VOLUME 1:

EXECUTIVE SUMMARY

KANSAS CITY POWER & LIGHT COMPANY (KCP&L)

INTEGRATED RESOURCE PLAN

4 CSR 240-22.010

CASE NO. EO-2012-0323

APRIL, 2012

TABLE OF CONTENTS

SECTION 1: INTRODUCTION 1
SECTION 2: KANSAS CITY POWER & LIGHT IRP SUBMITTAL 1
2.1 IRP REPORT STRUCTURE 1
2.2 WAIVERS 2
2.3 IRP DEVELOPMENT 2
SECTION 3: KCP&L SYSTEM OVERVIEW 4
SECTION 4: LOAD FORECAST INFORMATION 8
SECTION 5: PREFERRED RESOURCE PLAN SELECTION 14
5.1 ALTERNATIVE RESOURCE PLAN DEVELOPMENT 14
5.2 SELECTION OF PREFERRED RESOURCE PLAN 19
SECTION 6: CRITICAL UNCERTAIN FACTORS 22
SECTION 7: PERFORMANCE MEASURES 23
SECTION 8: COMPANY FINANCIAL RATIOS 25
SECTION 9: RESOURCE ACQUISITION INITIATIVES 26
SECTION 10: MAJOR RESEARCH PROJECTS 29
10.1 DEMAND-SIDE MANAGEMENT PROJECTS 29
10.1.1 DEMAND-SIDE MANAGEMENT MARKET POTENTIAL STUDY 29
10.1.2 SMARTGRID DEMONSTRATION PROJECT 30
10.1.3 LED LIGHTING COLLABORATION PROJECT WITH EPRI 31

TABLE OF TABLES

Table 1: KCP&L Customers, NSI and Peak Demand 5
Table 2: KCP&L Capacity and Energy Resources 6
Table 3: KCP&L Energy with and without DSM Impacts (GWh) 10
Table 4: KCP&L Peak Demand with and without DSM Impacts (MW) 12
Table 5: KCP&L Plan Naming Convention 15
Table 6 : Alternative Resource Plans 16
Table 7: Alternative Resource Plans (continued) 17
Table 8: Alternative Resource Plans (continued) 18
Table 9: KCP&L Preferred Resource Plan 19
Table 10: KCP&L Forecast of Capacity Balance - Preferred Plan **Highly Confidential** 21
Table 11: Alternative Plans for Each Uncertain Factor 22
Table 12: Financial Performance - Preferred Plan 24
Table 13: Mega Study Major Milestone Schedule 27
Table 14: Mega Study - Montrose Station ** Highly Confidential ** 28
Table 15: DSM Research Projects 29
Table 16: DSM Potential Study Schedule 30

TABLE OF FIGURES

Figure 1: KCP&L Service Territory....4
Figure 2: KCP&L Capacity By Source Chart....6
Figure 3: KCP&L Generation By Source Chart....7
Figure 4: KCP&L System Energy....11
Figure 5: KCP&L System Peak....13

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

SECTION 2: KANSAS CITY POWER & LIGHT IRP SUBMITTAL

2.1 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

2.2 WAIVERS

No waivers were requested by KCP&L for this IRP filing.

2.3 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 2012-2031 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:

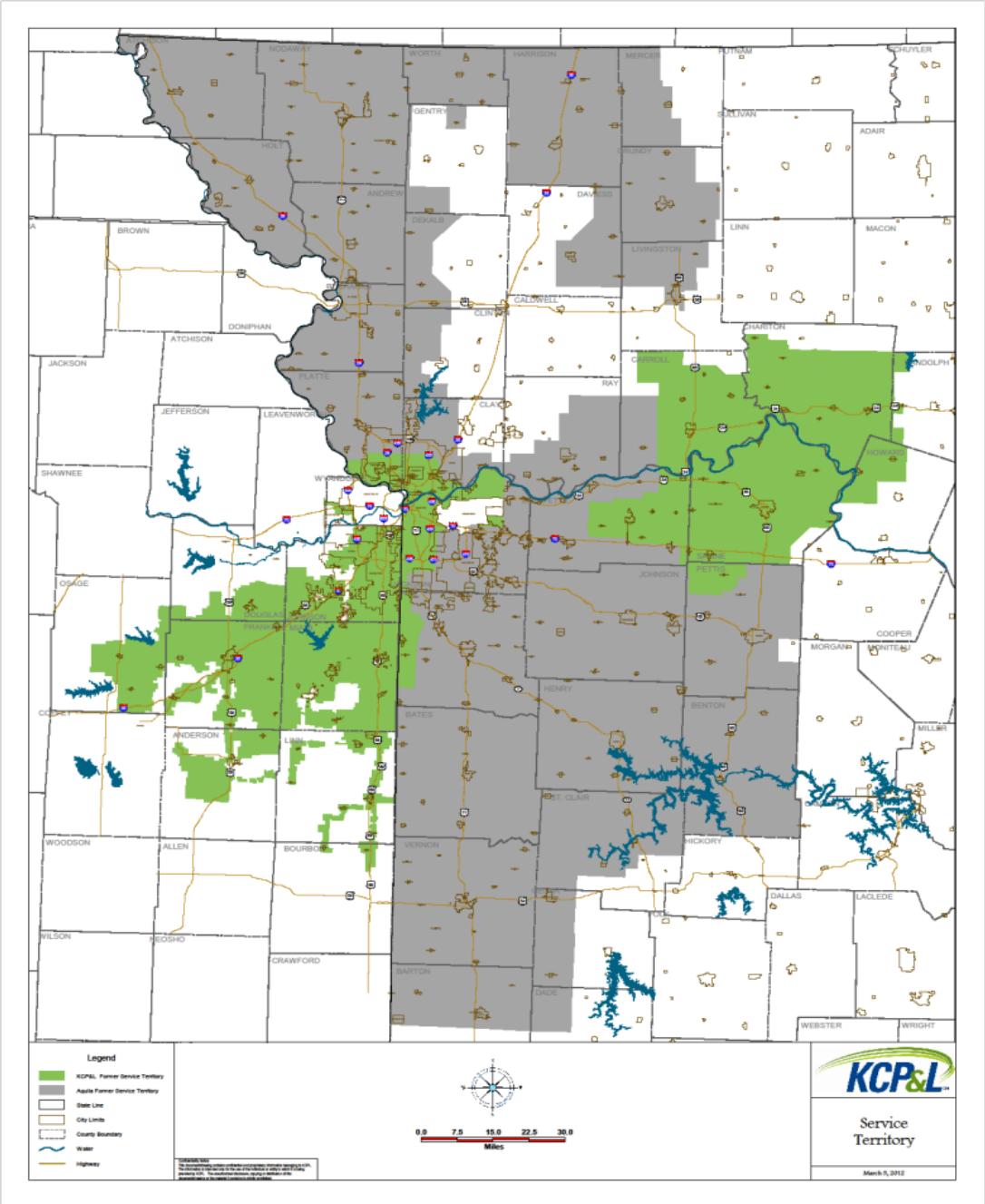
- A detailed forecast of future demand and energy requirements
- An assessment of Supply-Side resource alternatives
- An assessment of Demand-Side resource alternatives
- An assessment of Transmission and Distribution alternatives
- Integrated Analysis evaluates the economics of various combinations 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 3: 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 KCP&L service territory is provided in Figure 1 below:

Figure 1: KCP&L 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, estimated retail sales and pre-DSM peak demand.

