasks are included in the planning process:

- A detailed forecast of future demand and energy requirements
- An assessment of Supply-Side resource alternatives
- An assessment of Demand-Side resource alternatives
- An assessment of Transmission and Distribution alternatives
- Integrated Analysis evaluates the economics of various combinations of demand-side and supply-side alternatives that are developed as alternative resource plans over the planning timeline
- Risk Analysis provides a comparison of the range of economic results for the alternative resource plans due to identified critical uncertain factors
- The adoption and executive approval of a Resource Acquisition Strategy that includes a preferred resource plan, implementation plan, and contingency plans

SECTION 2: KCP&L SYSTEM OVERVIEW

KCP&L is an integrated, mid-sized electric utility serving the metropolitan region surrounding the Kansas City, Missouri metropolitan area including customers in Kansas and Missouri. A map of the Great Plains Energy (GPE) service territory which includes KCP&L is provided in Figure 1 below:

Figure 1: GPE Service Territory



KCP&L is significantly impacted by seasonality with approximately one-third of its retail revenues recorded in the third quarter. Table 1 provides a snapshot of the number of customers served, retail sales, and peak demand from 2014.

Table 1: 2014 Customers, Retail Sales, and Peak Demand

Jurisdiction	Number of Retail Customers	Retail Sales (MWh)	Net Peak Demand (MW)
KCP&L-Missouri	272,798	9,086,509	1,833
KCP&L-Kansas	246,175	6,397,289	1,605
KCP&L	518,973	15,483,798	3,412

KCP&L owns and operates a diverse generating portfolio and Power Purchase Agreements (PPA) to meet customer energy requirements. In June 2014, GPE signed a contract for a Power Purchase Agreement with EDF Energies for the output of a 150 MW wind farm named Slate Creek, located in Sumner and Cowley counties in Kansas. This new wind facility is expected to be on-line by the end of 2015, and at this time has been assigned to KCP&L. Table 2, Figure 2, and Figure 3 below reflect KCP&L's generation assets including all executed wind PPAs currently in place.

Table 2: Capacity and Energy By Resource Type

Resource Type	Capacity (MW)	% of Total Capacity	Estimated Energy (MWh)	% of Annual Energy
Coal	2,691	52%	16,657,929	69%
Nuclear	549	11%	4,076,020	17%
Oil	375	7%	0	0%
Nat. Gas	808	15%	155,574	1%
Wind	730*	14%	2,993,481	12%
Hydro	62	1%	181,326	1%
Solar	0.2	0.003%	140	0.001%
Total	5,215	100%	24,064,470	100%
*Nameplate Capacity				

