



## ELECTRIC SUPPLY AND DEMAND

## ANNUAL REPORT 2019

*We serve the  
people of Kansas...*

# Introduction

K.S.A. 2017 Supp. 66-1282 became effective July 1, 2011, and requires the Kansas Corporation Commission (KCC or Commission) to compile a report regarding electric supply and demand for all electric utilities in Kansas. The statute requires this report to include, but not be limited to: (1) Generation capacity needs and (2) system peak capacity needs and (3) renewable generation needs associated with the 2009 Kansas renewable energy standards.

To ensure that the KCC Staff has the information it needs to compile these reports, the KCC issued an Order on October 29, 2012, requiring Westar Energy, Kansas City Power & Light Company, Empire District Electric Company, Kansas Power Pool, Kansas Municipal Energy Agency, Kansas Electric Power Cooperative Inc., Midwest Energy, Sunflower Electric Power Corporation, Mid-Kansas Electric Company, and Kansas City Board of Public Utilities to file annually, the data required to compile this report with the Commission under Docket 13-GIME-256-CPL.

Effective January 1, 2016, the Renewable Energy Standard Act was amended and the requirement to own or purchase renewable generation became a voluntary initiative. While most of the affected utilities continue to invest in renewable generation, it is no longer a requirement under state law.

# Section 1: Generation Capacity Needs and System Peak Capacity Planning

All major utilities<sup>1</sup> in Kansas are members of the Southwest Power Pool (SPP), which operates as the Regional Transmission Organization (RTO) throughout the State, as well as in the states of North Dakota, South Dakota, Nebraska, Oklahoma, and parts of Iowa, Missouri, Texas, Arkansas, Louisiana, Montana, and New Mexico. SPP additionally serves as the Regional Entity of the North American Electric Reliability Corporation (NERC), and is mandated by the Federal Energy Regulatory Commission (FERC) to ensure reliable operation of the electric grid within the region, including ensuring adequate power supplies and reserves are maintained by its members.

In furtherance of the FERC mandate, SPP publishes a series of regulations—called the SPP Criteria—governing the system operations of its members. SPP additionally requires its members to annually submit 10 year capacity and load projections to show how the utility will meet its ongoing system peak capacity responsibility (System Peak Responsibility), including the 12% reserve margin requirement outlined in the Criteria.<sup>2</sup> System Peak Responsibility may be satisfied by capacity from owned generation units, capacity purchased through long term wholesale power contracts (often called Power Purchase Agreements (PPAs)), full or partial requirements contracts, and short-term capacity contracts.<sup>3</sup>

Table 1 (page three) shows the current and 20 year forecasted capacity and System Peak Responsibility (system peak load plus SPP's 12% required reserve margin) for utilities operating in Kansas. This includes smaller municipal and cooperatives utilities that purchase electricity wholesale from larger state utilities through full requirements contracts, wherein these municipal and cooperative utilities' peak loads are incorporated into the larger utility's system requirements. Finally, two of the State's investor-owned utilities, Kansas City Power & Light (KCP&L) and Empire District Electric Company (Empire), are multi-jurisdictional; therefore, the data shown in this report represents only their Kansas loads (peak demand) and their system capacity has been scaled to represent the capacity allocated to serving their Kansas load.

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<sup>1</sup> Specifically, all utilities listed in this report are members of SPP.

<sup>2</sup> SPP Tariff Attachment AA defines Planning Reserve Margin to be twelve percent (12%) and that each utility maintain capacity required to meet its load and planning reserve obligations.

<sup>3</sup> Note Table 1.1 and the tables listed in Appendix A are intended to represent a utility's long-term position, and thus do not include short-term capacity contracts. Short-term capacity contracts are defined as a capacity contract greater than three months but less than a year in duration.

**Table 1—Overview of Current and Projected Total System Capacity and System Capacity Responsibility for Utilities Operating in Kansas**