Table 1: KCP&L Customers, NSI and Peak Demand

KCP&L 2012 Customers, Net System Input and Peak Demand			
State	**Number of Retail Customers**	**Net System Input (MWh)**	**Projected Net Peak Demand (MW)**
Missouri	**270,400**		
Kansas	**240,700**		
Total	**511,100**	**15,940,120**	**3,522**

KCP&L owns and operates a diverse generating portfolio and Power Purchase Agreements (PPA) to meet customer energy requirements. In 2011, KPC&L signed two wind energy PPAs with on-line dates in 2012. One PPA is with Duke Renewable Generation Services for the output of a 131.1 MW wind farm named Cimarron II, located in Gray County, Kansas. The second PPA is with enXco for the output of a 100.8 MW wind farm named Spearville 3. This facility is adjacent to the KCP&L owned Spearville 1 & 2 Wind Energy Facilities. The facility will be used to fulfill a portion of KCP&L's Missouri and Kansas Renewable Energy requirements. Table 2, Figure 2, and Figure 3 below reflect current KCP&L owned generation assets as well as PPAs signed in 2011 but will be available by the end of 2012. Because of the timing of the on-line date for the new wind PPAs, the projected wind generation in 2012 will be limited to primarily the existing Spearville 1 & 2 facilities.

Table 2: KCP&L Capacity and Energy Resources

2012 Capacity and Energy Resources				
Capacity By Fuel Type	**Capacity (MW)**	**% of Total Capacity**	**Estimated Energy (MWh)**	**% of Annual Energy**
Coal	2,744	57%	15,311,806	73%
Nuclear	547	11%	4,019,759	19%
Oil	410	8%	420	0%
Gas	770	16%	591,310	3%
Wind	380	8%	1,011,848	5%
Total	4,851	100%	20,935,144	100%
Note: A portion of Wind is from PPA Resources				

Figure 2: KCP&L Capacity By Source Chart

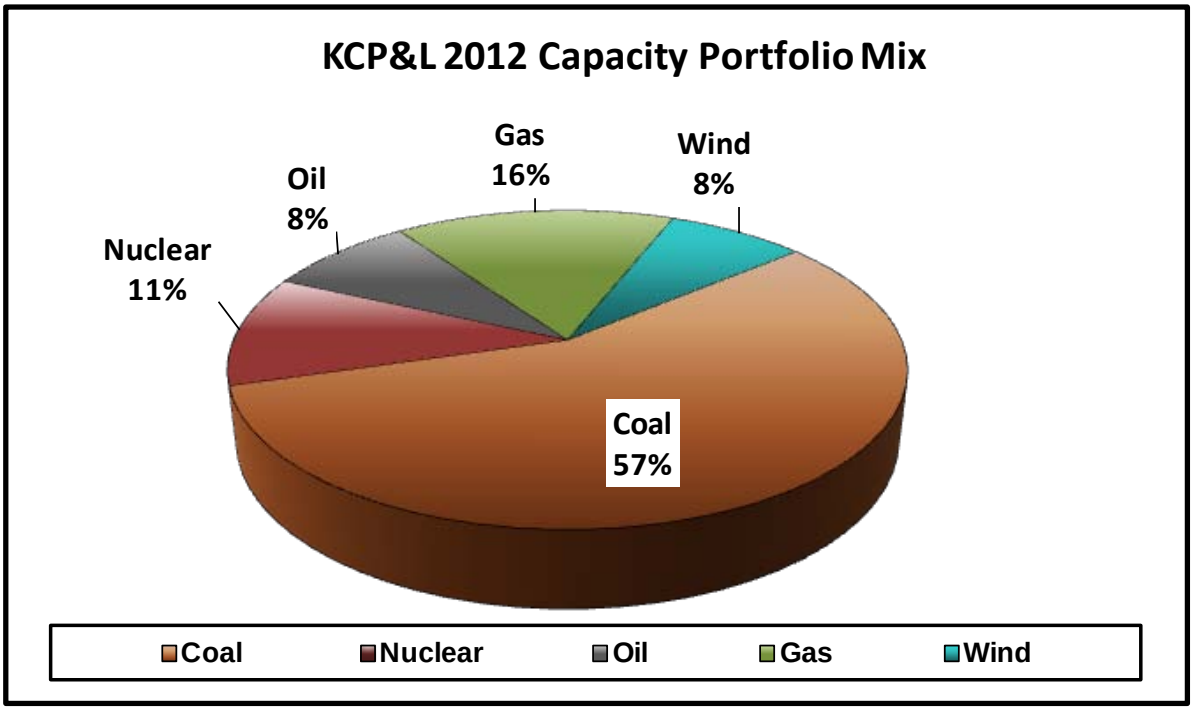
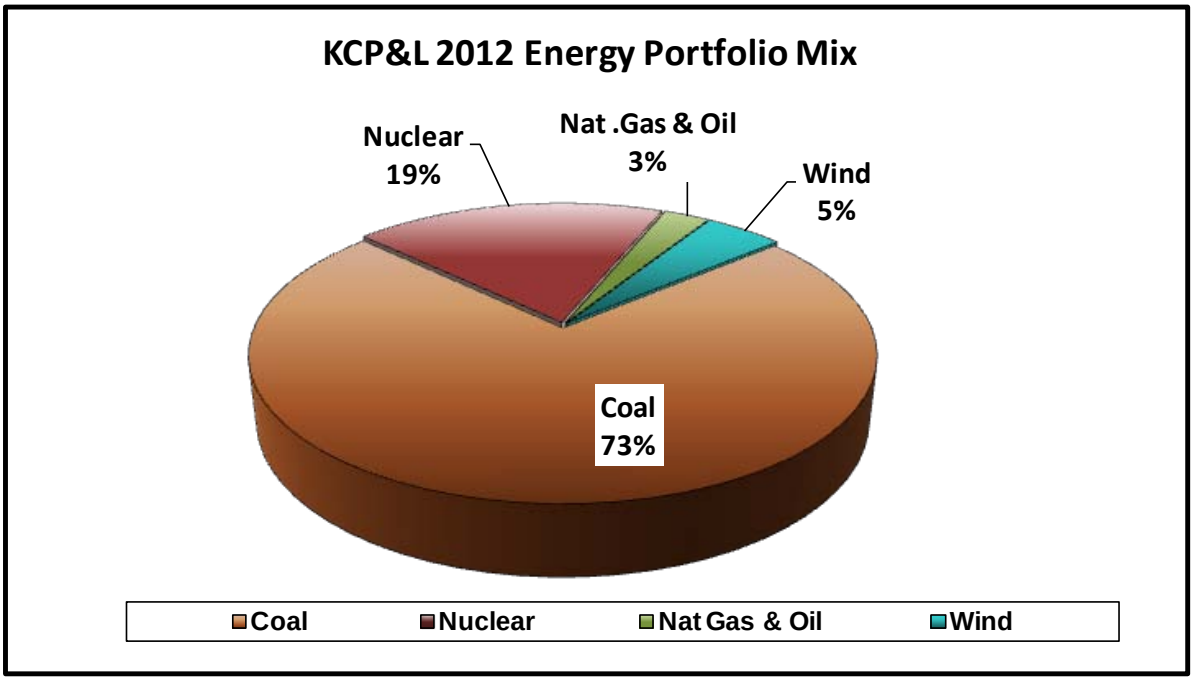


Figure 3: KCP&L Generation By Source Chart



SECTION 4: 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 June 2011 and an economic forecast produced in May 2011.

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 does not include the impacts of energy efficiency and demand side management (DSM) program measures and thus represents energy sales that would have occurred if there had not been any company programs since 2005. Net energy includes the impacts of 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 the highest for Medium GS, 2.1%, between 2011 and 2035, and the lowest for Large Power, 0.8%.