Figure 2: Capacity By Resource Type

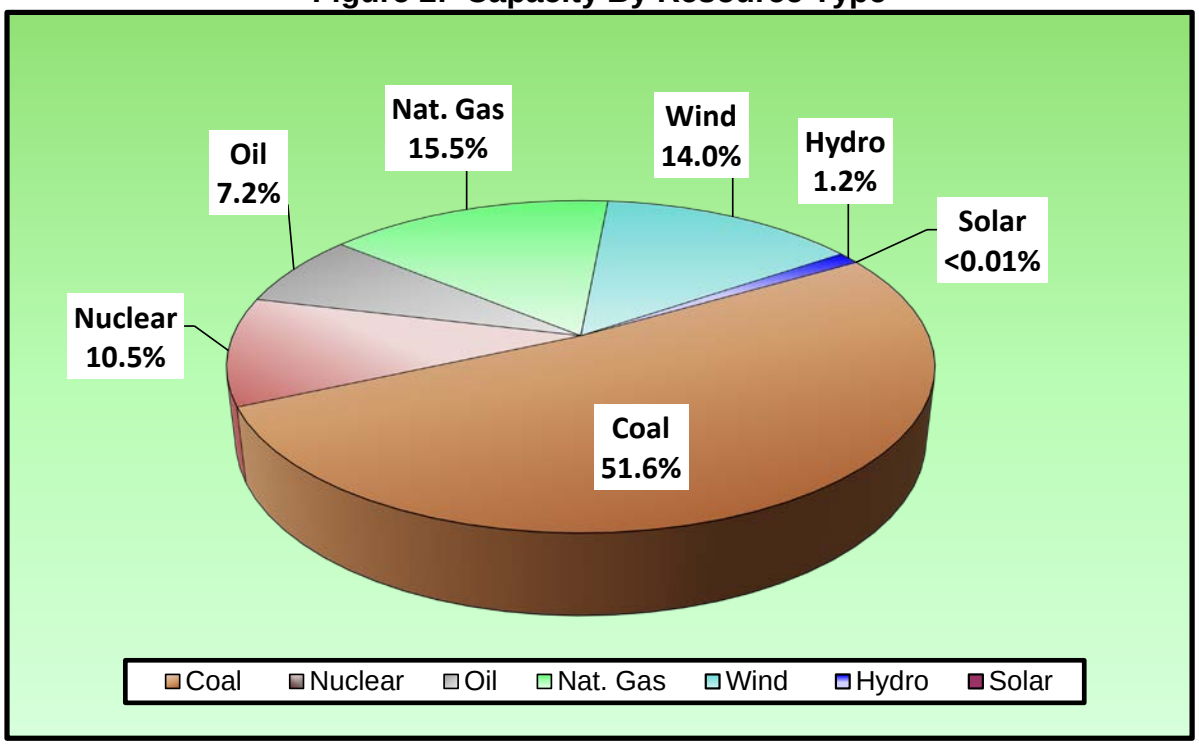
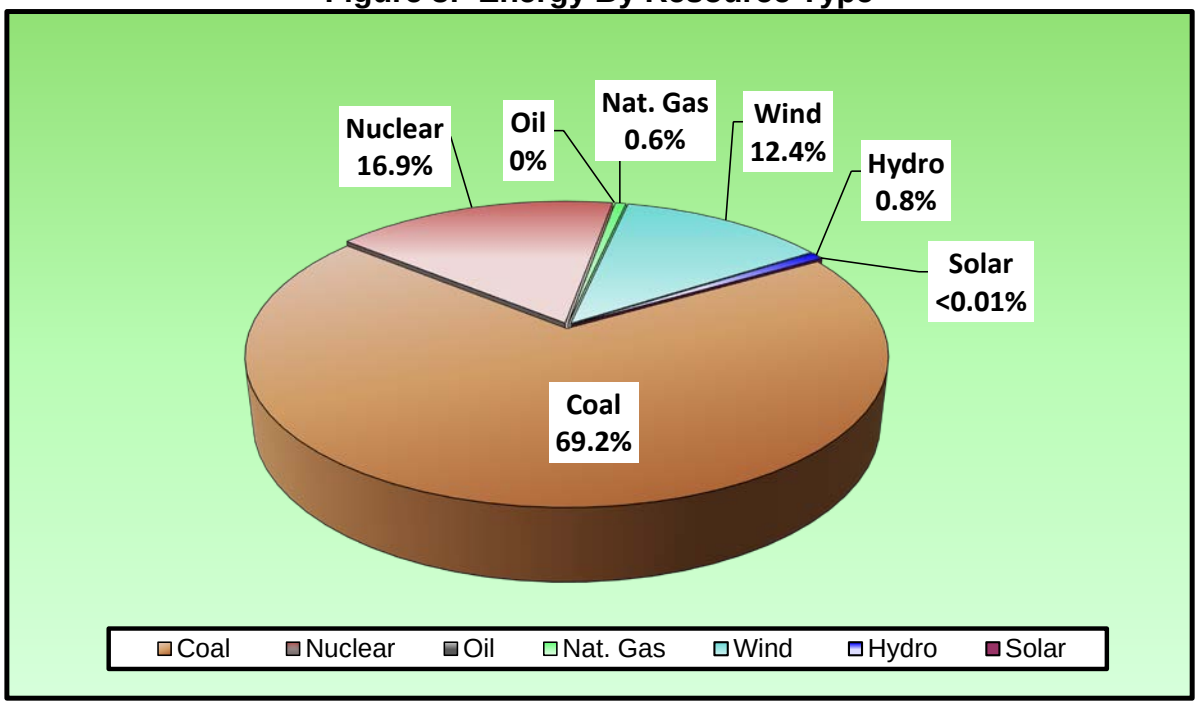


Figure 3: Energy By Resource Type



Additionally, GPE owns and operates a delivery system consisting of 3,700 miles of transmission lines, 22,400 miles of distribution lines, and 400 substations.

SECTION 3: LOAD FORECAST INFORMATION

2. For each major class and for the total of all major classes, the base load forecasts for peak demand and for energy for the planning horizon, with and without utility demand-side resources, and a listing of the economic and demographic assumptions associated with each base load forecast;

KCP&L used detailed end-use information along with statistical techniques to construct its load forecast. End-use information was obtained from KCP&L/GMO's semiannual appliance saturation surveys and from results published by the US Department of Energy (DOE) for the West North Central Midwest region. This information was used to construct end-use level forecasts of electricity sales based on economic forecasts of key drivers specific to the Kansas City metro area. Load was forecasted separately for each tariff group in each utility.