		Investor Owned Utilities (IOUs)			Cooperatives			Municipal Utilities		
		Empire District Electric Company (Empire)	Kansas City Power & Light (KCP&L)	Westar Energy (Westar)	Kansas Electric Power Coop. (KEPCo)	Midwest Energy (Midwest)	Sunflower Electric Power Corporation (Sunflower)	Kansas City Board of Public Utilities (KC-BPU)	Kansas Municipal Energy Agency (KMEA)	Kansas Power Pool (KPP)
2016 Historical	Total System Capacity (MW)	70	1,985	6,239	494	413	1,259	720	425	311
	System Peak Responsibility (MW)	58	1,932	5,835	483	358	1,113	548	454	246
	System Capacity Surplus (Deficit)	12	53	404	11	50	156	172	(29)	65
2021 Projected	Total System Capacity (MW)	70	1,908	6,244	461	427	1,149	768	489	284
	System Peak Responsibility (MW)	65	1,840	5,855	455	406	1,071	564	472	248
	System Capacity Surplus (Deficit)	5	68	389	6	21	78	204	17	36
2026 Projected	Total System Capacity (MW)	66	2,049	6,452	471	467	1,129	768	478	250
	System Peak Responsibility (MW)	66	1,768	6,025	464	432	1,055	570	491	255
	System Capacity Surplus (Deficit)	0	281	427	7	35	74	198	13	(5)
2031 Projected	Total System Capacity (MW)	61	2,049	6,072	477	467	1,024	768	478	234
	System Peak Responsibility (MW)	68	1,715	6,201	475	454	1,043	575	510	262
	System Capacity Surplus (Deficit)	(7)	334	(129)	2	13	(19)	193	(32)	(28)
2036 Projected	Total System Capacity (MW)	59	1,948	---	484	--	981	768	478	234
	System Peak Responsibility (MW)	69	1,763	---	485	--	1,032	575	530	268
	System Capacity Surplus (Deficit)	(10)	185	---	(1)	--	(51)	193	(52)	34

## **Section 2: Renewable Energy Planning**

In May 2009, the Kansas Legislature passed Senate Substitute bill for H. 2369, in part creating the Renewable Energy Standard Act (RESA) which requires all non-municipal utilities in Kansas to satisfy a portion of the utility's generation needs through renewable generation sources. In particular, the RESA—incorporated into statute as K.S.A. 66-1256 through 66-1262—required all utilities subject to its requirements to own or purchase renewable generation such that the nameplate capacity<sup>1</sup> of these generators was equal to 10% of the utility's average prior three-year annual peak retail sales for the years 2011 through 2015, 15% for the years 2016 through 2019, and 20% for all years after 2020. Table 2 (page five) shows each RESA affected utility's forecasted renewable capacity and the percentage of the utility's capacity that is due renewable generation.

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<sup>1</sup>The KCC, through K.A.R. 82-16-1(e), has interpreted renewable generation capacity as being nameplate capacity.

**Table 2—Overview of Voluntary Renewable Capacity for Utilities Operating in Kansas**

		Empire District Electric Company (Empire)	Kansas City Power & Light (KCP&L)	Westar Energy (Westar)	Kansas Electric Power Coop. (KEPCo)	Midwest Energy (Midwest)	Sunflower Electric Power Corporation (Sunflower)	Kansas City Board of Public Utilities (KC-BPU)	Kansas Municipal Elnergy Agency (KMEA)	Kansas Power Pool (KPP)
2016 Historical	System Renewable Capacity (MW)	13	730	868	22	117	250	64	61	38
	Total System Peak (MW)	52	1700	5184	425	337	980	480	399	216
	Renewable Capacity (% of Peak Capacity)	25%	43%	17%	5%	35%	26%	13%	15%	18%
2021 Projected	System Renewable Capacity (MW)	13	930	1,865	23	106	197	259	2	38
	Total System Peak (MW)	57	1,665	5382	400	357	942	496	415	218
	Renewable Capacity (% of Peak Capacity)	23%	56%	35%	6%	30%	21%	52%	0.005%	17%
2026 Projected	System Renewable Capacity (MW)	6	930	1,865	23	106	197	259	2	38
	Total System Peak (MW)	59	1705	5,519	409	380	928	576	432	225
	Renewable Capacity (% of Peak Capacity)	10%	55%	34%	6%	28%	21%	45%	0.005%	17%
2031 Projected	System Renewable Capacity (MW)	--	930	1,713	23	57	124	259	2	25
	Total System Peak (MW)	60	1,761	5,665	418	399	918	506	449	230
	Renewable Capacity (% of Peak Capacity)	--	53%	30%	6%	14%	14%	51%	0.004%	11%
2036 Projected	System Renewable Capacity (MW)	--	348	1,146	23	--	--	259	2	--
	Total System Peak (MW)	61	1,892	--	427	--	908	506	466	236
	Renewable Capacity (% of Peak Capacity)	--	18%	--	5%	--	--	51%	0.004%	--

# Appendix A: Utility System Capacities and Peak Responsibilities

## Appendix A-1—Empire District Electric Company (Empire)

The Empire District Electric Company (Empire) is a regulated investor-owned utility operating in the states of Kansas, Missouri, Arkansas, and Oklahoma. Only a very small portion of Empire’s overall service territory falls within Kansas, consisting of approximately 9,928 retail customers in Cherokee county (located in the extreme southeastern corner of the state).