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

	Residential		Small GS		Medium GS		Large GS		Large Power		Lighting		SFR		Billed Total		Net System Input	
	Gross	Net	Gross	Net	Gross	Net	Gross	Net	Gross	Net	Gross	Net	Gross	Net	Gross	Net	Gross	Net
2011	5,402	5,356	715	711	1,828	1,805	4,510	4,452	2,360	2,329	77	77	108	108	15,000	14,838	15,964	15,803
2012	5,451	5,397	727	723	1,865	1,840	4,539	4,473	2,417	2,381	78	78	109	109	15,186	15,000	16,126	15,940
2013	5,513	5,459	736	733	1,911	1,885	4,583	4,517	2,434	2,398	79	79	111	111	15,368	15,182	16,282	16,096
2014	5,567	5,512	746	742	1,964	1,938	4,630	4,564	2,451	2,415	80	80	113	113	15,551	15,364	16,476	16,290
2015	5,600	5,545	754	750	2,003	1,977	4,667	4,602	2,465	2,428	81	81	115	115	15,684	15,498	16,618	16,431
2016	5,635	5,579	762	759	2,036	2,010	4,708	4,642	2,479	2,443	82	82	116	116	15,818	15,630	16,798	16,611
2017	5,664	5,608	771	767	2,069	2,043	4,751	4,685	2,494	2,458	82	82	118	118	15,949	15,762	16,899	16,711
2018	5,700	5,644	780	776	2,106	2,080	4,800	4,734	2,511	2,475	83	83	119	119	16,100	15,912	17,058	16,871
2019	5,742	5,685	789	785	2,145	2,119	4,851	4,785	2,529	2,493	84	84	121	121	16,261	16,073	17,229	17,041
2020	5,787	5,730	798	794	2,183	2,157	4,899	4,834	2,546	2,510	84	84	123	123	16,421	16,232	17,440	17,251
2021	5,829	5,772	807	803	2,224	2,198	4,950	4,884	2,564	2,527	85	85	124	124	16,583	16,394	17,571	17,382
2022	5,878	5,820	816	812	2,264	2,238	5,001	4,935	2,581	2,545	86	86	125	125	16,750	16,561	17,749	17,559
2023	5,928	5,870	825	821	2,305	2,279	5,052	4,986	2,599	2,562	86	86	127	127	16,922	16,732	17,930	17,741
2024	5,987	5,929	834	830	2,348	2,322	5,106	5,040	2,618	2,581	87	87	128	128	17,107	16,917	18,170	17,980
2025	6,044	5,985	843	840	2,393	2,368	5,165	5,099	2,638	2,602	87	87	129	129	17,300	17,110	18,332	18,141
2026	6,106	6,047	853	849	2,442	2,416	5,226	5,160	2,659	2,623	88	88	131	131	17,505	17,314	18,549	18,358
2027	6,173	6,114	864	860	2,495	2,469	5,292	5,227	2,683	2,646	89	89	132	132	17,728	17,537	18,785	18,595
2028	6,247	6,187	875	871	2,550	2,525	5,360	5,294	2,706	2,670	89	89	133	133	17,960	17,769	19,077	18,887
2029	6,316	6,256	886	882	2,609	2,583	5,429	5,364	2,730	2,693	90	90	135	135	18,194	18,002	19,280	19,090
2030	6,392	6,331	896	893	2,670	2,644	5,501	5,435	2,754	2,718	90	90	136	136	18,440	18,247	19,540	19,350
2031	6,471	6,410	907	903	2,729	2,704	5,569	5,503	2,777	2,741	91	91	137	137	18,682	18,489	19,797	19,607
2032	6,558	6,496	918	914	2,792	2,766	5,639	5,573	2,801	2,764	92	92	139	139	18,937	18,744	20,117	19,926
2033	6,639	6,577	929	926	2,857	2,832	5,711	5,645	2,825	2,789	92	92	140	140	19,194	19,000	20,341	20,150
2034	6,725	6,663	941	937	2,927	2,901	5,786	5,720	2,850	2,813	93	93	141	141	19,463	19,269	20,626	20,436
2035	6,812	6,750	953	949	3,002	2,976	5,865	5,800	2,875	2,839	93	93	143	143	19,745	19,550	20,925	20,734
11-'15	0.9%	0.9%	1.3%	1.3%	2.3%	2.3%	0.9%	0.8%	1.1%	1.1%	1.2%	1.2%	1.5%	1.5%	1.1%	1.1%	1.0%	1.0%
15-'20	0.7%	0.7%	1.1%	1.2%	1.7%	1.8%	1.0%	1.0%	0.7%	0.7%	0.9%	0.9%	1.4%	1.4%	0.9%	0.9%	1.0%	1.0%
20-'25	0.9%	0.9%	1.1%	1.1%	1.9%	1.9%	1.1%	1.1%	0.7%	0.7%	0.7%	0.7%	1.1%	1.1%	1.0%	1.1%	1.0%	1.0%
25-30	1.1%	1.1%	1.2%	1.2%	2.2%	2.2%	1.3%	1.3%	0.9%	0.9%	0.7%	0.7%	1.0%	1.0%	1.3%	1.3%	1.3%	1.3%
30-'35	1.3%	1.3%	1.2%	1.2%	2.4%	2.4%	1.3%	1.3%	0.9%	0.9%	0.6%	0.6%	1.0%	1.0%	1.4%	1.4%	1.4%	1.4%
11-'35	1.0%	1.0%	1.2%	1.2%	2.1%	2.1%	1.1%	1.1%	0.8%	0.8%	0.8%	0.8%	1.2%	1.2%	1.2%	1.2%	1.1%	1.1%

Figure 4: KCP&L System Energy

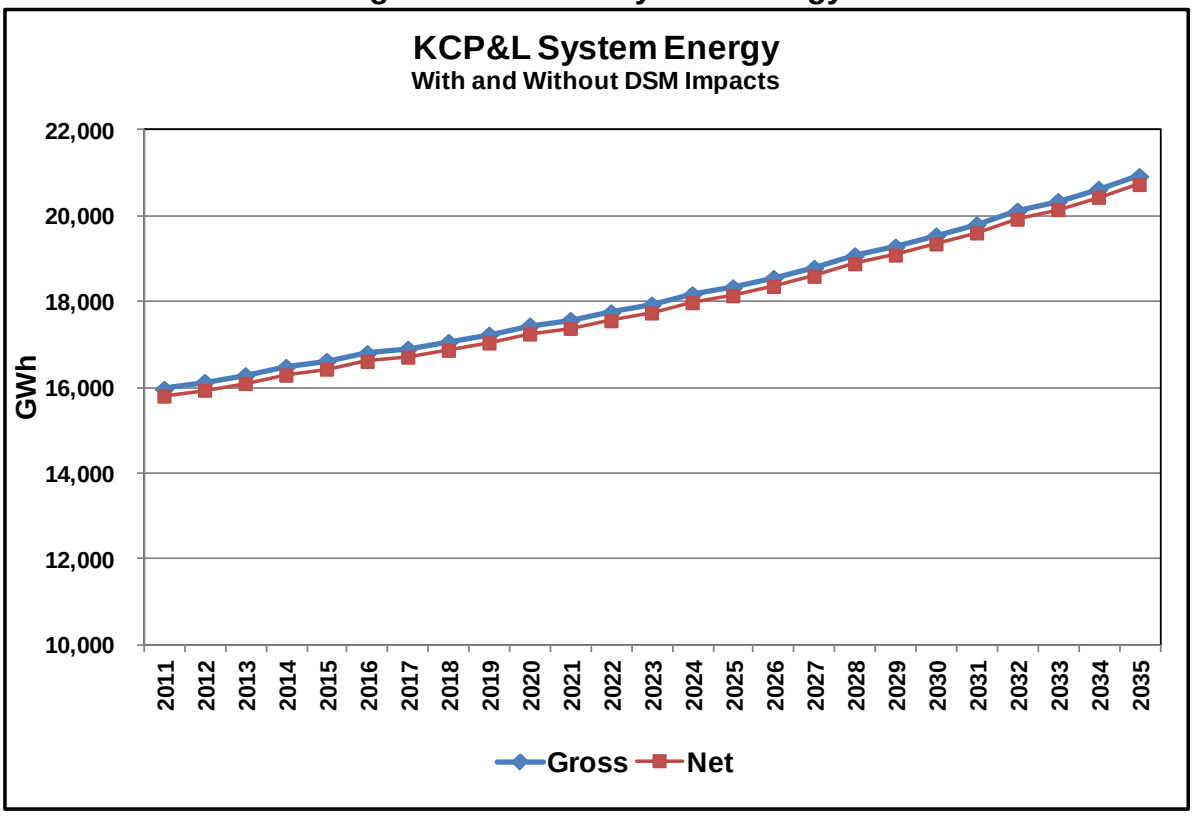


Table 4 reports the peak demands by rate class. These numbers include line losses and company use. The growth rates between 2011 and 2035 do not differ much by class except that for Medium GS is higher.