The forecasts of economic drivers was obtained through a contract with Moody's Analytics and include the number of households, population, personal income, gross metro product (GMP), manufacturing GMP, total employment, manufacturing employment, and the consumer price index (CPI). These drivers were provided for three scenarios that were used to construct base, high and low scenarios for KCP&L's load forecasts.

The end-use forecasts were calibrated to monthly billing statistics. Heating, cooling and base loads from the end-use models were each calibrated to optimize the ability of these forecasts to explain the monthly billing data. These calibrated models were then used to forecast monthly electric energy sales. Using load research data collected from a sample of KCP&L's customers, this end-use forecast was allocated to each hour of the forecast period and peak demands were determined from these results.

The load forecast used in the IRP was prepared using actual sales data through July 2014 and an economic forecast produced in June 2014.

Table 3 and Figure 4 summarize the forecast of energy sales and Net System Input (NSI) for KCP&L (including Kansas and Missouri) by rate class. Gross energy includes the impacts of energy efficiency and demand side management (DSM) program measures and thus represents actual energy sales. Net energy includes the impacts of future company programs. Neither gross nor net energy includes the impacts of programs that the company might adopt in the future as these are determined in the process for balancing supply and demand, discussed in a later section of this report. The energy sales shown in all but the last two columns are billed sales at the customers' meter. The last two columns show NSI, which includes line losses and company use and which represents the amount of generation and purchased power needed to serve the load of KCP&L. Sales for Resale (SFR) represents firm sales to other utilities under a FERC rate.

Growth rates are highest for the Residential class, 1.0%, between 2014 and 2035, and the lowest is Big Commercial (Medium General Service, Large General Service),0.3%.

Table 3: KCP&L Energy with and without DSM Impacts (GWh) **Highly Confidential**

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Figure 4: KCP&L System Energy **Highly Confidential**

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Table 4 reports the peak demands by rate class. These numbers include line losses and company use. The growth rates between 2014 and 2035 show Residential growing at 1.1% on the high side and Big Commercial on the low side at 0.3%.

Table 4: KCP&L Peak Demand with and without DSM Impacts (MW) **Highly Confidential**

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Figure 5 summarizes the forecast of peak demands by year for KCP&L.

Figure 5: KCP&L System Peak **Highly Confidential**

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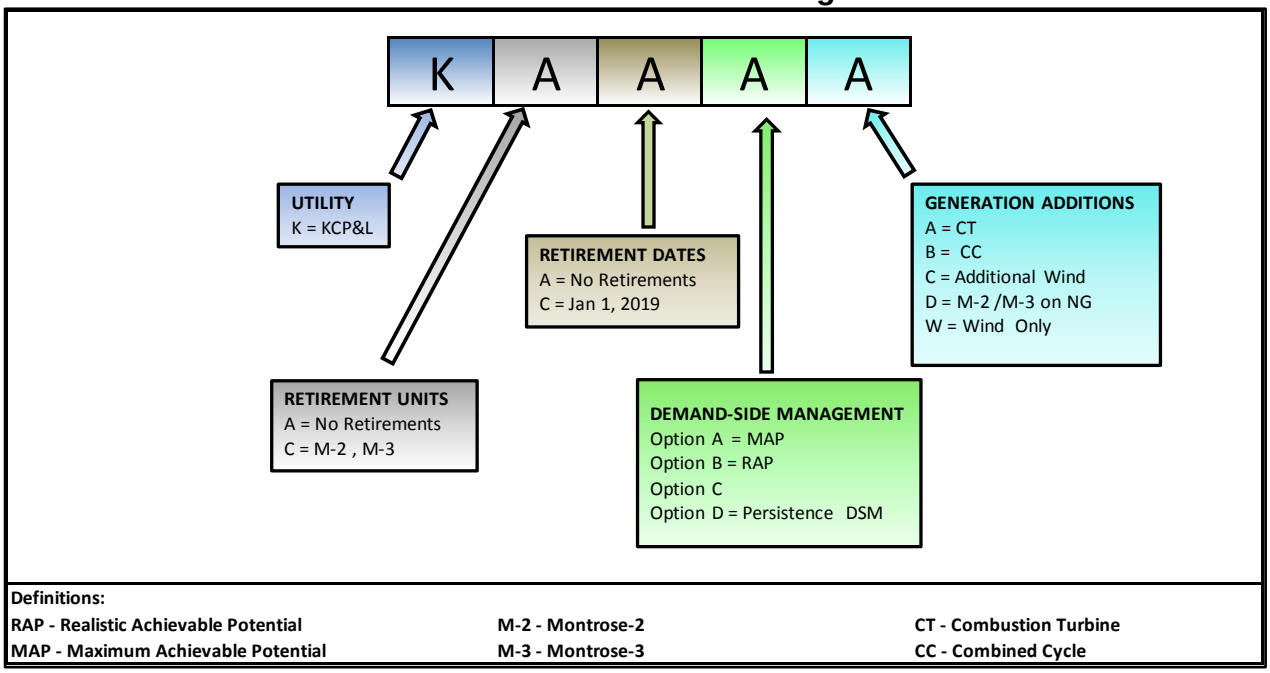
SECTION 4: PREFERRED RESOURCE PLAN SELECTION

