VOLUME 7

RESOURCE ACQUISITION STRATEGY SELECTION

KANSAS CITY POWER & LIGHT COMPANY (KCP&L)

INTEGRATED RESOURCE PLAN

4 CSR 240-22.070

APRIL, 2018

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PURPOSE: This rule requires the utility to select a preferred resource plan, develop an implementation plan, and officially adopt a resource acquisition strategy. The rule also requires the utility to prepare contingency plans and evaluate the demand-side resources that are included in the resource acquisition strategy.

SECTION 1: PREFERRED RESOURCE PLAN

(1) ***The utility shall select a preferred resource plan from among the alternative resource plans that have been analyzed pursuant to the requirements of 4 CSR 240-22.060. The utility shall describe and document the process used to select the preferred resource plan, including the relative weights given to the various performance measures and the rationale used by utility decision makers to judge the appropriate tradeoffs between competing planning objectives and between expected performance and risk. The utility shall provide the names, titles, and roles of the utility decision–makers in the preferred resource plan selection process. The preferred resource plan shall satisfy at least the following conditions:***

(A) In the judgment of utility decision makers, strike an appropriate balance between the various planning objectives specified in 4 CSR 240-22.010(2);

The Alternative Resource Plans (ARP) developed and analyzed under the requirements of 4 CSR 240-22.060 were designed to meet the objectives of 4 CSR 240-22.010(2). Demand-side resources - in conjunction with MEEIA - and growth of the renewables portfolios have been key components in the resource planning efforts of the company for over a decade.

(B) Invest in advanced transmission and distribution technologies unless, in the judgment of the utility decision-makers, investing in those technologies to upgrade transmission and/or distribution networks is not in the public interest;

These planning elements are discussed in 4 CSR 240-22.045 and in special contemporary issues.

(C) Utilize demand-side resources to the maximum amount that comply with legal mandates and, in the judgment of the utility decision-makers, are consistent with the public interest and achieve state energy policies; and

As indicated in section 1(A) above, demand-side resources are a key component of alternative resource plan development. Per 4 CSR 240-22.010(2)(A), demand-side resources, renewable energy, and supply-side resources are to be analyzed on an equivalent basis, subject to compliance with all legal mandates. Regarding demand-side resources, MEEIA provides the legal mandate structure that helps to translate the potential studies and other DSM tools into portfolios that are included in the alternative resource plans to be evaluated.

These planning elements are discussed in 4 CSR 240-22.050 and in special contemporary issues.

(D) In the judgment of the utility decision makers, the preferred plan, in conjunction with the deployment of emergency demand response measures and access to short-term and emergency power supplies, has sufficient resources to serve load forecasted under extreme weather conditions pursuant to 4CSR 240-22.030(8)(B) for the implementation period. If the utility cannot affirm the sufficiency of resources, it shall consider an alternative resource plan or modifications to its preferred resource plan that can meet extreme weather conditions.

The Preferred Plan that has been selected for KCP&L is shown in Table 1 below:

Table 1: KCP&L Preferred Plan

Year	CT's (MW)	Wind (MW)	Solar (MW)	DSM (MW)	Retire (MW)
2018	0	98		34	334
2019	0	80		52	
2020	0			95	
2021	0			134	
2022	0			171	
2023	0			212	
2024	0			256	
2025	0			303	
2026	0			347	
2027	0			383	
2028	0		13	409	
2029	0			429	
2030	0			447	
2031	0			463	
2032	0			476	
2033	0			485	
2034	0			490	
2035	0			496	
2036	0			506	
2037	0			517	

Based in part upon current Missouri RPS rule requirements, the Preferred Plan includes 13 MW of solar additions and 178 MW of wind additions over the twenty-year planning period. The 178 MW of wind additions are from two power purchase agreements (PPA) executed in 2017. The one wind project consisting of 244 MW of total capacity is currently expected to be in service in 2018. The second wind project consisting of 200 MW of total capacity is currently expected to be in service by June, 2019. The total capacity of each wind facility is shared between KCP&L and GMO. The DSM resources included in the Preferred Plan consist of a suite of six residential and eight commercial programs three of which are demand response programs, two are educational programs, and nine are energy efficiency programs.

The Preferred Plan also includes retiring 334 MW of coal generation at Montrose Station by 2019. Key drivers that contribute to these retirement decisions are a lower SPP reserve margin requirement which has been reduced from 13.6% to 12%, higher wind resource accreditations, and a reserve margin requirement based upon a normal weather peak forecast rather than actual peak. Additionally, continued low long-term gas price forecasts, low long-term peak load forecasts, and more wind capacity additions in the SPP region have reduced the economic value of these units. Also, environmental regulations including Ozone National Ambient Air Quality Standards (NAAQS), PM NAAQS, Clean Water Act Section 316(a) and (b), Coal Combustion Residuals Rule, Effluent Guidelines, Clean Power Plan increase the projected cost of operating these units, further reducing their economic value.

The Preferred Plan 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 Preferred Plan was reviewed and approved by Terry D. Bassham, President and Chief Executive Officer and Duane Anstaett, Vice President – Generation.

The Forecast of Capacity Balance worksheet associated with the KCP&L Preferred Plan is shown in Table 2 below. The Capacity Balance shows that reserve obligations are met each year.

Table 2: KCP&L Forecast of Capacity Balance - Preferred Plan

	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037
A. System Generating Capacity (KCPL share)																				
Base Capacity																				
Wolf Creek	552	552	552	552	552	552	552	552	552	552	552	552	552	552	552	552	552	552	552	552
Iatan I	490	490	490	490	490	490	490	490	490	490	490	490	490	490	490	490	490	490	490	490
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	368	368	368	368	368	368	368	368	368	368	368	368	368	368	368	368	368
La Cygne 2	331	331	331	331	331	331	331	331	331	331	331	331	331	331	331	331	331	331	331	331
Montrose 2	164	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Montrose 3	170	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Base Capacity	**3,121**	**2,787**	**2,787**	**2,787**	**2,787**	**2,787**	**2,787**	**2,787**	**2,787**	**2,787**	**2,787**	**2,787**	**2,787**	**2,787**	**2,787**	**2,787**	**2,787**	**2,787**	**2,787**	**2,787**
Intermediate Capacity																				
Hawthorn 6 & 9	235	235	235	235	235	235	235	235	235	235	235	235	235	235	235	235	235	235	235	235
Total Intermediate Capacity	**235**	**235**	**235**	**235**	**235**	**235**	**235**	**235**	**235**	**235**	**235**	**235**	**235**	**235**	**235**	**235**	**235**	**235**	**235**	**235**
Peaking Capacity																				
Hawthorn 7	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78
Hawthorn 8	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79
Northeast 11	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47
Northeast 12	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41
Northeast 13	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46
Northeast 14	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49
Northeast 15	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53
Northeast 16	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53
Northeast 17	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53
Northeast 18	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52
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 1	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80
West Gardner 2	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79	79
West Gardner 3	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77	77
West Gardner 4	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78
Osawatomie	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76
Total Peaking Capacity	**942**	**942**	**942**	**942**	**942**	**942**	**942**	**942**	**942**	**942**	**942**	**942**	**942**	**942**	**942**	**942**	**942**	**942**	**942**	**942**
Intermittent Capacity (Nameplate)																				
Spearville 1	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101
Spearville 2	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	32%	32%	32%	32%	32%	32%	32%	32%	32%	32%	32%	32%	32%	32%	32%	32%	32%	32%	32%	32%
Total Accredited Intermittent Capacity	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47
Wind Additions																				
Solar Additions											1	1	1	1	1	1	1	1	1	1
Total Intermittent Capacity with Additions	47	47	47	47	47	47	47	47	47	47	48	48	48	48	48	48	48	48	48	48
Total Generation Capacity (TGC)	**4,345**	**4,011**	**4,011**	**4,011**	**4,011**	**4,011**	**4,011**	**4,011**	**4,011**	**4,011**	**4,012**	**4,012**	**4,012**	**4,012**	**4,012**	**4,012**	**4,012**	**4,012**	**4,012**	**4,012**
B. Capacity Transactions																				
Purchases:																				
Duke/Sumitomo Cimarron II (131.1 MW)	39	39	39	39	39	39	39	39	39	39	39	39	39	39	-	-	-	-	-	-
EDF Spearville 3 (100.8 MW)	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	-	-	-	-	-
CNPPID (Nebraska) - Hydro PPA	60	60	60	60	60	60	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EDPR Renewables Waverly (200 MW)	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	-	-
EDF Slate Creek (150 MW)	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	-	-
Enel Rock Creek (180 MW)	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36
NextEra Osborn (120 MW)	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
NextEra Pratt (98 MW)	-	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46
EDPR Prairie Queen (80 MW)	-	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26
Total Capacity Purchases (P)	313	385	385	385	385	385	325	325	325	325	325	325	325	325	286	250	250	250	119	119
Sales:																				
GMO	(60)	(125)	(35)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
City of Chanute	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
City of Eudora	(15)	(15)	(15)	(15)	(15)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KMEA (from SPV 1 & 2)	(37)	(27)	(27)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Big Rivers Electric Coop	-	(25)	(25)	(25)	(25)	(25)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Capacity Sales (S)	(112)	(192)	(102)	(40)	(40)	(25)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Net Transactions (NT)	**201**	**193**	**283**	**345**	**345**	**360**	**325**	**325**	**325**	**325**	**325**	**325**	**325**	**325**	**286**	**250**	**250**	**250**	**119**	**119**
Total System Capacity (TSC)	**4,545**	**4,203**	**4,293**	**4,355**	**4,355**	**4,370**	**4,336**	**4,336**	**4,336**	**4,336**	**4,337**	**4,337**	**4,337**	**4,337**	**4,298**	**4,262**	**4,262**	**4,262**	**4,131**	**4,131**
C. System Peaks & Reserves																				
Peak Demands																				
Forecasted Peak	**3,507**	**3,519**	**3,510**	**3,509**	**3,523**	**3,536**	**3,560**	**3,566**	**3,574**	**3,594**	**3,625**	**3,644**	**3,665**	**3,680**	**3,699**	**3,718**	**3,741**	**3,770**	**3,801**	**3,810**
Less DSM:																				
Demand Response	(50)	(70)	(98)	(123)	(144)	(167)	(194)	(219)	(241)	(257)	(269)	(277)	(280)	(280)	(279)	(277)	(274)	(271)	(270)	(272)
Energy Efficiency		(5)	(15)	(23)	(33)	(43)	(53)	(62)	(72)	(81)	(91)	(99)	(106)	(114)	(121)	(129)	(136)	(143)	(151)	(160)
MEEIA	(34)	(27)	(27)	(26)	(26)	(25)	(25)	(24)	(24)	(21)	(12)	(4)	(2)	(2)	(2)	(0)	1	1	1	1
Demand-Side Rates	-	(0)	(5)	(11)	(18)	(26)	(34)	(47)	(59)	(73)	(86)	(98)	(108)	(116)	(124)	(128)	(130)	(132)	(134)	(136)
Peak Forecast less DSM (PF)	**3,423**	**3,417**	**3,366**	**3,325**	**3,302**	**3,275**	**3,254**	**3,214**	**3,178**	**3,162**	**3,167**	**3,166**	**3,168**	**3,168**	**3,174**	**3,184**	**3,201**	**3,224**	**3,246**	**3,244**
Capacity Reserves (CR)	**1,123**	**786**	**927**	**1,030**	**1,053**	**1,096**	**1,081**	**1,122**	**1,158**	**1,174**	**1,170**	**1,171**	**1,168**	**1,169**	**1,124**	**1,078**	**1,061**	**1,038**	**885**	**887**
D. Capacity Needs																				
% Reserve Margin	33%	23%	28%	31%	32%	33%	33%	35%	36%	37%	37%	37%	37%	37%	35%	34%	33%	32%	27%	27%
% Capacity Margin	25%	19%	22%	24%	24%	25%	25%	26%	27%	27%	27%	27%	27%	27%	26%	25%	25%	24%	21%	21%
Required Capacity (RC)	**3,833**	**3,828**	**3,770**	**3,724**	**3,699**	**3,668**	**3,645**	**3,599**	**3,559**	**3,541**	**3,547**	**3,545**	**3,548**	**3,548**	**3,555**	**3,566**	**3,585**	**3,611**	**3,635**	**3,633**
Capacity Balance	**712**	**376**	**524**	**631**	**657**	**703**	**691**	**736**	**777**	**795**	**790**	**791**	**788**	**789**	**743**	**696**	**676**	**651**	**495**	**498**