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

	Residential		Small GS		Medium GS		Large GS		Large Power		Lighting		SFR		System	
	Gross	Net	Gross	Net	Gross	Net	Gross	Net	Gross	Net	Gross	Net	Gross	Net	Gross	Net
2011	1,821	1,749	163	162	368	364	830	821	364	361	11	11	26	26	3,573	3,432
2012	1,808	1,736	166	166	400	396	869	859	404	401	11	11	25	25	3,672	3,522
2013	1,823	1,750	167	167	409	405	877	867	406	403	11	11	26	26	3,707	3,558
2014	1,837	1,764	169	168	418	414	883	873	408	406	11	11	27	27	3,741	3,592
2015	1,844	1,772	170	169	424	420	888	878	410	407	12	12	27	27	3,763	3,614
2016	1,850	1,778	171	170	430	426	894	884	412	409	12	12	27	27	3,784	3,634
2017	1,857	1,785	172	171	436	432	901	891	414	411	12	12	26	26	3,806	3,656
2018	1,866	1,822	173	173	442	438	908	899	417	414	12	12	27	27	3,833	3,712
2019	1,876	1,832	175	174	449	445	916	907	419	417	12	12	28	28	3,863	3,742
2020	1,887	1,843	176	175	455	451	924	914	422	419	12	12	28	28	3,892	3,771
2021	1,899	1,855	177	177	462	458	932	922	425	422	12	12	29	29	3,924	3,802
2022	1,912	1,868	178	178	469	465	940	930	427	424	12	12	29	29	3,955	3,834
2023	1,926	1,882	180	179	476	472	948	938	430	427	12	12	28	28	3,987	3,866
2024	1,942	1,898	181	180	483	479	956	946	432	430	12	12	29	29	4,024	3,903
2025	1,958	1,914	182	181	491	487	965	955	435	433	12	12	30	30	4,061	3,940
2026	1,976	1,932	184	183	499	495	974	965	439	436	12	12	30	30	4,102	3,981
2027	1,995	1,951	185	185	509	505	986	976	442	440	12	12	30	30	4,148	4,027
2028	2,015	1,971	187	186	519	515	997	987	446	443	12	12	29	29	4,193	4,072
2029	2,036	1,992	189	188	529	525	1,008	999	450	447	13	13	29	29	4,242	4,120
2030	2,057	2,013	190	190	540	536	1,020	1,010	453	451	13	13	31	31	4,291	4,170
2031	2,079	2,035	192	191	550	546	1,030	1,021	457	454	13	13	31	31	4,339	4,218
2032	2,103	2,058	193	193	561	557	1,041	1,032	460	458	13	13	32	32	4,391	4,269
2033	2,125	2,081	195	194	573	569	1,053	1,044	464	461	13	13	31	31	4,442	4,321
2034	2,150	2,105	197	196	585	581	1,065	1,055	468	465	13	13	30	30	4,495	4,373
2035	2,174	2,129	199	198	598	594	1,078	1,068	472	469	13	13	31	31	4,552	4,430
11-'15	0.3%	0.3%	1.0%	1.0%	3.6%	3.7%	1.7%	1.7%	3.0%	3.0%	1.9%	1.9%	0.4%	0.4%	1.3%	1.3%
15-'20	0.5%	0.8%	0.7%	0.7%	1.4%	1.4%	0.8%	0.8%	0.6%	0.6%	0.7%	0.7%	1.1%	1.1%	0.7%	0.9%
20-'25	0.7%	0.8%	0.7%	0.7%	1.5%	1.5%	0.9%	0.9%	0.6%	0.6%	0.6%	0.6%	1.0%	1.0%	0.9%	0.9%
25-30	1.0%	1.0%	0.9%	0.9%	1.9%	1.9%	1.1%	1.1%	0.8%	0.8%	0.5%	0.5%	0.7%	0.7%	1.1%	1.1%
30-'35	1.1%	1.1%	0.9%	0.9%	2.1%	2.1%	1.1%	1.1%	0.8%	0.8%	0.5%	0.5%	0.1%	0.1%	1.2%	1.2%
11-'35	0.7%	0.8%	0.8%	0.8%	2.0%	2.1%	1.1%	1.1%	1.1%	1.1%	0.8%	0.8%	0.7%	0.7%	1.0%	1.1%

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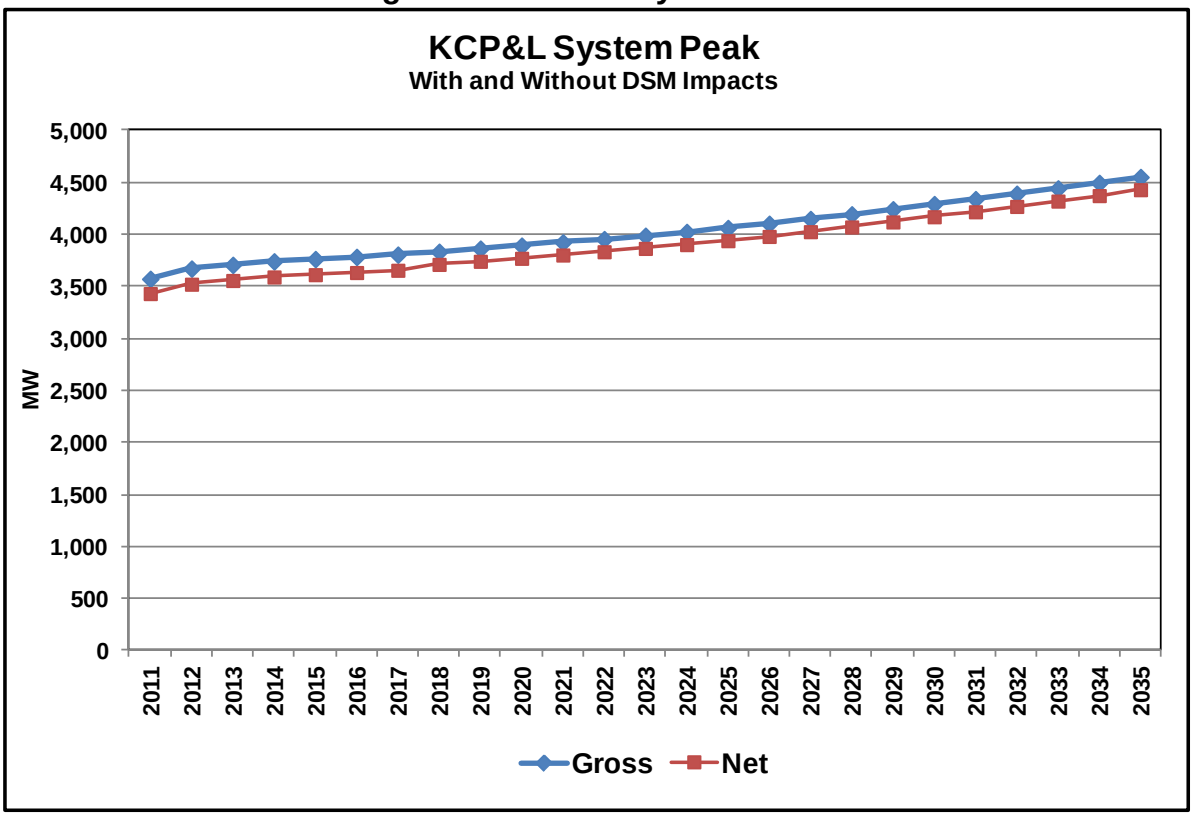
Figure 5 summarizes the forecast of peak demands by year for KCP&L.