4.1 ALTERNATIVE RESOURCE PLAN DEVELOPMENT

3. A summary of the preferred resource plan to meet expected energy service needs for the planning horizon, clearly showing the demand-side resources and supply-side resources (both renewable and non-renewable resources), including additions and retirements for each resource type;

Alternative resource plans were developed using a combination of various capacities of supply-side sources, demand-side resources resource addition timing. The plan-naming convention utilized for the alternative resource plans developed is shown in Table 5 below:

Table 5: Alternative Resource Plan Naming Convention



In total, fifteen Alternative Resource Plans were developed for integrated resource analysis. Table 6 through Table 9 represents an overview of each plan over the 2015 through 2034 planning period.

Table 6 : Alternative Resource Plans

Plan Name	DSM Level	Facility	Year to Cease Burning Coal	Renewable Additions		Generation Addition (if needed)
KAAAA	Option A - MAP	Montrose-1 Montrose-2 Montrose-3	2016 2021 2021	Solar: 2016 - 3 MW 2026 - 7 MW	Wind: 2016 - 350 MW 2017 - 300 MW	n/n
KAAAC	Option A - MAP	Montrose-1 Montrose-2 Montrose-3	2016 2021 2021	Solar: 2016 - 3 MW 2026 - 7 MW	Wind: 2016 - 350 MW 2017 - 400 MW	n/n
KAAAD	Option A - MAP	Montrose 1 Convert to NG: Montrose-2 Montrose-3	2016 2019	Solar: 2016 - 3 MW 2026 - 7 MW	Wind: 2016 - 350 MW 2017 - 300 MW	n/n

Table 7: Alternative Resource Plans (continued)

Plan Name	DSM Level	Facility	Year to Cease Burning Coal	Renewable Additions		Generation Addition (if needed)
KAABA	Option B - RAP	Montrose-1 Montrose-2 Montrose-3	2016 2021 2021	Solar: 2016 - 3 MW 2026 - 7 MW	Wind: 2016 - 350 MW 2017 - 300 MW	n/n
KAABC	Option B - RAP	Montrose-1 Montrose-2 Montrose-3	2016 2021 2021	Solar: 2016 - 3 MW 2026 - 7 MW	Wind: 2016 - 350 MW 2017 - 400 MW	n/n
KAABD	Option B - RAP	Montrose 1 Convert to NG: Montrose-2 Montrose-3	2016 2019	Solar: 2016 - 3 MW 2026 - 7 MW	Wind: 2016 - 350 MW 2017 - 300 MW	n/n
KCCBA	Option B - RAP	Montrose-1 Montrose-2 Montrose-3	2016 2019 2019	Solar: 2016 - 3 MW 2026 - 7 MW	Wind: 2016 - 350 MW 2017 - 300 MW	n/n

Table 8: Alternative Resource Plans (continued)

Plan Name	DSM Level	Facility	Year to Cease Burning Coal	Renewable Additions		Generation Addition (if needed)
KAACA	Option C	Montrose-1 Montrose-2 Montrose-3	2016 2021 2021	Solar: 2016 - 3 MW 2026 - 7 MW	Wind: 2016 - 350 MW 2017 - 300 MW	207 MW CT in 2029
KAACB	Option C	Montrose-1 Montrose-2 Montrose-3	2016 2021 2021	Solar: 2016 - 3 MW 2026 - 7 MW	Wind: 2016 - 350 MW 2017 - 300 MW	200 MW CC in 2029
KAACC	Option C	Montrose-1 Montrose-2 Montrose-3	2016 2021 2021	Solar: 2016 - 3 MW 2026 - 7 MW	Wind: 2016 - 350 MW 2017 - 400 MW	207 MW CT in 2030
KAACD	Option C	Montrose 1 Convert to NG: Montrose-2 Montrose-3	2016 2019	Solar: 2016 - 3 MW 2026 - 7 MW	Wind: 2016 - 350 MW 2017 - 300 MW	n/n
KAACW	Option C	Montrose-1 Montrose-2 Montrose-3	2016 2021 2021	Solar: 2016 - 3 MW 2026 - 7 MW	Wind: 2016 - 350 MW 2017 - 300 MW	670 MW Wind in 2029