The Preferred Plan was tested under extreme weather conditions as defined by Rule 240-22.030(8)(B). The performance measure effects and annual amount of unserved energy given extreme weather conditions are provided below, followed by an unserved energy table. The 311 MWh of unserved energy is not considered meaningful.

Table 3: Performance Measure Impact - Extreme Weather

Year	Revenue Requirement ($MM)	Revenue Requirement ($MM) - Extreme Weather	Levelized Annual Rates ($/kW-hr)	Levelized Annual Rates ($/kW-hr) - Extreme Weather	Rate Increase	Rate Increase - Extreme Weather	Times Interest Earned	Times Interest Earned - Extreme Weather	Debt to Capital	Debt to Capital - Extreme Weather	Internal Cash to Construction Expense	Internal Cash to Construction Expense - Extreme Weather
2018	1,788	1,789	0.11	0.11	0.00%	0.00%	4.83	4.83	47.90	47.90	1.19	1.19
2019	1,805	1,806	0.11	0.11	1.01%	1.04%	4.95	4.95	47.90	47.90	1.35	1.35
2020	1,772	1,772	0.11	0.11	-1.75%	-1.77%	4.62	4.62	47.90	47.90	1.37	1.37
2021	1,817	1,818	0.11	0.11	2.96%	2.97%	4.57	4.57	47.90	47.90	1.36	1.36
2022	1,828	1,829	0.12	0.12	0.51%	0.52%	4.55	4.55	47.89	47.89	1.23	1.23
2023	1,835	1,836	0.12	0.12	0.28%	0.28%	4.36	4.36	47.89	47.89	1.08	1.08
2024	1,859	1,860	0.12	0.12	0.99%	1.00%	4.11	4.11	47.88	47.88	1.00	1.00
2025	1,877	1,879	0.12	0.12	1.07%	1.07%	4.03	4.03	47.87	47.87	1.04	1.04
2026	1,978	1,979	0.12	0.12	5.04%	5.06%	4.08	4.08	47.87	47.87	1.30	1.30
2027	2,070	2,072	0.13	0.13	4.24%	4.23%	4.17	4.17	47.87	47.87	1.28	1.28
2028	2,099	2,100	0.13	0.13	0.61%	0.60%	4.06	4.06	47.87	47.87	1.35	1.35
2029	2,099	2,101	0.13	0.13	-0.35%	-0.33%	4.04	4.04	47.87	47.87	1.31	1.31
2030	2,140	2,142	0.13	0.13	1.53%	1.52%	4.01	4.01	47.87	47.87	1.33	1.33
2031	2,173	2,175	0.13	0.13	1.09%	1.12%	3.98	3.98	47.87	47.87	1.37	1.37
2032	2,214	2,216	0.13	0.13	1.17%	1.14%	4.04	4.04	47.87	47.87	1.42	1.42
2033	2,282	2,284	0.14	0.14	2.76%	2.76%	3.99	3.99	47.87	47.87	1.48	1.48
2034	2,314	2,316	0.14	0.14	0.76%	0.77%	3.97	3.97	47.87	47.87	1.42	1.42
2035	2,332	2,334	0.14	0.14	0.11%	0.09%	3.75	3.75	47.87	47.87	1.43	1.43
2036	2,420	2,423	0.14	0.14	2.84%	2.84%	3.90	3.90	47.87	47.87	1.42	1.42
2037	2,471	2,473	0.15	0.15	1.58%	1.59%	3.89	3.89	47.87	47.87	1.44	1.44

Table 4: Extreme Weather Unserved Energy

Year	Unserved Energy - Extreme Weather (MWh)
2018	0
2019	311
2020	0
2021	0
2022	0
2023	0
2024	0
2025	0
2026	0
2027	0
2028	0
2029	0
2030	0
2031	0
2032	0
2033	0
2034	0
2035	0
2036	0
2037	0

SECTION 2: RANGES OF CRITICAL UNCERTAIN FACTORS

The utility shall specify the ranges or combinations of outcomes for the critical uncertain factors that define the limits within which the preferred resource plan is judged to be appropriate and explain how these limits were determined. The utility shall also describe and document its assessment of whether, and under what circumstances, other uncertain factors associated with the preferred resource plan could materially affect the performance of the preferred resource plan relative to alternative resource plans.

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 Plan to no longer be preferred. 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 high, mid and low forecasts for each critical uncertain factor to develop the resulting ranges.

The Company has selected its Preferred Plan (KAADA) based on the results of the NPVRR (in $mm) rankings of KCP&L Alternative Resource Plans (ARPs). All ARPs are ranked based upon the expected value of results from the 18 scenario/endpoint decision tree represented in Figure 1 of Volume 6 KCPL Integrated Resource Plan and Risk Analysis. These results are presented in Table 5 below:

Table 5: Alternative Resource Plan Rankings

18 EP Expected Value		
PLAN	NPVRR	DELTA
KAADA	20,271	-
KAALA	20,272	1
KAAKA	20,315	44
KAAFA	20,318	46
KAACA	20,322	50
KAAEA	20,324	53
KAABA	20,339	68
KAAGA	20,345	73
KBBDA	20,357	86
KAAHA	20,377	105
KAAEW	20,434	163
KAAAA	20,441	170
KAAKN	20,470	199
KBBAA	20,526	254

The plans are also ranked by their sub-sets of results, representing a known state of CO_2, the nine endpoints assuming a future CO_2 tax are represented on the left side of Table 6 whereas no future CO_2 tax results are shown on the right side of Table 6 below.

Table 6: Alternative Resource Plan Ranking Based upon CO_2

9 EP EV (CO2)			9 EP EV (No CO2)		
PLAN	NPVRR	DELTA	PLAN	NPVRR	DELTA
KAADA	20,788	-	KAADA	19,927	-
KAALA	20,789	1	KAALA	19,928	1
KBBDA	20,810	22	KAAKA	19,967	40
KAAKA	20,837	50	KAAFA	19,970	42
KAAFA	20,839	52	KAACA	19,975	48
KAACA	20,841	54	KAAEA	19,978	51
KAAEA	20,844	56	KAABA	19,995	68
KAABA	20,856	68	KAAGA	19,996	68
KAAGA	20,868	80	KAAHA	20,023	96
KAAHA	20,907	120	KBBDA	20,055	128
KAAEW	20,935	147	KAAAA	20,100	173
KAAAA	20,952	164	KAAEW	20,100	173
KBBAA	20,973	185	KAAKN	20,112	184
KAAKN	21,008	220	KBBAA	20,227	300

The lowest ranked ARPs by scenario/endpoint are provided in Table 7 below.