Figure 5: KCP&L System Peak



SECTION 5: PREFERRED RESOURCE PLAN SELECTION

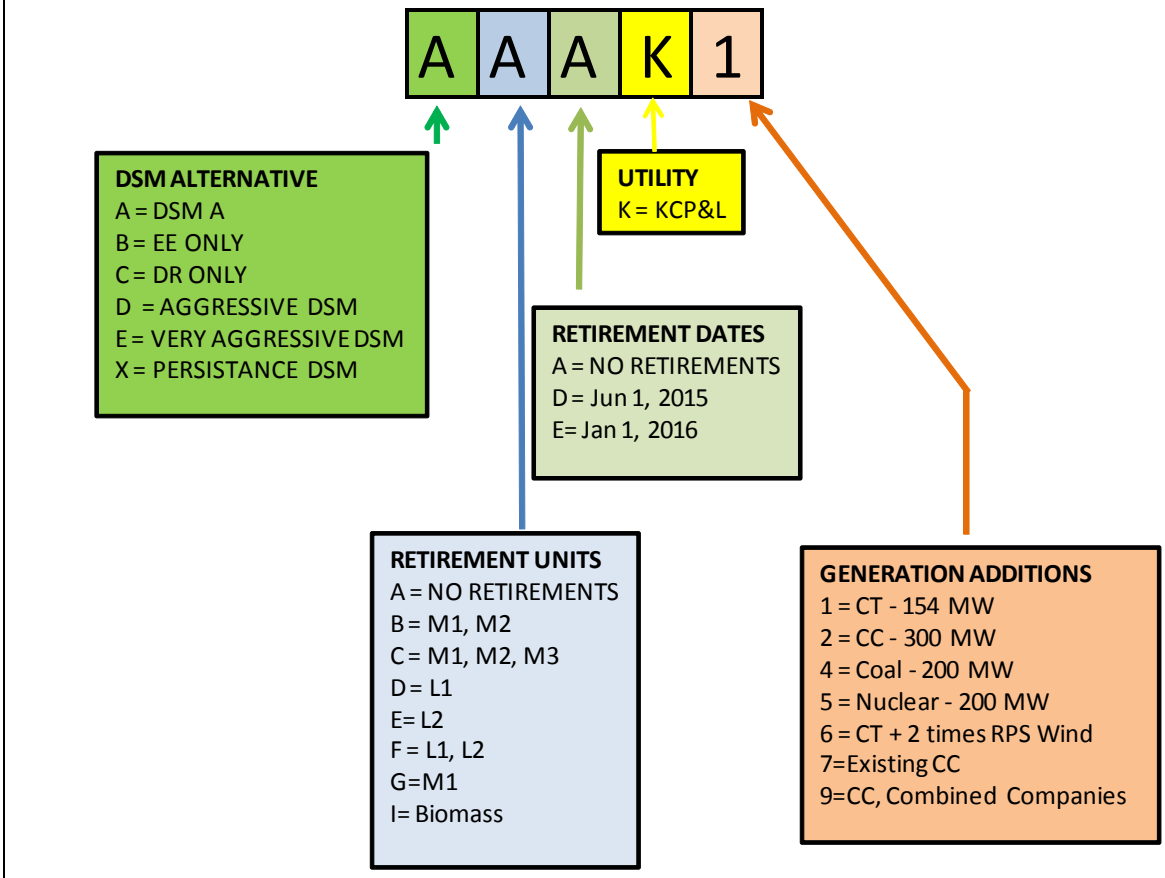
5.1 ALTERNATIVE RESOURCE PLAN DEVELOPMENT

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: KCP&L Plan Naming Convention

NAMING CONVENTION FOR ALTERNATIVE RESOURCE PLANS IN THE 2012 KCP&L IRP



Definitions:

DSM - Demand-Side Management	M1 - Montrose Unit 1	CT - Combustion Turbine
EE - Energy Efficiency	M2 - Montrose Unit 2	CC - Combined Cycle
DR - Demand Response	M3 - Montrose Unit 3	RPS - Renewable Portfolio Standard
	L1 - LaCygne Unit 1	
	L2 - LaCygne Unit 2	
	Biomass - 10% Blending	

In total, twenty-two alternative resource plans were developed for integrated resource analysis. Table 6 through Table 8 represents an overview of each plan over the 2012 through 2031 planning period.

Table 6 : Alternative Resource Plans

Resource	Plan AAAK1	Plan AAAK9	Plan ABEK1	Plan ABEK2
DSM	DSM A	DSM A	DSM A	DSM A
Solar	11 MW in 2018	11 MW in 2018	11 MW in 2018	11 MW in 2018
Solar	6 MW in 2021	6 MW in 2021	6 MW in 2021	6 MW in 2021
Solar	3 MW in 2023	3 MW in 2023	3 MW in 2023	3 MW in 2023
Wind	100 MW in 2016	100 MW in 2016	100 MW in 2016	100 MW in 2016
Wind	200 MW in 2020	200 MW in 2020	200 MW in 2020	200 MW in 2020
Wind	100 MW in 2023	100 MW in 2023	100 MW in 2023	100 MW in 2023
Coal Retire			334 MW in 2016 (M 1-2)	334 MW in 2016 (M 1-2)
Coal				
Coal				
Nuclear				
Nuclear				
Combustion Turbine			154 MW in 2029	
Combustion Turbine				
Combustion Turbine				
Combustion Turbine				
Combustion Turbine				
Combined Cycle				300 MW in 2024
Combined Cycle				
Resource	**Plan ABEK4**	**Plan ABEK5**	**Plan ABEK6**	**Plan ABEK7**
DSM	DSM A	DSM A	DSM A	DSM A
Solar	11 MW in 2018	11 MW in 2018	11 MW in 2018	11 MW in 2018
Solar	6 MW in 2021	6 MW in 2021	6 MW in 2021	6 MW in 2021
Solar	3 MW in 2023	3 MW in 2023	3 MW in 2023	3 MW in 2023
Wind	100 MW in 2016	100 MW in 2016	200 MW in 2016	100 MW in 2016
Wind	200 MW in 2020	200 MW in 2020	400 MW in 2020	200 MW in 2020
Wind	100 MW in 2023	100 MW in 2023	200 MW in 2023	100 MW in 2023
Coal Retire	334 MW in 2016 (M 1-2)	334 MW in 2016 (M 1-2)	334 MW in 2016 (M 1-2)	334 MW in 2016 (M 1-2)
Coal	200 MW in 2024			
Coal	200 MW in 2030			
Nuclear		200 MW in 2024		
Nuclear		200 MW in 2030		
Combustion Turbine			154 MW in 2025	
Combustion Turbine			154 MW in 2030	
Combustion Turbine				
Combustion Turbine				
Combustion Turbine				
Combined Cycle				310 MW in 2013
Combined Cycle				

Table 7: Alternative Resource Plans (continued)

Resource	Plan ACEK1	Plan ACEK2	Plan ADDK1	Plan AEDK1
DSM	DSM A	DSM A	DSM A	DSM A
Solar	11 MW in 2018	11 MW in 2018	11 MW in 2018	11 MW in 2018
Solar	6 MW in 2021	6 MW in 2021	6 MW in 2021	6 MW in 2021
Solar	3 MW in 2023	3 MW in 2023	3 MW in 2023	3 MW in 2023
Wind	100 MW in 2016	100 MW in 2016	100 MW in 2016	100 MW in 2016
Wind	200 MW in 2020	200 MW in 2020	200 MW in 2020	200 MW in 2020
Wind	100 MW in 2023	100 MW in 2023	100 MW in 2023	100 MW in 2023
Coal Retire	510 MW in 2016 (M 1-2-3)	510 MW in 2016 (M 1-2-3)	368 MW in 2015 (L1)	343 MW in 2015 (L2)
Coal				
Coal				
Nuclear				
Nuclear				
Combustion Turbine	154 MW in 2016		154 MW in 2024	154 MW in 2024
Combustion Turbine	154 MW in 2024		154 MW in 2028	154 MW in 2029
Combustion Turbine	154 MW in 2028			
Combustion Turbine				
Combustion Turbine				
Combined Cycle		300 MW in 2016		
Combined Cycle		300 MW in 2028		
Resource	**Plan AFDK1**	**Plan AGEK1**	**Plan AGEK9**	**Plan AIEK9**
DSM	DSM A	DSM A	DSM A	DSM A
Solar	11 MW in 2018	11 MW in 2018	11 MW in 2018	11 MW in 2018
Solar	6 MW in 2021	6 MW in 2021	6 MW in 2021	6 MW in 2021
Solar	3 MW in 2023	3 MW in 2023	3 MW in 2023	3 MW in 2023
Wind	100 MW in 2016	100 MW in 2016	100 MW in 2016	100 MW in 2016
Wind	200 MW in 2020	200 MW in 2020	200 MW in 2020	200 MW in 2020
Wind	100 MW in 2023	100 MW in 2023	100 MW in 2023	100 MW in 2023
Coal Retire	711 MW in 2015 (L 1-2)	170 MW in 2016 (M1)	170 MW in 2016 (M1)	170 MW in 2016 (M1)
Coal				10% Biomass (M 2-3)
Coal				
Nuclear				
Nuclear				
Combustion Turbine	308 MW in 2015	154 MW in 2029		
Combustion Turbine	154 MW in 2021			
Combustion Turbine	154 MW in 2027			
Combustion Turbine	154 MW in 2031			
Combustion Turbine				
Combined Cycle			150 MW in 2028	150 MW in 2028
Combined Cycle				