Table 9: Alternative Resource Plans (continued)

Plan Name	DSM Level	Facility	Year to Cease Burning Coal	Renewable Additions		Generation Addition (if needed)
KBBCA	Option C	Montrose-1 LaCygne-2 Montrose-2 Montrose-3	2016 2019 2021 2021	Solar: 2016 - 3 MW 2026 - 7 MW	Wind: 2016 - 350 MW 2017 - 300 MW	414 MW CT in 2021 207 MW CT in 2032
KCCCA	Option C	Montrose-1 Montrose-2 Montrose-3	2016 2019 2019	Solar: 2016 - 3 MW 2026 - 7 MW	Wind: 2016 - 350 MW 2017 - 300 MW	207 MW CT in 2029
KAADA	Option D - Persistence	Montrose-1 Montrose-2 Montrose-3	2016 2021 2021	Solar: 2016 - 3 MW 2026 - 7 MW	Wind: 2016 - 350 MW 2017 - 300 MW	207 MW CT in 2021 207 MW CT in 2025 207 MW CT in 2031

Each plan is detailed in year-by-year charts in Volume 6, Section 4.

4.2 SELECTION OF PREFERRED RESOURCE PLAN

The Preferred Plan, Alternative Resource Plan KAACA, selected for KCP&L is shown in Table 10 below:

Table 10: KCP&L Preferred Resource Plan

Year	CT's (MW)	Wind (MW)	Solar (MW)	DSM (MW)	Retire (MW)	Total Capacity
2015	0			29		4372
2016	0	350	3	71		4321
2017	0	300		103		4434
2018	0			124		4434
2019	0			139		4444
2020	0			176		4444
2021	0			206		4254
2022	0			228		4254
2023	0			248		4269
2024	0			266		4258
2025	0			284		4283
2026	0		7	299		4284
2027	0			308		4309
2028	0			316		4359
2029	207			325		4366
2030	0			333		4416
2031	0			337		4441
2032	0			341		4466
2033	0			345		4516
2034	0			349		4541

Based in part upon current Missouri RPS rule requirements, the Preferred Plan includes 10 MW of solar additions and 650 MW of wind additions over the twenty-year planning period. It should be noted that the 3 MW of solar resource additions are expected to consist of Commercial and Industrial rooftop installations owned by KCP&L. The 350 MW of wind additions are from power purchase agreements (PPA) executed in 2013 and 2014. The additional 300 MW of wind additions are planned to be in service in 2017. DSM resources consist of a suite of eight residential and eight commercial programs. The Preferred Plan also reflects ceasing

to burn coal at Montrose unit 1 in 2016 and at Montrose units 2 and 3 in 2021. The environmental drivers that contributed to the discontinuing coal use at the Montrose units included Mercury and Air Toxics Standards Rule, Ozone National Ambient Air Quality Standards (NAAQS), PM NAAQS, Clean Water Act Section 316(a) and (b), Effluent Guidelines, Coal Combustion Residuals Rule, and Clean Power Plan.

The Preferred Plan was not the lowest cost plan from a Net Present Value of Revenue Requirement (NPVRR) perspective for KCP&L on a stand-alone planning basis. Alternative Resource Plan KCCCA had the lowest expected NPVRR of all modeled KCP&L plans. This plan is the same as the Preferred Plan except KCP&L would cease to burn coal in Montrose 2 and 3 starting in 2021 as opposed to 2019. It should be noted that the Preferred Plan is based upon resource planning in tandem with KCP&L-Greater Missouri Operations Company (GMO) and provides benefit to Missouri retail customers by planning on a joint basis. The joint KCP&L/GMO plan that includes keeping Montrose 2 and 3 in service as coal resources until 2021 is lower cost for Missouri electric customers than ceasing coal use in 2019.

The Preferred Plan also meets the fundamental planning objectives as required by Rule 22.010(2) 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 Forecast of Capacity Balance worksheet associated with Preferred Plan selected for KCP&L is shown in Table 11 below.

Table 11: KCP&L Forecast of Capacity Balance - Preferred Plan **Highly Confidential**

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SECTION 5: CRITICAL UNCERTAIN FACTORS

4. Identification of critical uncertain factors affecting the preferred resource plan;

The ranges of critical uncertain factors are calculated by finding the value at which the critical uncertain factor needs to change in order for the Preferred Resource Plan to no longer be the lowest cost option. The values of the NPVRR for the Preferred Resource Plan and the lowest cost plan under extreme conditions are compared and by using linear interpolation a crossover point value is found and expressed as a percent of the range of the critical uncertain factor. These percentages are superimposed on the forecast levels for each critical uncertain factor to develop the resulting ranges.