Table 7: Lowest NPVRR Alternative Resource Plan By Endpoint

EP	Plan	NPVRR ($mm)	Load Growth	Natural Gas	CO_2	Endpoint Probability
1	KAADA	20,979	High	High	Yes	2.5%
2	KAADA	20,042	High	High	No	3.8%
3	KAADA	21,207	High	Mid	Yes	5.0%
4	KAADA	20,285	High	Mid	No	7.5%
5	KBBDA	21,346	High	Low	Yes	2.5%
6	KAADA	20,488	High	Low	No	3.8%
7	KAADA	20,528	Mid	High	Yes	5.0%
8	KAADA	19,639	Mid	High	No	7.5%
9	KAADA	20,791	Mid	Mid	Yes	10.0%
10	KAADA	19,923	Mid	Mid	No	15.0%
11	KBBDA	20,968	Mid	Low	Yes	5.0%
12	KAADA	20,166	Mid	Low	No	7.5%
13	KAADA	20,148	Low	High	Yes	2.5%
14	KAADA	19,305	Low	High	No	3.8%
15	KAADA	20,439	Low	Mid	Yes	5.0%
16	KAADA	19,619	Low	Mid	No	7.5%
17	KBBDA	22,148	Low	Low	Yes	2.5%
18	KAALA	19,892	Low	Low	No	3.8%

In these rankings above, KAADA emerges as the lowest cost in all but four scenarios. In EP 18 - representing low load growth, low gas price, no CO_2 tax, the overall second ranked plan (KAALA) has a $0.171mm lower revenue requirement than Preferred Plan KAADA. In three endpoints - EPs 5, 11 and 17- plan KBBDA is the lowest cost plan. KBBDA, has LaCygne 1 retiring in 2025, and represents the low gas prices combined with CO_2 restrictions at all load growth scenarios (High, Mid and Low).

The following tables represent the sensitivities for the uncertain factors by scenario/endpoint.

Table 8: Uncertain Factors Sensitivities - Load Vs. Natural Gas and CO_2

High Load (Including DSM)

	CO2 - Yes		CO2 - No		CO2 - Yes		CO2 - No		CO2 - Yes		CO2 - No	
	Endpoint 1		Endpoint 2		Endpoint 3		Endpoint 4		Endpoint 5		Endpoint 6	
	PLAN	NPVRR	PLAN	NPVRR	PLAN	NPVRR	PLAN	NPVRR	PLAN	NPVRR	PLAN	NPVRR
HIGH GAS	KAADA	20,979	KAADA	20,042	KAADA	21,207	KAADA	20,285	KBBDA	21,346	KAADA	20,488
	KAALA	20,981	KAALA	20,043	KAALA	21,208	KAALA	20,286	KAADA	21,355	KAALA	20,488
	KAACA	21,036	KAAKA	20,091	KBBDA	21,230	KAAKA	20,326	KAALA	21,356	KAAKA	20,522
	KAAKA	21,036	KAAFA	20,093	KAAKA	21,258	KAAFA	20,329	KAAKA	21,398	KAAFA	20,525
	KAAEA	21,037	KAACA	20,093	KAAFA	21,260	KAACA	20,333	KAAFA	21,400	KAACA	20,533
	KAAFA	21,038	KAAEA	20,096	KAACA	21,261	KAAEA	20,336	KAACA	21,405	KAAEA	20,536
	KBBDA	21,045	KAABA	20,108	KAAEA	21,263	KAABA	20,352	KAAEA	21,408	KAAGA	20,550
	KAABA	21,045	KAAGA	20,120	KAABA	21,274	KAAGA	20,355	KAABA	21,423	KAABA	20,556
	KAAGA	21,067	KAAHA	20,161	KAAGA	21,288	KAAHA	20,385	KAAGA	21,427	KAAHA	20,570
	KAAEW	21,106	KAAEW	20,190	KAAHA	21,328	KBBDA	20,425	KAAHA	21,458	KBBDA	20,583
	KAAHA	21,116	KAAAA	20,204	KAAEW	21,351	KAAEW	20,451	KAAEW	21,515	KAAKN	20,653
	KAAAA	21,136	KBBDA	20,227	KAAAA	21,370	KAAAA	20,455	KBBAA	21,516	KAAAA	20,666
	KBBAA	21,200	KAAKN	20,262	KBBAA	21,392	KAAKN	20,476	KAAAA	21,525	KAAEW	20,670
	KAAKN	21,230	KBBAA	20,389	KAAKN	21,431	KBBAA	20,596	KAAKN	21,551	KBBAA	20,762

Low Load (Including DSM)

	Endpoint 13		Endpoint 14		Endpoint 15		Endpoint 16		Endpoint 17		Endpoint 18	
	PLAN	NPVRR	PLAN	NPVRR	PLAN	NPVRR	PLAN	NPVRR	PLAN	NPVRR	PLAN	NPVRR
HIGH GAS	KAADA	20,148	KAADA	19,305	KAADA	20,439	KAADA	19,619	KBBDA	20,642	KAALA	19,892.1
	KAALA	20,149	KAALA	19,306	KAALA	20,440	KAALA	19,620	KAADA	20,655	KAADA	19,892.2
	KBBDA	20,198	KAAKA	19,347	KBBDA	20,453	KAAKA	19,655	KAALA	20,656	KAAKA	19,922.6
	KAAKA	20,201	KAAFA	19,349	KAAKA	20,487	KAAFA	19,658	KAAKA	20,698	KAAFA	19,925.9
	KAACA	20,202	KAACA	19,356	KAAFA	20,489	KAACA	19,667	KAAFA	20,701	KAACA	19,937.0
	KAAFA	20,202	KAAEA	19,358	KAACA	20,491	KAAEA	19,670	KAACA	20,705	KAAEA	19,940.5
	KAAEA	20,204	KAABA	19,373	KAAEA	20,493	KAAGA	19,685	KAAEA	20,707	KAAGA	19,951.0
	KAABA	20,213	KAAGA	19,377	KAABA	20,505	KAABA	19,689	KAABA	20,723	KAABA	19,962.2
	KAAGA	20,232	KAAHA	19,410	KAAGA	20,518	KAAHA	19,709	KAAGA	20,727	KAAHA	19,966.3
	KAAHA	20,278	KBBDA	19,454	KAAHA	20,556	KBBDA	19,733	KAAHA	20,757	KBBDA	19,969.2
	KAAEW	20,283	KAAEW	19,473	KAAEW	20,588	KAAKN	19,793	KBBAA	20,813	KAAKN	20,044.4
	KAAAA	20,306	KAAAA	19,476	KAAAA	20,603	KAAAA	19,796	KAAEW	20,819	KAAAA	20,074.7
	KBBAA	20,356	KAAKN	19,502	KBBAA	20,617	KAAEW	19,801	KAAAA	20,825	KAAEW	20,085.3
	KAAKN	20,387	KBBAA	19,620	KAAKN	20,655	KBBAA	19,906	KAAKN	20,848	KBBAA	20,149.4

Table 9: Uncertain Factors Sensitivities – Natural Gas Vs. Load and CO_2

HIGH NATURAL GAS PRICES

	CO2 - Yes		CO2 - No		CO2 - Yes		CO2 - No		CO2 - Yes		CO2 - No	
	Endpoint 1		Endpoint 2		Endpoint 7		Endpoint 8		Endpoint 13		Endpoint 14	
	PLAN	NPVRR	PLAN	NPVRR	PLAN	NPVRR	PLAN	NPVRR	PLAN	NPVRR	PLAN	NPVRR
HIGH LOAD	KAADA	20,979	KAADA	20,042	KAADA	20,528	KAADA	19,639	KAADA	20,148	KAADA	19,305
	KAALA	20,981	KAALA	20,043	KAALA	20,529	KAALA	19,640	KAALA	20,149	KAALA	19,306
	KAACA	21,036	KAAKA	20,091	KAAKA	20,583	KAAKA	19,687	KBBDA	20,198	KAAKA	19,347
	KAAKA	21,036	KAAFA	20,093	KAAFA	20,585	KAAFA	19,689	KAAKA	20,201	KAAFA	19,349
	KAAEA	21,037	KAACA	20,093	KAACA	20,585	KAACA	19,690	KAACA	20,202	KAACA	19,356
	KAAFA	21,038	KAAEA	20,096	KAAEA	20,587	KAAEA	19,692	KAAFA	20,202	KAAEA	19,358
	KBBDA	21,045	KAABA	20,108	KBBDA	20,588	KAABA	19,706	KAAEA	20,204	KAABA	19,373
	KAABA	21,045	KAAGA	20,120	KAABA	20,596	KAAGA	19,716	KAABA	20,213	KAAGA	19,377
	KAAGA	21,067	KAAHA	20,161	KAAGA	20,615	KAAHA	19,754	KAAGA	20,232	KAAHA	19,410
	KAAEW	21,106	KAAEW	20,190	KAAEW	20,660	KAAEW	19,796	KAAHA	20,278	KBBDA	19,454
	KAAHA	21,116	KAAAA	20,204	KAAHA	20,663	KAAAA	19,804	KAAEW	20,283	KAAEW	19,473
	KAAAA	21,136	KBBDA	20,227	KAAAA	20,686	KBBDA	19,809	KAAAA	20,306	KAAAA	19,476
	KBBAA	21,200	KAAKN	20,262	KBBAA	20,745	KAAKN	19,851	KBBAA	20,356	KAAKN	19,502
	KAAKN	21,230	KBBAA	20,389	KAAKN	20,773	KBBAA	19,974	KAAKN	20,387	KBBAA	19,620