		System Peak <sup>1</sup>				System Capacity <sup>2</sup>			System Capacity Surplus (Deficit)
		Total System Peak Load	12% Capacity Margin	System Peak Responsibility		Accredited Generation	Net Contracts	Total System Capacity	
Historical	2013	58	8	66		66	3	69	2
	2014	59	8	66		66	3	68	2
	2015	58	8	65		61	4	65	0
	2016	52	7	58		66	4	70	12
	2017	52	7	58		66	4	70	12
Projected	2018	61	8	68		66	4	70	2
	2019	59	8	66		66	4	70	4
	2020	59	8	67		66	4	70	3
	2021	57	8	65		66	4	70	5
	2022	58	8	65		66	4	70	5
	2023	58	8	65		66	4	70	5
	2024	58	8	66		62	4	66	0
	2025	58	8	66		62	4	66	0
	2026	59	8	66		62	3	66	0
	2027	59	8	66		58	3	62	4
	2028	59	8	67		58	3	62	5
	2029	59	8	67		58	2	61	6
	2030	59	8	67		58	2	61	6
	2031	60	8	67		58	2	61	6
	2032	60	8	68		58	2	61	6
	2033	60	8	68		58	2	61	7
	2034	60	8	68		58	2	59	7
	2035	61	8	68		57	2	59	9
	2036	61	8	69		57	2	59	10

<sup>1</sup> Empire’s system peak is scaled in this table to reflect the Kansas portion of Empire’s service territory (demand created by customers).

<sup>2</sup> Empire’s system capacity is scaled in this table to reflect the Kansas portion of Empire’s service territory; approximately 5.5% of Empire’s overall system peak.

## Appendix A-2—Kansas City Power & Light Company (KCP&L)

In 2018 Kansas City Power and Light Company (KCP&L) merged with Westar Energy to form Evergy, Inc. As a wholly owned subsidiary of Evergy, Inc., KCP&L operates in northeast Kansas and western Missouri. System-wide KCP&L, including its GMO territory, is responsible for serving more than 800,000 retail customers, approximately 250,000 of which are located in Kansas.

		System Peak <sup>1</sup>				System Capacity <sup>2</sup>			System Capacity Surplus (Deficit)
		Total System Peak Load	12% Capacity Margin	System Peak Responsibility <sup>3</sup>		Accredited Generation	Net Contracts	Total System Capacity	
Historical	2013	1,556	212	1,768		2,033	33	2,000	232
	2014	1,605	219	1,824		2,087	35	2,051	227
	2015	1,623	221	1,844		2,098	48	2,134	290
	2016	1,700	232	1,932		2,033	48	1,985	53
	2017	1,648	198	1,846		2,046	76	2,122	276
Projected	2018	1,657	196	1,831		2,046	110	2,156	325
	2019	1,663	197	1,837		1,888	45	1,934	97
	2020	1,665	197	1,840		1,888	3	1,886	46
	2021	1,665	197	1,840		1,888	19	1,908	68
	2022	1,672	197	1,837		1,887	18	1,905	68
	2023	1,679	196	1,827		1,887	24	1,911	84
	2024	1,689	194	1,814		1,887	162	2,049	235
	2025	1,695	192	1,788		1,887	162	2,049	261
	2026	1,705	189	1,768		1,887	162	2,049	281
	2027	1,716	188	1,754		1,887	162	2,049	295
	2028	1,730	187	1,746		1,887	162	2,049	303
	2029	1,739	186	1,732		1,887	162	2,049	317
	2030	1,750	185	1,722		1,887	162	2,049	327
	2031	1,761	184	1,715		1,887	162	2,049	334
	2032	1,775	184	1,715		1,887	142	2,028	313
	2033	1,785	184	1,718		1,887	122	2,008	290
	2034	1,798	186	1,732		1,887	122	2,008	276
	2035	1,812	187	1,747		1,887	122	2,008	261
	2036	1,829	189	1,763		1,887	59	1,948	185

<sup>1</sup> KCP&L's system peak is scaled in this table to reflect the Kansas portion of KCP&L's service territory (demand created by customers).

<sup>2</sup> KCP&L's system capacity is scaled in this table to reflect the Kansas portion of KCP&L's service territory; approximately 47% of KCP&L's overall system.

<sup>3</sup> The System Peak Responsibility is the sum of the Total System Peak Load plus the 12% Capacity Margin less any interruptible load not included in this table.



### Appendix A-3—Westar Energy, Inc. (Westar)

In 2018, Westar Energy, Inc. (Westar) merged with Kansas City Power & Light to form Evergy, Inc. As a wholly owned subsidiary of Evergy, Inc., Westar operates in south-central and northeast Kansas. Westar is responsible for providing electric service to approximately 700,000 retail customers.