The Company has selected its Preferred Plan based in part on the results of the joint planning for KCP&L and GMO. Details on the joint plans can be found in Volume 6, Section 3.1. In the joint planning analysis, the Preferred Plan, CBBFA and two other plans, CCDCC and CCDFC proved to be the lowest cost plans under different risk scenarios. The values of these plans' NPVRR under each of the risks are detailed in the following table.

Table 12: Alternative Plans for Each Uncertain Factor

Assuming Low CO2						
NPVRR ($MM)	**High Load**	**High NG**	**Low CO2**	**EV**	**Low NG**	**Low Load**
CCDCC	28,446	27,661	28,028	29,230	28,332	27,674
CBBFA	28,236	27,258	27,831	29,106	28,367	27,490
Assuming High CO2						
NPVRR ($MM)	**High Load**	**High NG**	**High CO2**	**EV**	**Low NG**	**Low Load**
CCDFC	31,520	30,748	31,026	29,181	30,972	30,603
CBBFA	31,577	30,676	31,085	29,106	31,120	30,663

Based on joint planning, the uncertain factors which may cause the Company to modify the KCP&L Preferred Plan are limited to high CO_2 and low natural gas prices. Calculation details for the range of uncertain factors are given in Volume 7, Section 2.

SECTION 6: PERFORMANCE MEASURES

5. For existing legal mandates and approved cost recovery mechanisms, the following performance measures of the preferred resource plan for each year of the planning horizon:

A. Estimated annual revenue requirement;

B. Estimated level of average retail rates and percentage of change from the prior year; and

C. Estimated company financial ratios;

Data for the Preferred Plan is provided in the table below. This information is also provided in the Company response to Rule 240-22.060(4)(C)1 in Volume 6.

Table 13: Financial Performance - Preferred Plan

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SECTION 7: COMPANY FINANCIAL RATIOS

6. If the estimated company financial ratios in subparagraph (2)(E)5.C. of this rule are below investment grade in any year of the planning horizon, a description of any changes in legal mandates and cost recovery mechanisms necessary for the utility to maintain an investment grade credit rating in each year of the planning horizon and the resulting performance measures of the preferred resource plan;

The Company calculated performance measures for all studied alternative plans including the Preferred Plan. The expected values of alternative plan performance ratios do not materially change below current conditions. The expectations would be that the investment rating of the company is not at risk from the choice of any particular alternative resource plan.

SECTION 8: RESOURCE ACQUISITION INITIATIVES

7. Actions and initiatives to implement the resource acquisition strategy prior to the next triennial compliance filing; and

8.1 ENVIRONMENTAL RETROFITS

Based on the 2015 Preferred Plan, limited environmental retrofits are anticipated to be required for Montrose Units 2 & 3 prior to cease burning coal in 2021. These retrofits are required to operate the units through year 2020. Other projects anticipated to begin within the three year implementation period are Hawthorn 5 Cooling Tower and Spray Dry Absorber water reduction, Iatan 1 Cooling Tower, and LaCygne 2 Submerged Flight Conveyer. A draft schedule of major milestones for these retrofit projects are provided in the following table:

Table 14: Environmental Retrofits

Retrofit Project	Milestone Description	Date Range
Hawthorn 5 Cooling Tower	Studies/Specification/Bid/Award	01/2016 - 4/2018
Hawthorn 5 SDA water reduction	Study/Design/Construction	01/2015 - 07/2015
Iatan 1 Cooling Tower	Studies/Specification/Bid/Award	01/2016 - 4/2018
La Cygne 2 SFC	Design/Procurement/Construction	04/2015 - 09/2018
Montrose 2 & 3 ACI	Engineering/Procurement/Construction	01/2015 - 4/2015
Montrose 2 & 3 ACI	Checkout/Startup/Tuning/Testing	04/2015 - 02/2016
Montrose 2 & 3 ESP Improvements	Engineering/Procurement/Construction	01/2015 - 4/2015
Montrose 2 & 3 ESP Improvements	Checkout/Startup/Tuning/Testing	04/2015 - 02/2016
Montrose 2 & 3 sluiced ash modifications	Study/Design/Procurement/Construction	01/2015 - 12/2018
Montrose 2 & 3 new fly ash pug mill	Study/Design/Procurement/Construction	04/2015 - 04/2016
ACI : Activated Carbon Injection ESP: Electrostatic Precipitator SDA: Spray Dry Absorber SFC: Submerged Flight Conveyor		

8.2 SOLAR AND WIND INITIATIVES

The Preferred Plan includes solar resource additions in 2016 consisting of ownership in 3 MW of Commercial and Industrial solar rooftop installations. A draft schedule of the major milestones for this solar initiative is provided in the following table:

Table 15: Solar Initiative

Solar Initiative	Date Range
Evaluate/Select Developer(s)	04/2015 - 07/2015
Site Designs/Obtain Permits	8/2015 - 12/2015
Rooftop Installations Mobilization/Construction	01/2016 - 5/2016
Commercial Operation for Rooftop Installations	05/2016 - 06/2016

In addition, KCP&L is working towards procuring additional wind resources.