LOW NATURAL GAS PRICES

	Endpoint 5		Endpoint 6		Endpoint 11		Endpoint 12		Endpoint 17		Endpoint 18	
	PLAN	NPVRR	PLAN	NPVRR	PLAN	NPVRR	PLAN	NPVRR	PLAN	NPVRR	PLAN	NPVRR
HIGH LOAD	KBBDA	21,346	KAADA	20,488.20	KBBDA	20,968	KAADA	20,165.9	KBBDA	20,642	KAALA	19,892
	KAADA	21,355	KAALA	20,488.21	KAADA	20,977	KAALA	20,166.1	KAADA	20,655	KAADA	19,892
	KAALA	21,356	KAAKA	20,522.42	KAALA	20,978	KAAKA	20,199.7	KAALA	20,656	KAAKA	19,923
	KAAKA	21,398	KAAFA	20,525.43	KAAKA	21,020	KAAFA	20,203.0	KAAKA	20,698	KAAFA	19,926
	KAAFA	21,400	KAACA	20,533.02	KAAFA	21,023	KAACA	20,211.2	KAAFA	20,701	KAACA	19,937
	KAACA	21,405	KAAEA	20,536.35	KAACA	21,029	KAAEA	20,214.5	KAACA	20,705	KAAEA	19,940
	KAAEA	21,408	KAAGA	20,549.72	KAAEA	21,032	KAAGA	20,227.2	KAAEA	20,707	KAAGA	19,951
	KAABA	21,423	KAABA	20,556.36	KAABA	21,047	KAABA	20,235.1	KAABA	20,723	KAABA	19,962
	KAAGA	21,427	KAAHA	20,569.95	KAAGA	21,052	KAAHA	20,245.4	KAAGA	20,727	KAAHA	19,966
	KAAHA	21,458	KBBDA	20,583.16	KAAHA	21,082	KBBDA	20,253.7	KAAHA	20,757	KBBDA	19,969
	KAAEW	21,515	KAAKN	20,652.52	KBBAA	21,139	KAAKN	20,326.3	KBBAA	20,813	KAAKN	20,044
	KBBAA	21,516	KAAAA	20,665.85	KAAEW	21,141	KAAAA	20,345.7	KAAEW	20,819	KAAAA	20,075
	KAAAA	21,525	KAAEW	20,669.99	KAAAA	21,149	KAAEW	20,353.2	KAAAA	20,825	KAAEW	20,085
	KAAKN	21,551	KBBAA	20,761.62	KAAKN	21,173	KBBAA	20,432.9	KAAKN	20,848	KBBAA	20,149

Table 10: Uncertain Factors Sensitivities – CO_2 Vs. Load and Natural Gas

CO2 CREDIT PRICES - Yes

	HIGH GAS		MID GAS		LOW GAS	
HIGH LOAD	Endpoint	1	Endpoint	3	Endpoint	5
	PLAN	NPVRR	PLAN	NPVRR	PLAN	NPVRR
	KAADA	20,979	KAADA	21,207	KBBDA	21,346
	KAALA	20,981	KAALA	21,208	KAADA	21,355
	KAACA	21,036	KBBDA	21,230	KAALA	21,356
	KAAKA	21,036	KAAKA	21,258	KAAKA	21,398
	KAAEA	21,037	KAAFA	21,260	KAAFA	21,400
	KAAFA	21,038	KAACA	21,261	KAACA	21,405
	KBBDA	21,045	KAAEA	21,263	KAAEA	21,408
	KAABA	21,045	KAABA	21,274	KAABA	21,423
	KAAGA	21,067	KAAGA	21,288	KAAGA	21,427
	KAAEW	21,106	KAAHA	21,328	KAAHA	21,458
	KAAHA	21,116	KAAEW	21,351	KAAEW	21,515
	KAAAA	21,136	KAAAA	21,370	KBBAA	21,516
	KBBAA	21,200	KBBAA	21,392	KAAAA	21,525
	KAAKN	21,230	KAAKN	21,431	KAAKN	21,551

	HIGH GAS		MID GAS		LOW GAS	
MID LOAD	Endpoint	7	Endpoint	9	Endpoint	11
	PLAN	NPVRR	PLAN	NPVRR	PLAN	NPVRR
	KAADA	20,528	KAADA	20,791	KBBDA	20,968
	KAALA	20,529	KAALA	20,792	KAADA	20,977
	KAAKA	20,583	KBBDA	20,812	KAALA	20,978
	KAAFA	20,585	KAAKA	20,841	KAAKA	21,020
	KAACA	20,585	KAAFA	20,843	KAAFA	21,023
	KAAEA	20,587	KAACA	20,846	KAACA	21,029
	KBBDA	20,588	KAAEA	20,848	KAAEA	21,032
	KAABA	20,596	KAABA	20,860	KAABA	21,047
	KAAGA	20,615	KAAGA	20,873	KAAGA	21,052
	KAAEW	20,660	KAAHA	20,912	KAAHA	21,082
	KAAHA	20,663	KAAEW	20,939	KBBAA	21,139
	KAAAA	20,686	KAAAA	20,956	KAAEW	21,141
	KBBAA	20,745	KBBAA	20,975	KAAAA	21,149
	KAAKN	20,773	KAAKN	21,012	KAAKN	21,173

	HIGH GAS		MID GAS		LOW GAS	
LOW LOAD	Endpoint	13	Endpoint	15	Endpoint	17
	PLAN	NPVRR	PLAN	NPVRR	PLAN	NPVRR
	KAADA	20,148	KAADA	20,439	KBBDA	20,642
	KAALA	20,149	KAALA	20,440	KAADA	20,655
	KBBDA	20,198	KBBDA	20,453	KAALA	20,656
	KAAKA	20,201	KAAKA	20,487	KAAKA	20,698
	KAACA	20,202	KAAFA	20,489	KAAFA	20,701
	KAAFA	20,202	KAACA	20,491	KAACA	20,705
	KAAEA	20,204	KAAEA	20,493	KAAEA	20,707
	KAABA	20,213	KAABA	20,505	KAABA	20,723
	KAAGA	20,232	KAAGA	20,518	KAAGA	20,727
	KAAHA	20,278	KAAHA	20,556	KAAHA	20,757
	KAAEW	20,283	KAAEW	20,588	KBBAA	20,813
	KAAAA	20,306	KAAAA	20,603	KAAEW	20,819
	KBBAA	20,356	KBBAA	20,617	KAAAA	20,825
	KAAKN	20,387	KAAKN	20,655	KAAKN	20,848

CO2 CREDIT PRICES - No

	HIGH GAS		MID GAS		LOW GAS	
HIGH LOAD	Endpoint	2	Endpoint	4	Endpoint	6
	PLAN	NPVRR	PLAN	NPVRR	PLAN	NPVRR
	KAADA	20,042	KAADA	20,285	KAADA	20,488.20
	KAALA	20,043	KAALA	20,286	KAALA	20,488.21
	KAAKA	20,091	KAAKA	20,326	KAAKA	20,522.42
	KAAFA	20,093	KAAFA	20,329	KAAFA	20,525.43
	KAACA	20,093	KAACA	20,333	KAACA	20,533.02
	KAAEA	20,096	KAAEA	20,336	KAAEA	20,536.35
	KAABA	20,108	KAABA	20,352	KAAGA	20,549.72
	KAAGA	20,120	KAAGA	20,355	KAABA	20,556.36
	KAAHA	20,161	KAAHA	20,385	KAAHA	20,569.95
	KAAEW	20,190	KBBDA	20,425	KBBDA	20,583.16
	KAAAA	20,204	KAAEW	20,451	KAAKN	20,652.52
	KBBDA	20,227	KAAAA	20,455	KAAAA	20,665.85
	KAAKN	20,262	KAAKN	20,476	KAAEW	20,669.99
	KBBAA	20,389	KBBAA	20,596	KBBAA	20,761.62

	HIGH GAS		MID GAS		LOW GAS	
MID LOAD	Endpoint	8	Endpoint	10	Endpoint	12
	PLAN	NPVRR	PLAN	NPVRR	PLAN	NPVRR
	KAADA	19,639	KAADA	19,923	KAADA	20,165.9
	KAALA	19,640	KAALA	19,924	KAALA	20,166.1
	KAAKA	19,687	KAAKA	19,964	KAAKA	20,199.7
	KAAFA	19,689	KAAFA	19,966	KAAFA	20,203.0
	KAACA	19,690	KAACA	19,971	KAACA	20,211.2
	KAAEA	19,692	KAAEA	19,974	KAAEA	20,214.5
	KAABA	19,706	KAABA	19,991	KAAGA	20,227.2
	KAAGA	19,716	KAAGA	19,992	KAABA	20,235.1
	KAAHA	19,754	KAAHA	20,020	KAAHA	20,245.4
	KAAEW	19,796	KBBDA	20,052	KBBDA	20,253.7
	KAAAA	19,804	KAAAA	20,096	KAAKN	20,326.3
	KBBDA	19,809	KAAEW	20,096	KAAAA	20,345.7
	KAAKN	19,851	KAAKN	20,108	KAAEW	20,353.2
	KBBAA	19,974	KBBAA	20,224	KBBAA	20,432.9

	HIGH GAS		MID GAS		LOW GAS	
LOW LOAD	Endpoint	14	Endpoint	16	Endpoint	18
	PLAN	NPVRR	PLAN	NPVRR	PLAN	NPVRR
	KAADA	19,305	KAADA	19,619	KAALA	19,892.06
	KAALA	19,306	KAALA	19,620	KAADA	19,892.23
	KAAKA	19,347	KAAKA	19,655	KAAKA	19,922.60
	KAAFA	19,349	KAAFA	19,658	KAAFA	19,925.94
	KAACA	19,356	KAACA	19,667	KAACA	19,937.01
	KAAEA	19,358	KAAEA	19,670	KAAEA	19,940.48
	KAABA	19,373	KAAGA	19,685	KAAGA	19,951.04
	KAAGA	19,377	KAABA	19,689	KAABA	19,962.25
	KAAHA	19,410	KAAHA	19,709	KAAHA	19,966.28
	KBBDA	19,454	KBBDA	19,733	KBBDA	19,969.20
	KAAEW	19,473	KAAKN	19,793	KAAKN	20,044.36
	KAAAA	19,476	KAAAA	19,796	KAAAA	20,074.71
	KAAKN	19,502	KAAEW	19,801	KAAEW	20,085.32
	KBBAA	19,620	KBBAA	19,906	KBBAA	20,149.41

The NPVRR values of the Preferred Plan, KAADA, Vs. KBBDA under each of the risks are detailed in the following table.