Table 8: Alternative Resource Plans (continued)

Resource	Plan BBEK1	Plan CBEK1	Plan DBEK1	Plan DCEK1
DSM	EE Only	DR Only	Aggressive DSM	Aggressive DSM
Solar	11 MW in 2018	11 MW in 2018	11 MW in 2018	11 MW in 2018
Solar	6 MW in 2021	6 MW in 2021	6 MW in 2021	6 MW in 2021
Solar	3 MW in 2023	3 MW in 2023	3 MW in 2023	3 MW in 2023
Wind	100 MW in 2016	100 MW in 2016	100 MW in 2016	100 MW in 2016
Wind	200 MW in 2020	200 MW in 2020	200 MW in 2020	200 MW in 2020
Wind	100 MW in 2023	100 MW in 2023	100 MW in 2023	100 MW in 2023
Coal Retire	334 MW in 2016 (M 1-2)	334 MW in 2016 (M 1-2)	334 MW in 2016 (M 1-2)	510 MW in 2016 (M 1-2-3)
Coal				
Coal				
Nuclear				
Nuclear				
Combustion Turbine	154 MW in 2019	154 MW in 2020		154 MW in 2031
Combustion Turbine	154 MW in 2025	154 MW in 2024		
Combustion Turbine	154 MW in 2030	154 MW in 2027		
Combustion Turbine		154 MW in 2030		
Combustion Turbine				
Combined Cycle				
Combined Cycle				

Resource	Plan EBEK1	Plan XBEK1
DSM	Very Aggressive DSM	Persistance DSM
Solar	11 MW in 2018	11 MW in 2018
Solar	6 MW in 2021	6 MW in 2021
Solar	3 MW in 2023	3 MW in 2023
Wind	100 MW in 2016	100 MW in 2016
Wind	200 MW in 2020	200 MW in 2020
Wind	100 MW in 2023	100 MW in 2023
Coal Retire	334 MW in 2016 (M 1-2)	334 MW in 2016 (M 1-2)
Coal		
Coal		
Nuclear		
Nuclear		
Combustion Turbine		154 MW in 2018
Combustion Turbine		154 MW in 2022
Combustion Turbine		154 MW in 2025
Combustion Turbine		154 MW in 2028
Combustion Turbine		154 MW in 2031
Combined Cycle		
Combined Cycle		

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

5.2 SELECTION OF PREFERRED RESOURCE PLAN

The Preferred Plan that has been selected for KCP&L is shown in Table 9 below:

Table 9: KCP&L Preferred Resource Plan

Year	CC's (MW)	Solar (MW)	Wind (MW)	DSM A (MW)	Retire (MW)	Existing Capacity (MW)
2012	-			89		4,492
2013	-			89		4,553
2014	-			169		4,609
2015	-			185		4,602
2016	-		100	195	170	4,397
2017	-			213		4,397
2018	-	11		201		4,397
2019	-			223		4,397
2020	-		200	242		4,397
2021	-	6		215		4,397
2022	-			279		4,397
2023	-	3	100	295		4,397
2024	-			312		4,341
2025	-			328		4,341
2026	-			346		4,341
2027	-			363		4,341
2028	150			380		4,341
2029	-			397		4,341
2030	-			415		4,341
2031	-			433		4,341

Based upon current Missouri RPS rule requirements, the Preferred Plan includes 20 MW of solar additions and 400 MW of wind additions over the twenty-year planning period. It should be noted that solar and wind additions could be obtained from power purchase agreements (PPA), purchasing of renewable energy credits (RECs), or utility ownership. "DSM A" consists of a suite of twelve Energy Efficiency and two Demand Response programs that KCP&L considers the capacity and energy estimated from these programs comprise realistically achievable levels. The retirement of 170 MW in 2016 represents Montrose Unit 1. The environmental drivers that contributed to the Montrose Unit 1 retirement 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, and Coal Combustion Residuals Rule. These rules are currently not in effect and will be monitored by KCP&L prior to the projected retirement year 2016 to determine if the current decision to retire Montrose Unit 1 continues to be prudent.

The Preferred Plan was not the lowest cost plan from a Net Present Value of Revenue Requirement (NPVRR) perspective. Alternative Resource Plan DBEK1 had the lowest expected NPVRR of all modeled plans. This plan included the "D" level of DSM which was developed to satisfy the requirement of Special Contemporary Issue h. stated in Order EO-2012-0041, "Analyze and document aggressive DSM portfolios without constraints". This "Aggressive" D-level of DSM is not considered to be realistically achievable. The plan producing the next lowest expected value of NPVRR was chosen as the Preferred Plan. It should be noted that this 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 combined company basis.

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. 22.080 (E) (3)

The Forecast of Capacity Balance worksheet associated with Preferred Plan selected for KCP&L is shown in Table 10 below.

Table 10: KCP&L Forecast of Capacity Balance - Preferred Plan **Highly Confidential**

Name of Utility	Kansas City Power & Light																			
Year of Electric Utility Resource Planning Filing	1-Apr-12																			
A. System Generating Capacity (KCPL share)	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**
Base Capacity																				
Wolf Creek	547	547	547	547	547	547	547	547	547	547	547	547	547	547	547	547	547	547	547	547
Iatan I	493	493	493	493	493	493	493	493	493	493	493	493	493	493	493	493	493	493	493	493
Iatan II	482	482	482	482	482	482	482	482	482	482	482	482	482	482	482	482	482	482	482	482
Hawthorn 5	564	564	564	564	564	564	564	564	564	564	564	564	564	564	564	564	564	564	564	564
La Cygne 1	368	368	368	372	372	372	372	372	372	372	372	372	372	372	372	372	372	372	372	372
La Cygne 2	343	343	343	332	332	332	332	332	332	332	332	332	332	332	332	332	332	332	332	332
Montrose 1	170	170	170	170																
Montrose 2	164	164	164	164	164	164	164	164	164	164	164	164	164	164	164	164	164	164	164	164
Montrose 3	176	176	176	176	176	176	176	176	176	176	176	176	176	176	176	176	176	176	176	176
Total Base Capacity	3,307	3,307	3,307	3,300	3,130	3,130	3,130	3,130	3,130	3,130	3,130	3,130	3,130	3,130	3,130	3,130	3,130	3,130	3,130	3,130
Intermediate Capacity																				
Hawthorn 6 & 9	232	232	232	232	232	232	232	232	232	232	232	232	232	232	232	232	232	232	232	232
Combined Cycle Additions																	150	150	150	150
Total Intermediate Capacity	232	232	232	232	232	232	232	232	232	232	232	232	232	232	232	232	382	382	382	382
Peaking Capacity																				
Hawthorn 7	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77
Hawthorn 8	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77
Northeast 11	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48
Northeast 12	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51
Northeast 13	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51	51
Northeast 14	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54
Northeast 15	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Northeast 16	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44
Northeast 17	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54
Northeast 18	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56
Northeast Black Start Generator	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
West Gardner Comb Turb 1	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77
West Gardner Comb Turb 2	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78
West Gardner Comb Turb 3	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77
West Gardner Comb Turb 4	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78
Osawatomie Comb Turb 1	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75
Total Peaking Capacity	948	948	948	948	948	948	948	948	948	948	948	948	948	948	948	948	948	948	948	948
Intermittent Capacity (Nameplate)																				
Spearville I	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101
Spearville II	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48
Total Intermittent Capacity	149	149	149	149	149	149	149	149	149	149	149	149	149	149	149	149	149	149	149	149
Percent Accredited Intermittent Capacity	8.15%	8.15%	8.15%	8.15%	8.15%	8.15%	8.15%	8.15%	8.15%	8.15%	8.15%	8.15%	8.15%	8.15%	8.15%	8.15%	8.15%	8.15%	8.15%	8.15%
Total Accredited Intermittent Capacity	12.1	12.1	12.1	12.1	12.1	12.1	12.1	12.1	12.1	12.1	12.1	12.1	12.1	12.1	12.1	12.1	12.1	12.1	12.1	12.1
Wind Additions					8	8	8	8	24	24	24	32	32	32	32	32	32	32	32	32
Solar Additions							11	11	11	17	17	20	20	20	20	20	20	20	20	20
Total Intermittent Capacity with Additions	12.1	12.1	12.1	12.1	20.1	20.1	31.1	31.1	47.1	53.1	53.1	64.1	64.1	64.1	64.1	64.1	64.1	64.1	64.1	64.1
Total Generation Capacity	4,499	4,499	4,499	4,492	4,330	4,330	4,341	4,341	4,357	4,363	4,363	4,374	4,374	4,374	4,374	4,374	4,524	4,524	4,524	4,524