SECTION 9: MAJOR RESEARCH PROJECTS

8. A description of the major research projects and programs the utility will continue or commence during the implementation period;

9.1 LOAD FORECASTING

KCP&L plans to conduct its next Residential Appliance Saturation Survey in 2016-2017. KCP&L is also looking at the option of expanding the survey to the commercial sector in 2016-2017. The last residential survey was completed in 2013. The timeline currently expected for the Residential Appliance Saturation Survey is shown in the following table:

Appliance Saturation Survey Initiative	Date Range
Issue Appliance Saturation Survey Request for Proposal (RFP)	06/2015 - 12/2015
Evaluate Conducting a C&I Survey	1/2015 - 12/2015
Conduct Residential Appliance Saturation Survey	01/2016-06/2016
Tabulation Appliance Saturation Survey Results	06/2016-12/2016
Conduct Conditional Demand Study	01/2017-5/2017
Implement Survey Result in Load Forecast	05/2017-7/2017

9.2 DEMAND-SIDE MANAGEMENT PROJECTS

Major DSM research projects are discussed below.

9.2.1 DEMAND-SIDE MANAGEMENT MARKET POTENTIAL STUDY

KCP&L engaged Navigant Consulting, Inc. (Navigant) to conduct a Demand Side Management (DSM) Resource Potential Study in January 2012. Navigant provided a broad range of stakeholders opportunities to review and comment on the potential study methodologies, survey instruments and findings. The stakeholders included the Missouri Public Service Commission, Missouri Office of Public Counsel, Missouri Department of Natural Resources, National Resources Defense Council, Empire Electric District, Renew Missouri, and Ameren.

Navigant completed Demand-Side Management (DSM) Potential Study in August 2013, which included an assessment of:

- Realistic Achievable Potential (RAP) and Maximum Achievable Potential (MAP) energy efficiency potential for the period of 2014-2033
- RAP and MAP demand response potential including time-based rates
- Combined heat and power potential

KCP&L adjusted the RAP and MAP scenarios to account for the roll-off of measures at the end of the measures' life, commercial and industrial opt-outs, and to match the 2016-2034 time period need for the IRP analysis.

The final reports can be found in Appendix 5A Navigant Demand-Side Resource Potential Study Report and Appendix 5B Navigant Demand Response Potential Study Report.

Pursuant to 4 CSR 240-3.164 (2) (A), the current market potential study shall be updated no less frequently than every four (4) years. Therefore, in compliance with this requirement and as part of KCP&L's ongoing research efforts, KCP&L will initiate the next market potential study in 2015 with an estimated completion date of early 2017. KCP&L also recognizes that the current market potential study reflects a single data point and that a future market potential study may result in different energy and demand savings levels.

9.2.2 ADVANCED THERMOSTAT-COLLABORATION PROJECT WITH EPRI

KCP&L is collaborating with The Electric Power Research Institute (EPRI), as a host utility, to test and evaluate the potential of a new generation of programmable communicating thermostats that hold the potential for both energy and demand savings at a relatively low cost to the utility. Industry experience has shown that customer acceptance and usability can be key drivers to a thermostat's energy or demand reduction potential. Given that smart thermostats may offer better customer usability due to their remote programming capability, the objective of this

program is to evaluate their energy and demand savings impacts, as well as how customers perceive and use them.

The program will inform utilities and the public of the potential energy savings benefits of smart thermostats. For utilities, it may provide a measure of how these thermostats fit into their programs and key features that might promote energy efficiency and demand response. Demand response from residential air conditioners has been a target of many utility programs, but the cost of installation of load control devices and the perceived compromise in customer comfort have been large barriers. These thermostats, which are consumer-managed and possibly consumer-procured, may overcome these barriers at a relatively low cost. The knowledge gained about how customers perceive and interact with these types of devices may potentially inform future product designs and help bring about better thermostat choices for consumers.