Table 11: Risk Scenario NPVRR

Assuming No CO_2 Tax						
NPVRR ($MM)	**High Load**	**High NG**	**No CO_2 Tax**	**EV**	**Low NG**	**Low Load**
KAADA	20,285	19,639	19,923	20,271	20,166	19,619
KBBDA	20,425	19,809	20,052	20,357	20,254	19,733
Assuming CO_2 Tax						
NPVRR ($MM)	**High Load**	**High NG**	**CO_2 Tax**	**EV**	**Low NG**	**Low Load**
KAADA	21,207	20,528	20,791	20,271	20,977	20,439
KBBDA	21,230	20,588	20,812	20,357	20,968	20,453

Given the analysis indicates that the Preferred Plan ranking across the scenarios is relatively insensitive to the load and gas price ranges evaluated, limits within which the Preferred Plan remains appropriate was not determined.

2.1 COMBINATION OF UNCERTAIN FACTORS: LOW NATURAL GAS PRICE AND CO2

The combination of low Natural Gas prices and CO_2 tax uncertain factors causes KBBDA to become the lowest cost plan under high, mid and low load scenarios. In the low Natural Gas prices and CO_2 tax scenarios, LaCygne 1 would be retired in 2025, just prior to the implementation of the carbon tax in 2026.

Using the NPVRR results shown in the Table below, linear interpolation was used to determine the percentage change in CO_2 emission allowance prices necessary for the NPVRR for KBBDA to become lower than the Preferred Plan KAADA. That would occur at 95.2% of the CO_2 emission allowance forecast.

Table 12: CO_2 Uncertain Factor Range

CO_2 and Low Gas		
Plan	**Low CO_2**	**High CO_2**
KAADA	20,166	20,977
KBBDA	20,346	20,968
Percent	**from Low**	
Upper %	95.2%	

SECTION 3: BETTER INFORMATION

The utility shall describe and document its quantification of the expected value of better information concerning at least the critical uncertain factors that affect the performance of the preferred resource plan, as measured by the present value of utility revenue requirements. The utility shall provide a tabulation of the key quantitative results of that analysis and a discussion of how those findings will be incorporated in ongoing research activities.

The Company calculated the value of better information for each of the critical uncertain factors identified in the preliminary sensitivity test. For each uncertainty, the Preferred Plan NPVRR for the specific uncertainty scenarios (or endpoints)

was compared to the better plan under each extreme uncertainty condition. The comparison was made on an expected value basis assuming that only those three particular scenarios (high value uncertainty, mid value and low value uncertainty) would occur. Baye's Theorem was applied to the endpoint probabilities to develop conditional probabilities for the calculation scenarios. The difference between the expected value of the Preferred Plan and the expected value of the better information results is the expected value of better information.

These values represent the maximum amount the company should be willing to spend to study each of these uncertainties. It must be noted that should a Preferred Plan out-perform all alternatives across the range of a critical risk, the calculation for better information will yield a value of zero.

It is only the combination of CO_2 tax with the low natural gas prices which causes plan KBBDA to become the lowest cost plan in a smaller subset of 3 of the 18 endpoints representing a known state of low natural gas prices and CO_2 tax. The illustration below represents the value of better information of evaluating these two plans having that knowledge.

Table 13: Better Information – Low Natural Gas Price and CO2

Low Natural Gas - With CO2						
Preferred Plan	**Endpoint**	**Plan**	**NPVRR**	**EP Prob**	**Cond. Prob**	**Expected Value**
High Load/LowGas/CO2	5	KAADA	21,355	2.50%	25.00%	20,991
Mid Load/LowGas/CO2	11	KAADA	20,977	5.00%	50.00%	
Low Load/LowGas/CO2	17	KAADA	20,655	2.50%	25.00%	
Better Information	**Endpoint**	**Plan**	**NPVRR**	**EP Prob**	**Cond. Prob**	**Expected Value**
High Load/LowGas/CO2	5	KBBDA	21,346	2.50%	25.00%	20,981
Mid Load/LowGas/CO2	11	KBBDA	20,968	5.00%	50.00%	
Low Load/LowGas/CO2	17	KBBDA	20,642	2.50%	25.00%	
Expected Value of Better Information			10.12	Million		

SECTION 4: CONTINGENCY RESOURCE PLANS

The utility shall describe and document its contingency resource plans in preparation for the possibility that the preferred resource plan should cease to be appropriate, whether due to the limits identified pursuant to 4 CSR240-22.070(2) being exceeded or for any other reason.

(A) The utility shall identify as contingency resource plans those alternative resource plans that become preferred if the critical uncertain factors exceed the limits developed pursuant to section (2).

KCP&L has identified a contingency plan should the critical uncertain factors exceed the limits specified. The Contingency Resource Plan is shown in the table below:

Table 14: Contingency Resource Plan

Plan Name	DSM Level	Facility	Renewable Additions		Generation Addition (if needed)
KBBDA	RAP Modified + DSR	LaCygne-1: Dec 31, 2025	Solar: 2028 - 13 MW	Wind: 2018 - 98 MW 2019- 80 MW	n/n

The contingency plan was identified through evaluation of the relative cost performance of each alternative resource plan under different combinations of the critical uncertain factors. The combination of the critical uncertain factors under which this contingency plan is projected to be lower cost than the Preferred Plan is as follows:

Low Gas, High CO_2 Price Scenario: Under this scenario, the Alternative Resource Plan shown in Table 14 above is the Contingency Plan.

(B) The utility shall develop a process to pick among alternative resource plans, or to revise the alternative resource plans as necessary, to help

ensure reliable and low cost service should the preferred resource plan no longer be appropriate for any reason. The utility may also use this process to confirm the viability of contingency resource plans identified pursuant to subsection (4)(A).

The KCP&L Preferred Plan chosen was the resource plan that exhibited the lowest expected value of NPVRR. The Contingency Plan was chosen as the plan that could perform better than the Preferred Plan, should certain combinations of extreme conditions of risk factors arise. These factors are described in the response to Rule 240-22.070(2) in this Volume.

(C) Each contingency resource plan shall satisfy the fundamental objective in 4 CSR240-22.010(2) and the specific requirements pursuant to 4 CSR 240-22.070(1).

The Contingency Plan KBBDA meets the considerations of Rule 240.22.010(2) as one of the alternative resource plans developed and conformed in the response to Rule 240-22.060(3) in Volume 6 of this filing.

As for concurrence with Rule 240.070(1), Plan KBBDA conforms by meeting Rule 240.010(2), utilizes the amount of DSM that conforms to legal mandates and demonstrates adequate access to emergency short-term power supply.

SECTION 5: LOAD –BUILDING PROGRAMS

Analysis of Load-Building Programs. If the utility intends to continue existing load building programs or implement new ones, it shall analyze these programs in the context of one (1) or more of the alternative resource plans developed pursuant to 4 CSR 240- 22.060(3) of this rule, including the preferred resource plan selected pursuant to 4 CSR240-22.070(1). This analysis shall use the same modeling procedure and assumptions described in 4 CSR 240-22.060(4). The utility shall describe and document—

(A) Its analysis of load building programs, including the following elements:

1. Estimation of the impact of load building programs on the electric utility's summer and winter peak demands and energy usage;

2. A comparison of annual average rates in each year of the planning horizon for the resource plan(s) with and without the load building program;

3. A comparison of the probable environmental costs of the resource plan(s) in each year of the planning horizon with and without the proposed load-building program;

4. A calculation of the performance measures and risk by year; and

5. An assessment of any other aspects of the proposed load-building programs that affect the public interest; and

(B) All current and proposed load-building programs, a discussion of why these programs are judged to be in the public interest, and, for all resource plans that include these programs, plots of the following over the planning horizon:

1. Annual average rates with and without the load-building programs; and

2. Annual utility costs and probable environmental costs with and without the load-building programs.

At this time, KCP&L does not have any load-building programs.

SECTION 6: IMPLEMENTATION PLAN

(6) The utility shall develop an implementation plan that specifies the major tasks, schedules, and milestones necessary to implement the preferred resource plan over the implementation period. The utility shall describe and document its implementation plan, which shall contain—

6.1 LOAD ANALYSIS - SCHEDULE AND DESCRIPTION

(A) A schedule and description of ongoing and planned research activities to update and improve the quality of data used in load analysis and forecasting;

KCP&L plans to conduct its next Residential Appliance Saturation Survey during the implementation period. KCP&L expanded the last survey in 2016 to include the commercial sector and is planning to include the result in the 2019 IRP Annual Update. The last survey was completed in 2016. The results were used to calculate appliance saturations and these saturations were used to calibrate DOE forecasts of appliance saturations for use in KCP&L's load forecasting models. KCP&L also plans to match the responses with the customers' billing records and to conduct a conditional demand study to measure the unit energy consumption (UEC) for each major appliance.