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SECTION 6: CRITICAL UNCERTAIN FACTORS

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

The Company has selected its Preferred Plan by assuming combined planning for both KCP&L and GMO. This assumption has changed the risk impact when comparing stand-alone company alternatives. As such some critical uncertain factors do not remain critical to the decision of the joined company.

In the combined company analysis the preferred plan, AJDC2 and one other plan, AGDC2, proved to be the lowest cost plan under different risk scenarios. The values of these two plans NPVRR under each of these risks are detailed in the following table.

Table 11: Alternative Plans for Each Uncertain Factor

NPVRR($MM)	High Load	High NG	High CO2	EV	Low CO2	Low NG	Low Load
AGDC2	33,436.3	32,469.6	35,429.8	33,068.4	31,273.4	33,091.1	32,196.9
AJDC2	33,443.5	32,543.4	35,374.8	33,064.5	31,310.4	33,022.2	32,193.3

With combined company planning, the remaining uncertain factors which may cause the company to modify the preferred plan are limited to low CO_2, high load growth and high natural gas prices. Details of the calculations for range of uncertain factors are given in detail in Volume 7, Section2.

For KCP&L the Preferred Plan and the Contingency Plan are the allocated components of the lowest-cost and contingency plan from the combined company study. KCP&L Preferred Plan AGEK9 is the KCP&L allocated portion of combined company plan AJDC2. KCP&L Contingency Plan AAAK9 is the KCP&L allocated portion of combined company plan AGDC2. Complete descriptions of the KCP&L plans are located in the response to Rule 240-22.060(3) in Volume 6 of this filing. Complete descriptions of the combined company plans are located in the response to Rule 240-22.060(3)8 in Volume 6 of this filing.

SECTION 7: 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 12: Financial Performance - Preferred Plan

Year	Revenue Requirement ($MM)	Revenue Requirement ($MM) No DSM	Levelized Annual Rates ($/kw-hr)	Levelized Annual Rates ($/kw-hr) No DSM	Rate Increase	Rate Increase No DSM	Times Interest Earned	Times Interest Earned No DSM	Debt to Capital	Debt to Capital No DSM	Internal Cash to Construction Expense	Internal Cash to Construction Expense No DSM
2012	1,707	1,706	0.11	0.11	0.00%	0.00%	4.47	4.47	50.43	50.43	1.17	1.17
2013	1,679	1,678	0.10	0.10	-2.56%	-2.56%	4.47	4.47	50.42	50.42	0.86	0.86
2014	1,754	1,740	0.11	0.11	3.41%	2.65%	4.39	4.40	50.40	50.40	0.69	0.69
2015	1,736	1,725	0.11	0.11	-1.59%	-1.43%	4.20	4.20	50.37	50.37	0.61	0.61
2016	1,866	1,859	0.11	0.11	6.64%	6.91%	4.53	4.53	50.37	50.37	1.28	1.26
2017	1,921	1,917	0.12	0.12	2.55%	2.72%	4.43	4.43	50.38	50.38	1.72	1.76
2018	1,990	1,988	0.12	0.12	2.93%	3.04%	4.53	4.53	50.37	50.37	1.09	1.22
2019	2,016	2,017	0.12	0.12	0.58%	0.73%	4.40	4.44	50.35	50.36	0.8	0.87
2020	2,156	2,159	0.13	0.13	5.91%	6.01%	4.48	4.47	50.36	50.37	1.88	2.03
2021	2,179	2,182	0.13	0.13	0.58%	0.58%	4.22	4.23	50.37	50.38	1.44	1.47
2022	2,205	2,207	0.13	0.13	0.44%	0.39%	4.37	4.39	50.37	50.39	1.14	1.13
2023	2,262	2,265	0.13	0.13	1.84%	1.88%	4.35	4.37	50.38	50.39	1.88	1.84
2024	2,282	2,285	0.13	0.13	-0.24%	-0.24%	4.35	4.38	50.40	50.41	2.2	2.16
2025	2,258	2,261	0.13	0.13	-1.64%	-1.64%	4.35	4.36	50.42	50.43	1.83	1.56
2026	2,296	2,299	0.13	0.13	0.74%	0.73%	4.32	4.29	50.43	50.43	1.47	0.97
2027	2,328	2,331	0.13	0.13	0.34%	0.34%	4.25	4.16	50.44	50.43	1.62	1.22
2028	2,286	2,289	0.13	0.13	-3.10%	-3.10%	4.20	4.27	50.45	50.44	1.57	1.39
2029	2,307	2,311	0.13	0.13	0.10%	0.14%	3.97	3.96	50.46	50.45	1.58	1.59
2030	2,354	2,358	0.13	0.13	0.87%	0.87%	3.95	3.94	50.47	50.46	1.59	1.59
2031	2,367	2,371	0.13	0.13	-0.54%	-0.54%	3.93	3.92	50.48	50.47	1.54	1.55

SECTION 8: 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 9: RESOURCE ACQUISITION INITIATIVES

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

KCP&L is currently in the initial stage of engaging an engineering firm to develop several supply-side related studies. This suite of studies is referred to as the "Mega Study". KCP&L has engaged Sega, Inc. to develop the scope of the Mega Study and to evaluate the responses that will be received from the Request For Proposal.