9.3 SMARTGRID DEMONSTRATION PROJECT

The 5 year KCP&L SmartGrid Demonstration Project (SGDP) is implementing and evaluating end-to-end SmartGrid platform that includes advanced renewable generation, storage resources, leading-edge substation and distribution automation and control, energy management interfaces, and innovative customer programs and rate structures. The SGDP is focused on the geographic area served by the KCP&L Midtown Substation within Kansas City's urban core. The SGDP was awarded a funding grant from the DOE in and also collaborated with EPRI's SmartGrid Demonstration Program as a host utility.

The SGDP includes detailed analysis and testing to demonstrate the benefits of optimizing energy and information flows and utility operations across supply and demand resources, T&D operations, and customer end-use programs. The operational testing and data collection phase of the SGDP concluded September 31, 2014. The analysis, evaluation, and documentation of findings for the twenty three operational demonstrations and tests conducted during the operational phase

is ongoing and will be completed the first quarter of 2015. The SGDP Final Technical Report is due to the DOE May 1, 2015.

KCP&L anticipates that the results of SGDP and subsequent benefit cost analyses will determine that several of the advanced distribution grid technologies will be determined to be cost effective, or at a minimum we will understand under what conditions they become cost effective.

9.4 KCP&L CLEAN CHARGE NETWORK PILOT

KCP&L and KCP&L Greater Missouri Operations Company ("GMO") have launched an initiative to install and operate the KCP&L Clean Charge Network consisting of more than 1,000 electric vehicle charging stations throughout the Greater Kansas City region and within the KCP&L and GMO service territories.

KCP&L and GMO are partnering with organizations throughout our service territories that will host the charging station sites. Through these partnerships the KCP&L Clean Charge Network will offer free charging on every station to all drivers for a pilot period.

Prior to this pilot program KCP&L had deployed a limited number of EV charging stations as part of the SmartGrid Demonstration Project and a DOE Clean Cities grant. While these charging stations have provided some limited insight into EV charging characteristics, they have failed to provide much insight on the following questions:

- Can electric vehicles and electric vehicle charging stations enhance efficiency and utilization of the grid and, if so, how should such impacts be assessed, optimized and recognized?

- Do electric vehicles and electric vehicle charging stations present demand response opportunities and, if so, how should such opportunities be assessed, optimized and implemented?

The scale of the KCP&L Clean Charge Network is such that KCP&L should gain considerable insight in these and other public benefit areas, which could not be gained from the earlier limited deployments.

The Company plans to learn from these installations, gathering information during the pilot period to be shared with stakeholders in developing a longer term view.

9.5 DISTRIBUTED GENERATION AND PHOTOVOLTAIC SYSTEMS MARKET RESEARCH STUDY

KCP&L is participating with other utilities in an E Source market research study that will provide critical, timely information to help understand what motivates large and midsize business customers to acquire photovoltaic (PV) and other distributed generation (DG) technologies. It will also reveal which customers are most likely to reduce their demand for traditional utility-provided electricity.

Data will be gathered using a combination of qualitative and quantitative techniques on customer attitudes, desires, barriers, and actions that are essential to understand in order to create a viable PV and DG strategy. The E Source study covers the US and Canada and includes key market segments such as retail, grocery, healthcare, government, manufacturing, hotels and motels, data centers, and education. The DG questions focus on the following technologies: microturbines / combustion turbines, reciprocating engines, fuel cells, battery storage, thermal storage, combined heat and power (CHP), and waste heat recovery.

E Source will field a national survey, conduct customer interviews, perform research, and conduct analysis from January to April 2015. In addition, E Source will also field an oversample from the KCP&L service territory expected to be completed in the fall of 2015. The report and findings of the primary study is expected to be published in the spring of 2015.

Key questions addressed in this study include:

- What drives business customers to embrace PV and DG
- How do attitudes about utilities affect customers' decisions to adopt PV and DG
- What investment criteria are most commonly used for decision-making
- How do corporate sustainability goals affect these decisions
- What barriers may keep customers from adopting PV and DG
- Who are the preferred providers of PV and DG, including utilities, local contractors, and national vendors
- To what extent will on-site electric storage affect these decisions
- Can utility pricing models affect adoption
- How are corporate decisions made regarding PV and DG adoption
- Which customer segments are most likely to adopt PV and why

As a participant of this study KCP&L will receive:

- An interim intelligence report based on in-depth interviews
- A strategic outcome report, highlighting how the findings paint a picture for the future and illustrating how utilities can take advantage of, or defend, the PV and DG space
- A detailed results presentation report with key data in meaningful formats that can be used to help make strategic decisions
- A web conference on E Source's findings, including time for questions and a discussion of the results
- Full national data sets and, if fielded, utility-specific data sets