KCP&L plans to conduct a price elasticity study during the implementation period.

KCP&L will continue develop and improve its framework of incorporating photovoltaic (PV) and electric vehicle (EV) impacts into the energy forecast to capture PV and EV energy impacts.

KCP&L developed a new industrial model that will allow the utility to create an industrial intensity index which would be calibrated to the KCP&L service area based on employment. It was implemented in the 2017 IRP update and KCP&L will continue to monitor and refine the model going forward.

6.2 DEMAND-SIDE PROGRAMS – SCHEDULE AND DESCRIPTION

(B) A schedule and description of ongoing and planned demand-side programs and demand-side rates, evaluations, and research activities to improve the quality of demand-side resources;

The current schedules for ongoing and planned DSM programs are shown in Table 15 and Table 16 below:

Table 15: DSM Program Schedule – Existing Programs

Program Name	Program Type	Segment	Program Implemented	Annual Report	Program Duration	EM&V Completed and draft report available
Home Lighting Rebate	Energy Efficiency	Residential	Apr., 2016	90-days following Plan Year	3-Years	1-Yr following Plan Year
Online Home Energy Audit	Educational	Residential	Apr., 2016	90-days following Plan Year	3-Years	1-Yr following Plan Year
Whole House Efficiency	Energy Efficiency	Residential	Apr., 2016	90-days following Plan Year	3-Years	1-Yr following Plan Year
Income-Eligible Multi-Family	Energy Efficiency	Residential	Apr., 2016	90-days following Plan Year	3-Years	1-Yr following Plan Year
Home Energy Report	Energy Efficiency	Residential	Apr., 2016	90-days following Plan Year	3-Years	1-Yr following Plan Year
Residential Programmable Thermostat	Demand Response	Residential	Apr., 2016	90-days following Plan Year	3-Years	1-Yr following Plan Year
Business Energy Efficiency Rebate - Standard	Energy Efficiency	C&I	Apr., 2016	90-days following Plan Year	3-Years	1-Yr following Plan Year
Business Energy Efficiency Rebate - Custom	Energy Efficiency	C&I	Apr., 2016	90-days following Plan Year	3-Years	1-Yr following Plan Year
Strategic Energy Management	Energy Efficiency	C&I	Apr., 2016	90-days following Plan Year	3-Years	1-Yr following Plan Year
Block Bidding	Energy Efficiency	C&I	Apr., 2016	90-days following Plan Year	3-Years	1-Yr following Plan Year
Online Business Energy Audit	Educational	C&I	Apr., 2016	90-days following Plan Year	3-Years	1-Yr following Plan Year
Small Business Direct Install	Energy Efficiency	C&I	Apr., 2016	90-days following Plan Year	3-Years	1-Yr following Plan Year
Commercial Programmable Thermostat	Demand Response	C&I	Apr., 2016	90-days following Plan Year	3-Years	1-Yr following Plan Year
Demand Response Incentive	Demand Response	C&I	Apr., 2016	90-days following Plan Year	3-Years	1-Yr following Plan Year

Table 16: DSM Program Schedule – Planned Programs

Program Name	Program Type	Segment	Projected Tariff Filing Date	Projected Approval Date	Projected Implementation Date	Annual Report
Home Lighting Rebate	Energy Efficiency	Residential	June, 2018	Oct., 2018	Apr., 2019	90-days following Plan Year
Home Energy Report	Energy Efficiency	Residential	June, 2018	Oct., 2018	Apr., 2019	90-days following Plan Year
Income-Eligible Home Energy Report	Energy Efficiency	Residential	June, 2018	Oct., 2018	Apr., 2019	90-days following Plan Year
Online Home Energy Audit	Educational	Residential	June, 2018	Oct., 2018	Apr., 2019	90-days following Plan Year
Whole House Efficiency	Energy Efficiency	Residential	June, 2018	Oct., 2018	Apr., 2019	90-days following Plan Year
Income-Eligible Multi-Family	Energy Efficiency	Residential	June, 2018	Oct., 2018	Apr., 2019	90-days following Plan Year
Income-Eligible Weatherization	Energy Efficiency	Residential	June, 2018	Oct., 2018	Apr., 2019	90-days following Plan Year
Residential Smart Thermostat w DLC	Demand Response	Residential	June, 2018	Oct., 2018	Apr., 2019	90-days following Plan Year
Central AC DLC Switch	Energy Efficiency	Residential	June, 2018	Oct., 2018	Apr., 2019	90-days following Plan Year
Water Heating DLC Switch	Energy Efficiency	Residential	June, 2018	Oct., 2018	Apr., 2019	90-days following Plan Year
Business Energy Efficiency Rebate - Standard	Energy Efficiency	C&I	June, 2018	Oct., 2018	Apr., 2019	90-days following Plan Year
Business Energy Efficiency Rebate - Custom	Energy Efficiency	C&I	June, 2018	Oct., 2018	Apr., 2019	90-days following Plan Year
Strategic Energy Management	Educational	C&I	June, 2018	Oct., 2018	Apr., 2019	90-days following Plan Year
Retrocommissioning	Energy Efficiency	C&I	June, 2018	Oct., 2018	Apr., 2019	90-days following Plan Year
Block Bidding	Demand Response	C&I	June, 2018	Oct., 2018	Apr., 2019	90-days following Plan Year
Online Business Energy Audit	Demand Response	C&I	June, 2018	Oct., 2018	Apr., 2019	90-days following Plan Year
Small Business Targeted	Demand Response	C&I	June, 2018	Oct., 2018	Apr., 2019	90-days following Plan Year
Business Smart Thermostat w DLC	Demand Response	C&I	June, 2018	Oct., 2018	Apr., 2019	90-days following Plan Year
Demand Response Incentive	Demand Response	C&I	June, 2018	Oct., 2018	Apr., 2019	90-days following Plan Year

Additional detail regarding the implementation plan for the DSM Preferred Plan can be found in Volume 5. It includes the descriptions of the programs, the implementation strategy, a discussion of risk management, the incentive levels used for planning purposes, energy and peak demand savings goals, and budget estimates. KCP&L will file an application under the Missouri Energy Efficiency Investment Act (MEEIA) in mid-2018 requesting Commission approval of demand-side programs for a program implementation period beginning in 2019.

6.3 SUPPLY-SIDE – SCHEDULES AND DESCRIPTIONS

(C) A schedule and description of all supply-side resource research, engineering, retirement, acquisition, and construction activities, including research to meet expected environmental regulations;

The Preferred Plan also includes retiring 334 MW of coal generation at Montrose Station by 2019. Post Montrose Station retirement activities include but are not limited to disconnection, de-energization, cleanout and tasks to secure the facility rendering the site safe until dismantlement can occur. Selected items may be dismantled to render the site safe. A draft schedule of the major milestones expected to be undertaken for the retirement of these units within the next three years is provided in the following table:

Table 17: Montrose Station Retirement Milestones

Milestone Description	Date Range
Notified SPP of anticipated plant closure	June 2, 2017
Selection of Owner's Engineer	Oct, 2017 - Nov, 2017
Phase 1: Initial Study - Cost and MHA*	Nov, 2017 - Mar, 2018
Phase 2: Develop isolation plans, specs, etc	April, 2018 - June, 2018
Bid process and selection	July, 2018 - Dec, 2018
Isolation and Retirement	Dec, 2018 - Dec, 2019
Montrose retires	By Dec 31, 2018
Montrose Staff - post retire assignments	Jan 1, 2019
Disposition of Montrose Lake	Jan, 2019 - Dec, 2019
Asbestos Removal	Jan, 2019 - Dec, 2020
Montrose demolition	TBD
* Material Hazard Analysis	

There are also environmental retrofit projects continuing or expected to be initiated during the three-year implementation period. Table 18 below provides estimated dates for major projects currently expected.

Table 18: Environmental Retrofit Project Schedule

Milestone Description	Date Range
Iatan-1 - Landfill Cell 3 Expansion	2018
Iatan-1 - Landfill Cover	2018
Iatan-1 - Replace Holding Basin	2020 - 2021
Iatan-1 - Monitoring Wells	2018 - 2019
Iatan-1 - Ash Pond Closure	2018 - 2020
Iatan-1 - Fish Intake	2018 - 2021
LaCygne-1 Stormwater Pond Construction Plus Pump Station	2018 - 2019
LaCygne-1 Stormwater Pond Discharge Structures	2018 - 2021
LaCygne-1 Upper Cover, Dewatering, Grading, Install	2018 - 2020
LaCygne-1 Lower Cover, Dewatering, Grading, Install	2019 - 2021
LaCygne-1 Bottom Ash Pond Clean Closure	2018
LaCygne-2 Stormwater Pond Construction Plus Pump Station	2018 - 2019
LaCygne-2 Stormwater Pond Discharge Structures	2018 - 2021
LaCygne-2 Upper Cover, Dewatering, Grading, Install	2018 - 2020
LaCygne-2 Lower Cover, Dewatering, Grading, Install	2019 - 2021
LaCygne-2 Bottom Ash Pond Clean Closure	2018
LaCygne-2 Wet to Dry Conversion (SFC)	2018
Hawthorn-5 Intake Modification	2019 - 2020
Hawthorn-5 Coal Pond Cells	2020

6.4 MILESTONES AND CRITICAL PATHS

(D) Identification of critical paths and major milestones for implementation of each demand-side resource and each supply-side resource, including decision points for committing to major expenditures;

Critical paths and major milestones for implementation of each demand-side resource are shown above, in Section 6.2.