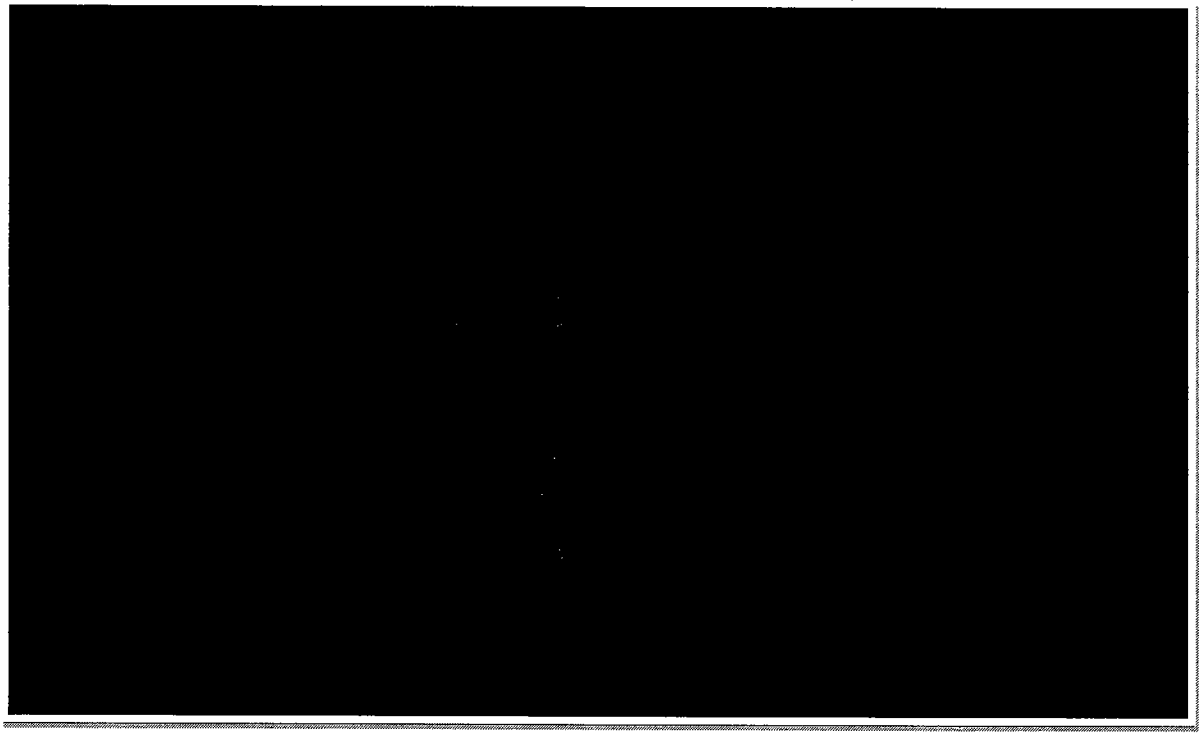
The draft timeline for the Mega Study initiative is shown in Table 13 below:

Table 13: Mega Study Major Milestone Schedule

Milestone Description	Duration (work days)	Start Date	Completion Date	Total Duration (work days)	Status
Statement of Work Issued - Notice to Proceed	1	4/2/2012	4/2/2012	1	Complete
Sega submits draft RFP/Scope	15	4/2/2012	4/20/2012	16	In process
Draft RFP Review and Comments to Sega	5	4/23/2012	4/27/2012	21	In process
Sega Revises and Submits Final RFP	5	4/30/2012	5/4/2012	26	In process
Request For Proposal Issued to Bidders	5	5/7/2012	5/11/2012	31	In process
Bidders Prepare Proposals	18	5/14/2012	6/6/2012	49	In process
Mandatory Pre-Bid Conference for All Bidders	1	5/21/2012	5/21/2012	50	In process
Proposals Due	0	6/6/2012	6/6/2012	50	In process
Evaluation of Proposals	5	6/7/2012	6/13/2012	55	In process
Project Awarded	5	6/14/2012	6/20/2012	60	In process
Commence MEGA Study	0	6/20/2012	6/20/2012	60	In process
Perform Study & Compile Draft Report	75	6/21/2012	10/3/2012	135	In process
Consultant Submits Draft Report	0	10/3/2012	10/3/2012	135	In process
Review and Comment on Draft Report	10	10/4/2012	10/17/2012	145	In process
Finalize Report	10	10/18/2012	10/31/2012	155	In process
Submit FINAL Report	0	10/31/2012	10/31/2012	155	In process

The draft scope of the Mega Study is shown in Table 14 below:

Table 14: Mega Study - Montrose Station ** Highly Confidential **



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SECTION 10: MAJOR RESEARCH PROJECTS

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

10.1 DEMAND-SIDE MANAGEMENT PROJECTS

Major DSM research projects are identified in the table below

Table 15: DSM Research Projects

Major Research Projects			
	PROJECT	Start	Results
1	DSM Market Potential Study	January 16, 2012	January 15, 2013
2	Green Impact Zone SmartGrid Demonstration	2010	2014
3	EPRI / UMKC LED Evaluation	March 29, 2010	Summer 2012

10.1.1 DEMAND-SIDE MANAGEMENT MARKET POTENTIAL STUDY

KCP&L has engaged Navigant Consulting to conduct a Demand-Side Management Potential study in the utility's control area. The scope of work and project schedule are provided in Appendix 5A Navigant SOW Signed 01162012 HC.pdf. The project schedule is shown in Table 16 below:

Table 16: DSM Potential Study Schedule

DSM Potential Study Schedule Estimate		
Milestone	**Estimated Completion Date**	**Status as of June 20, 2011**
RFP Available	May 9, 2011	Complete
Intent to Respond & Signed Non-Disclosure Agreement Due	May 12, 2011	Complete
Mandatory Pre-bid Meeting (via Conference Call)	May 16, 2011	Complete
Bidder Questions Due – 12:00 Noon CDT	May 20, 2011	Complete
Final Answers to Questions Provided by KCP&L – Close of Business	May 27, 2011	Complete
Proposal Responses Due – 12:00 Noon CST	June 10, 2011	Complete
KCP&L Bid Review Complete	June 24, 2011	Complete
Short List Onsite Presentations	June 27, 2011 – July 8, 2011	Complete
Signed Contract	January 16, 2012	Complete
Project Initiation Meeting	January 30, 2012	Complete
Market Characterization, Historical Load Analysis, Sample Design, Surveys	Feb 16, 2011 – Sep 16, 2012	Pending
ID and Characterize Potential Demand Side Resources/Measures	Jun 18, 2012 - Sept 16, 2012	Pending
Estimate Economic and Technical Potential	October 15, 2012	Pending
Develop Potential Demand Side Programs	November 15, 2012	Pending
Finalize Project Report	January 15, 2013	Pending

10.1.2 SMARTGRID DEMONSTRATION PROJECT

KCP&L's SmartGrid demonstration project complies with the Department of Energy's (DOE's) funding guidelines and combines commercial innovation with a unique approach to smart grid development and demonstration:

1. SmartGrid creates a complete, end-to-end smart grid — from smart generation to smart end-use — that will deliver improved performance focused on a major substation in an urban location.

2. SmartGrid introduces new technologies, applications, protocols, communications and business models that will be evaluated, demonstrated and refined to achieve improved operations, increase energy efficiency, reduce energy delivery costs and improve environmental performance.

3. SmartGrid incorporates a best-in-class approach to technology integration, application development and partnership collaboration, allowing KCP&L to advance the progression of complete smart grid solutions — with interoperability standards — rather than singular, packaged applications.

4. KCP&L's demonstration project will provide the critical energy infrastructure required to support a targeted urban revitalization effort in Kansas City's Green Impact Zone.

10.1.3 LED LIGHTING 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 currently available LED lighting. The issues that need to be addressed are system compatibility, technology performance, validating industry performance claims and efficacy issues. In particular, assuming the lamps perform reliably, the efficacy of the lamps will determine the total energy savings possible. LED lamps have a higher color rendering index and this has the effect of increasing the amount of perceived light. Identifying the minimum amount of light output necessary to replace existing light sources will maximize the possible energy savings. To this end, the EPRI collaboration will take periodic readings of scotopic and photopic light measurements at test sites. If you match lumens, LED luminaries can't measure up to HPS lamps. However, if you measure the efficacy, using scotopic readings, LED fixtures can replace HPS fixtures with fewer lumens, therefore, fewer watts.

The EPRI LEDSAL collaboration project involves a test site, where HID lighting is being replaced with LED luminaries. A KCP&L participant is involved in the quarterly measurement process, using EPRI's Rover Light Measurement Tool, to take readings of the pre installation HID lighting, the post installation LED lighting, and quarterly readings, through the end of the project. In addition to testing the efficacy of the LED lighting, the quarterly observations will provide information about degradation, spectrum shift, and reliability and maintenance issues. A significant part of the savings from LED lighting comes from the reduced need for maintenance and monitoring.

Additional information on the KCP&L-EPRI collaboration can be found in Appendix 5E EPRI EE Demonstration-T.Geist-For Electronic Distribution.pdf"