As described above, 178 MW of wind additions are from two power purchase agreements (PPA) executed in 2017. One wind project, Pratt Wind consists of 244 MW of total capacity and is currently planned to be in-service in 2018. KCP&L is expected to be allocated 98 MW of the 244 MW facility. Pratt Wind is cited over approximately 34,000 acres in Pratt County, Kansas and owned by NextEra. The current construction schedule is provided in Table 19 below.

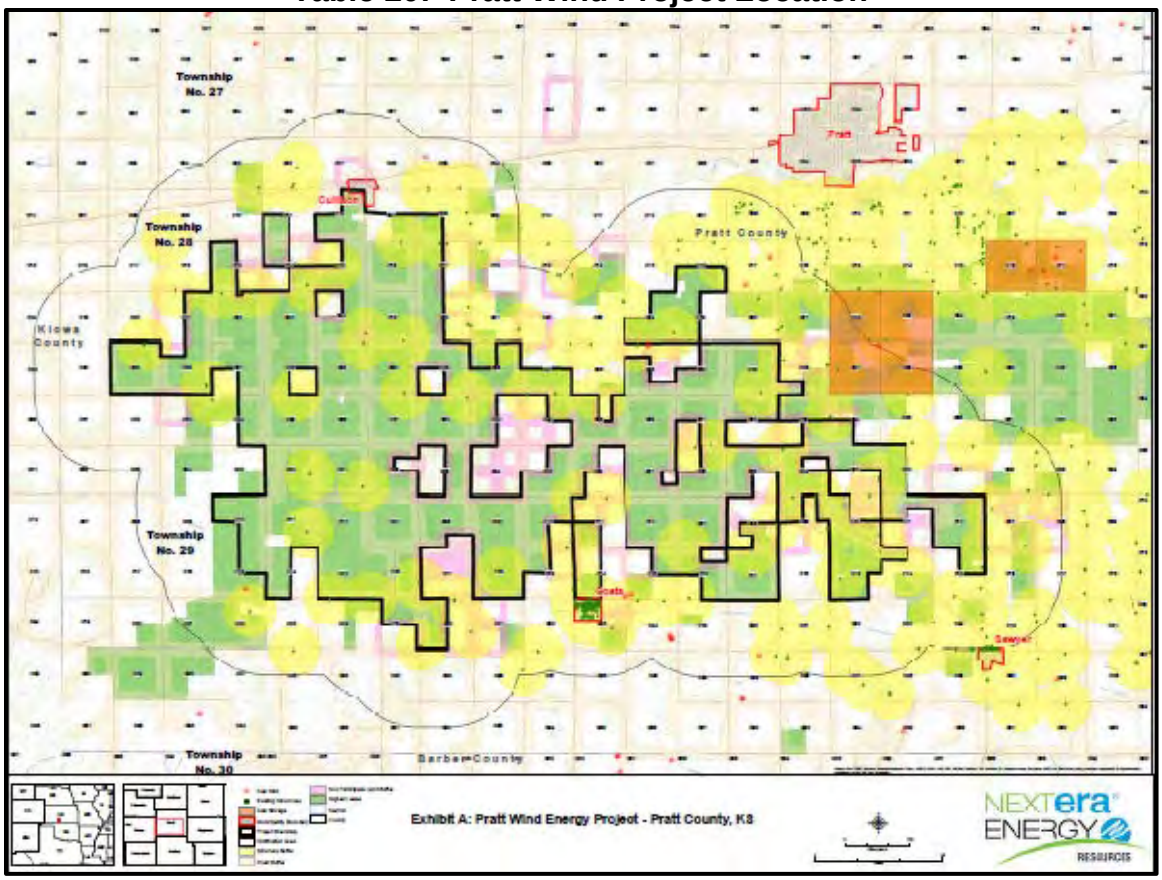
Table 19: Pratt Wind Schedule

Milestone Description	Milestone Dates
Unrestricted Construction Access	March, 2018
Pre-Construction Surveys and Staking	April, 2018
Install Station Service Power	April, 2018
Wind Farm EPC Mobilize (Start of Construction)	April, 2018
Substation EPC Mobilize	May, 2018
T-Line EPC Mobilize	June, 2018
Road Construction Complete	July, 2018
Foundation Construction Complete	August, 2018
Turbine Deliveries	July, 2018
WTG Erection Commence	July, 2018
Turbine Mechanical Completion	September, 2018
Turbine Pre Commissioning	October, 2018
Backfeed	October, 2018
Commissioning of Substation and TLine	November, 2018
Construction COD	November, 2018
Final Wind Farm Commissioning	November, 2018

EPC: Engineering/Procurement/Construction
WTG Wind Turbine Generator
COD: Commercial Operation Date

Table 20 provides the location of the Pratt wind project:

Table 20: Pratt Wind Project Location



The second wind project, Prairie Queen, consists of 200 MW of total capacity and is currently expected to be in service by June, 2019. KCP&L is expected to be allocated 80 MW of the 200 MW facility. Prairie Queen is cited over approximately 14,000 acres in Allen County, Kansas and owned by EDP Renewables.

Table 21 provides the current milestone schedule of activities.

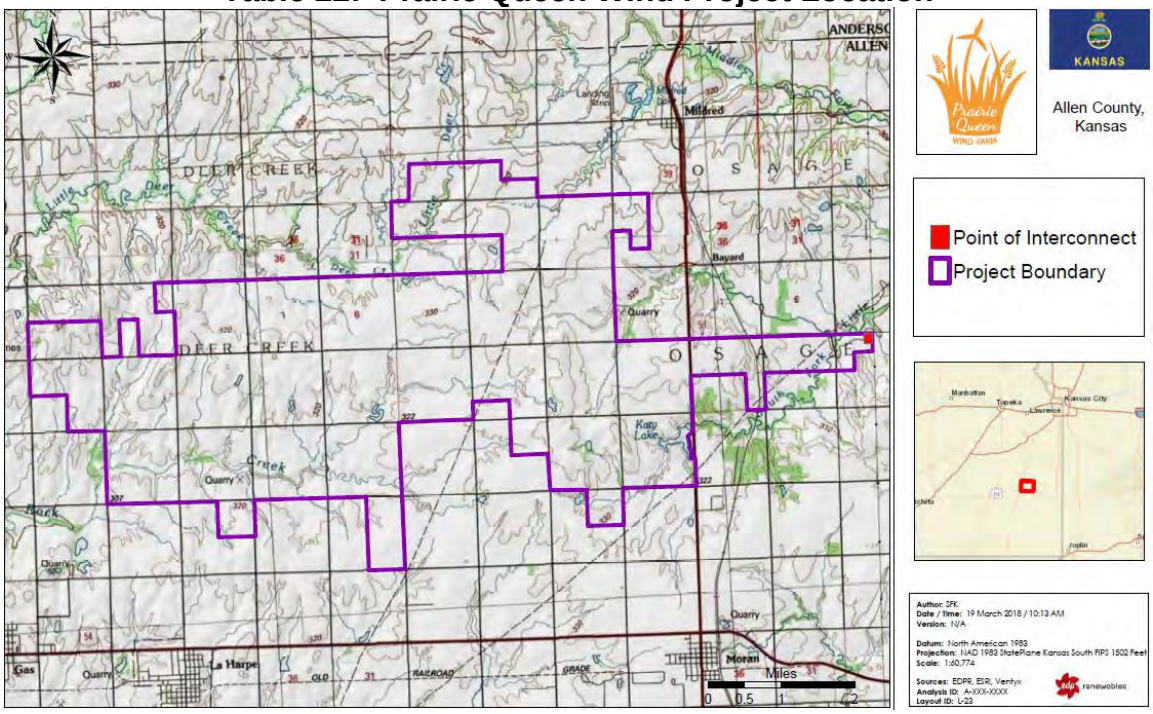
Table 21: Prairie Queen Wind Schedule

Milestone Description	Milestone Dates
Site Mobilization for general vegetation clearing	March 2018
Site Mobilization for Balance of Plant	June 2018
Completion of Dakota Substation (Point of Interconnection)	July 2018
Main Power Transfomer Delivered	December 2018
Turbine Deliveries and Erection Begin and Main Power Transformer Energized	January 2019
Mechanical Completion of Turbines Begins and Commencement of Turbine Commissioning	February 2019
Mechanical Completion of Turbines Complete	April 2019
Commercial Operation Date[1]	May 2019

1 Delays may be possible due to adverse weather

Table 22 shows the location of this wind project:

Table 22: Prairie Queen Wind Project Location



6.5 COMPETITIVE PROCUREMENT POLICIES

(E) A description of adequate competitive procurement policies to be used in the acquisition and development of supply-side resources;

KCP&L has no plan to procure additional supply-side resources during the Implementation Period.

6.6 MONITORING CRITICAL UNCERTAIN FACTORS

(F) A process for monitoring the critical uncertain factors on a continuous basis and reporting significant changes in a timely fashion to those managers or officers who have the authority to direct the implementation of contingency resource plans when the specified limits for uncertain factors are exceeded; and

Each critical uncertain factor is reviewed on an individual basis due to the varied nature of the information sources used in its review. This IRP analysis will be updated on an annual basis reflecting any changes to these critical uncertain factors. Results will be distributed to the Vice President, Generation.

Critical Uncertain Factor: CO_2

CO_2 credit prices are reviewed on a continual basis. The data sources used are third party views predicting the price of the credits. Most of these third party studies are sparked by proposed legislation or are updated up to a quarterly basis. This review and update is conducted by the Fuels department with a full review conducted on an annual basis.

Critical Uncertain Factor: Load

Load forecasts are updated on an annual basis as part of the company's annual budgeting process.

Critical Uncertain Factor: Natural Gas

Natural Gas forecasts are updated weekly with executive updates provided on a monthly basis.

6.7 MONITORING PREFERRED RESOURCE PLAN

(G) A process for monitoring the progress made implementing the preferred resource plan in accordance with the schedules and milestones set out in the implementation plan and for reporting significant deviations in a timely fashion to those managers or officers who have the authority to initiate corrective actions to ensure the resources are implemented as scheduled.

6.7.1 DSM INITIATIVES

KCP&L has processes in place to monitor its Demand-Side Management programs and track and report their performance compared to the planned implementation schedule.

6.7.2 PLANT RETIREMENT INITIATIVES

A monthly meeting is held to monitor progress, issues and deviations concerning the preferred plant retirement or demolition plan. This will be in accordance with the milestones to be established and for reporting significant deviations to managers, directors or officers who have the authority to initiate corrective actions to ensure the resources are executed as scheduled.

6.7.3 PLANT RETROFIT INITIATIVES

A quarterly meeting is held with internal members of the Environmental Compliance team on progress made implementing the Coal Combustible Residual (CCR) plan. Reporting includes reviewing plans, project schedules and significant deviations. Significant deviations would be elevated to those managers or officers who have the authority to initiate corrective actions to ensure the resources are completed as required.

6.7.4 WIND INITIATIVES

Wind development activities are reported to the Vice President, Generation on an ongoing basis by receiving monthly progress reports from the developers of the two wind projects currently under development.

SECTION 7: RESOURCE ACQUISITION STRATEGY

The utility shall develop, describe and document, officially adopt, and implement a resource acquisition strategy. This means that the utility's resource acquisition strategy shall be formally approved by an officer of the utility who has been duly delegated the authority to commit the utility to the course of action described in the resource acquisition strategy. The officially adopted resource acquisition strategy shall consist of the following components:

7.1 PREFERRED RESOURCE PLAN

(A) A preferred resource plan selected pursuant to the requirements of section (1) of this rule;

The Preferred Resource Plan is outlined in Section 1 above per Rule 240-22.070(1).

7.2 IMPLEMENTATION PLAN

(B) An implementation plan developed pursuant to the requirements of section (6) of this rule; and

The Implementation Plan is outlined in Section 6 above per Rule 240-22.070(6).

7.3 CONTINGENCY RESOURCE PLANS

(C) A set of contingency resource plans developed pursuant to the requirements of section (4) of this rule and identification of the point at which the critical uncertain factors would trigger the utility to move to each contingency resource plan as the preferred resource plan.

The Contingency Resource Plan is outlined in Section 4 above per Rule 240-22.070(4).

KANSAS CITY POWER & LIGHT COMPANY

INTEGRATED RESOURCE PLAN – 2018 TRIENNIAL FILING

CORPORATE APPROVAL AND STATEMENT OF COMMITMENT FOR RESOURCE ACQUISITION STRATEGY

In accordance with Missouri Public Service Commission rules found in 4 CSR 240-22 and 4 CSR 240-22.080(3), Kansas City Power & Light Company ("KCP&L") now officially adopts for implementation the resource acquisition strategy contained in this Triennial filing.

With the objective of providing the public with energy services that are safe, reliable, and efficient at just and reasonable rates, KCP&L is committed to the full implementation of the Resource Acquisition Strategy contained herein.

Duane Anstaett

Vice President Generation

Terry D. Bassham

President and Chief Executive Officer

SECTION 8: EVALUATION OF DEMAND-SIDE PROGRAMS AND DEMAND-SIDE RATES

The utility shall describe and document its evaluation plans for all demand-side programs and demand-side rates that are included in the preferred resource plan selected pursuant to 4 CSR 240-22.070(1). Evaluation plans required by this section are for planning purposes and are separate and distinct from the evaluation, measurement, and verification reports required by 4 CSR 240-3.163(7) and 4 CSR 240-20.093(7); nonetheless, the evaluation plan should, in addition to the requirements of this section, include the proposed evaluation schedule and the proposed approach to achieving the evaluation goals pursuant to 4 CSR 240-3.163(7) and 4 CSR 240-20.093(7). The evaluation plans for each program and rate shall be developed before the program or rate is implemented and shall be filed when the utility files for approval of demand-side programs or demand-side program plans with the tariff application for the program or rate as described in 4 CSR 240-20.094(3). The purpose of these evaluations shall be to develop the information necessary to evaluate the cost-effectiveness and improve the design of existing and future demand-side programs and demand-side rates, to improve the forecasts of customer energy consumption and responsiveness to demand-side programs and demand-side rates, and to gather data on the implementation costs and load impacts of demand-side programs and demand-side rates for use in future cost-effectiveness screening and integrated resource analysis.

KCP&L will prepare a request for proposal ("RFP") to conduct an evaluation, measurement and verification ("EM&V") of all demand-side programs and demand-side rates that are approved by the Commission.

EM&V Process Evaluation

The scope of work will require that the Vendor conduct a process evaluation pursuant to requirements of 4 CSR 240-22.070 (8) (A) and require the Vendor to

provide answers to questions 1 through 5 of this rule section in the EM&V final report ("Report").

EM&V Impact Evaluation

The scope of work will require that the Vendor conduct the impact evaluation pursuant to requirements of 4 CSR 240-22.070 (8) (B) and require the Vendor to provide answers to questions 1 and 2 of this rule section in the Report.

EM&V Data Collection

The scope of work will require that the Vendor collect EM&V participation rate data, utility cost data, participant cost data and total cost data pursuant to requirements of 4 CSR 240-22.070 (8) (C).

EM&V Reporting Requirements

The scope of work will also require that the Vendor perform, and report EM&V of each commission-approved demand-side program in accordance with 4 CSR 240-3.163 (7).

KCP&L will provide the Missouri Public Service Commission ("Commission") Staff and other stakeholders with an opportunity to review and comment on the EM&V scope of work.

An EM&V for all demand-side programs and demand-side rates that are included in KCP&L's Preferred Plan will begin after the completion of each program year.

The EM&V scope of work will require the vendor to evaluate and prepare an annual program performance report. Preliminary EM&V reports will be available 120 days following the program year. Commission Staff and stakeholders will be provided with an opportunity to review, and comment on the preliminary report. The final EM&V report will be available 255 days following the completion of each program year.

EM&V Schedule and Budget

The EM&V budget shall not exceed five percent (5%) of the total budget for all approved demand-side program costs. A tentative EM&V schedule is shown in Table 23 below. This schedule will be updated when KCP&L files for new programs under MEEIA.

Table 23: Evaluation Schedule[i]

Estimated EM&V Schedule	
1st Annual EM&V Begins	Day 1 of PY 1
1st Annual Draft Report	120 days after the end of PY 1
1st Annual Program Report	255 days after the end of PY 1
2nd Annual EM&V Begins	Day 1 of PY 2
2nd Annual Draft Report	120 days after the end of PY 2
2nd Annual Program Report	255 days after the end of PY 2
3rd Annual EM&V Begins	Day 1 of PY 3
3rd Annual Draft Report	120 days after the end of PY 3
3rd Annual Program Report	255 days after the end of PY 3

8.1 PROCESS EVALUATION

(A) Each demand-side program and demand-side rate that is part of the utility's preferred resource plan shall be subjected to an ongoing evaluation process which addresses at least the following questions about program design.

1. What are the primary market imperfections that are common to the target market segment?

See the response to Section 8, above.

2. Is the target market segment appropriately defined, or should it be further subdivided or merged with other market segments?

See the response to Section 8, above.

3. Does the mix of end-use measures included in the program appropriately reflect the diversity of end-use energy service needs and existing end-use technologies within the target market segment?

See the response to Section 8, above.

4. Are the communication channels and delivery mechanisms appropriate for the target market segment?

See the response to Section 8, above.

5. What can be done to more effectively overcome the identified market imperfections and to increase the rate of customer acceptance and implementation of each enduse measure included in the program?

See the response to Section 8, above.

8.2 IMPACT EVALUATION

(B) The utility shall develop methods of estimating the actual load impacts of each demand-side program and demand-side rate included in the utility's preferred resource plan to a reasonable degree of accuracy.

1. Impact evaluation methods. At a minimum, comparisons of one (1) or both of the following types shall be used to measure program and rate impacts in a manner that is based on sound statistical principles:

A. Comparisons of pre-adoption and post-adoption loads of program or demand-side rate participants, corrected for the effects of weather and other intertemporal differences; and

See the response to Section 8, above.

B. Comparisons between program and demand-side rate participants' loads and those of an appropriate control group over the same time period.

See the response to Section 8, above.

2. The utility shall develop load-impact measurement protocols that are designed to make the most cost-effective use of the following types of measurements, either individually or in combination:

A. Monthly billing data, hourly load data, load research data, end-use load metered data, building and equipment simulation models, and survey responses; or

See the response to Section 8, above.

B. Audit and survey data on appliance and equipment type, size and efficiency levels, household or business characteristics, or energy-related building characteristics.

See the response to Section 8, above.

8.3 DATA COLLECTION PROTOCOLS

(C) The utility shall develop protocols to collect data regarding demand-side program and demand-side rate market potential, participation rates, utility costs, participant costs, and total costs.

See the response to Section 8, above.

[i] Dates are estimated based on a December 2015 Commission approval of the programs.