		System Peak				System Capacity			System Capacity Surplus (Deficit)
		Total System Peak Load	12% Capacity Margin	System Peak Responsibility <sup>1</sup>		Accredited Generation	Net Contracts	Total System Capacity	
Historical	2013	5,187	707	5,894		6,356	34	6,391	497
	2014	5,224	712	5,936		6,370	110	6,480	544
	2015	5,167	698	5,816		6,313	133	6,446	630
	2016	5,184	700	5,835		5,939	300	6,239	404
	2017	5,242	623	5,816		5,985	334	6,319	503
Projected	2018	5,204	596	5,560		6,141	703	6,844	1,284
	2019	5,319	613	5,720		5,188	924	6,112	392
	2020	5,349	620	5,789		5,188	1,011	6,199	410
	2021	5,382	627	5,855		5,188	1,056	6,244	389
	2022	5,416	632	5,897		5,188	1,055	6,243	346
	2023	5,416	636	5,934		5,188	1,114	6,302	368
	2024	5,463	638	5,957		5,188	1,114	6,302	345
	2025	5,490	642	5,990		5,188	1,264	6,452	462
	2026	5,519	646	6,025		5,188	1,264	6,452	427
	2027	5,548	649	6,060		5,188	1,264	6,452	392
	2028	5,575	653	6,095		5,188	1,294	6,432	337
	2029	5,606	657	6,130		5,188	1,221	6,409	279
	2030	5,635	661	6,165		4,857	1,221	6,078	(87)
	2031	5,665	664	6,201		4,857	1,215	6,072	(129)
	2032	--	--	--		--	--	--	--
	2033	--	--	--		--	--	--	--
	2034	--	--	--		--	--	--	--
	2035	--	--	--		--	--	--	--
	2036	--	--	--		--	--	--	--

<sup>1</sup> The System Peak Responsibility is the sum of the Total System Peak Load plus the 12% Capacity Margin less any interruptible load not included in this table.

#### Appendix A-4—Kansas Electric Power Cooperative, Inc. (KEPCo)

The Kansas Electric Power Cooperative, Inc. (KEPCo) is a deregulated Generation and Transmission Cooperative whose membership is composed of 19 rural distribution cooperatives located throughout central and eastern Kansas.<sup>1</sup> KEPCo's 19 member cooperatives collectively serve approximately 110,000 customers—as indicated by number of meters.

		System Peak				Total System Capacity		System Capacity Surplus (Deficit)
		Total System Peak Load	12% Capacity Margin	System Peak Responsibility				
Historical	2013	435	59	494		508		14
	2014	433	59	492		506		14
	2015	432	59	491		508		17
	2016	425	58	483		494		11
	2017	427	58	485		501		16
Projected	2018	414	56	470		484		14
	2019	425	58	483		490		7
	2020	427	58	485		492		7
	2021	400	55	455		461		6
	2022	402	55	457		464		7
	2023	404	55	459		465		6
	2024	406	55	461		467		6
	2025	407	56	463		469		6
	2026	409	56	464		471		7
	2027	411	56	466		473		7
	2028	412	56	469		474		5
	2029	414	56	471		475		4
	2030	416	57	473		476		3
	2031	418	57	475		477		2
	2032	419	57	477		478		1
	2033	421	57	479		480		1
	2034	423	58	481		461		(20)
	2035	425	58	483		483		0
	2036	427	58	485		484		(1)

<sup>1</sup> Member cooperatives of KEPCo are: Prairie Land, Rolling Hills, Bluestem, Brown-Atchison, FreeState, DS&O Electric, Flint Hills, Lyon-Coffey, Victory, Ninnescah, Ark Valley, Sedgwick County, Butler, Heartland, Radiant, CMS Electric, Sumner-Cowley, Caney Valley, and Twin Valley.

#### **Appendix A-5—Midwest Energy, Inc. (Midwest)**

Midwest Energy Inc. (Midwest) is a regulated electric and natural gas distribution cooperative operating in central and western Kansas. Unique in Kansas among the State's cooperatives, the electric utility is vertically-integrated, possessing generation and transmission assets and providing retail service. Headquartered in Hays, Midwest provides electric service to approximately 48,750 retail customers.

THIS SECTION WAS INTENTIONALLY LEFT BLANK DUE TO MIDWEST ENERGY'S REQUEST THAT THE INFORMATION REMAIN CONFIDENTIAL

## Appendix A-6—Sunflower Electric Power Company (Sunflower)

Sunflower Electric Power Company (Sunflower) is a deregulated generation and transmission cooperative owned by six member rural distribution cooperatives in Western Kansas (Lane-Scott, Prairie Land, Southern Pioneer, Victory, Western, and Wheatland). In 2007, the six member distribution cooperatives comprising Sunflower formed the Mid-Kansas Electric Company (Mid-Kansas). Although Mid-Kansas has distinct assets and distinct customers from Sunflower, the two companies employ the same individuals; and therefore, for the purposes of this report these two entities are combined as a single system.

		System Peak			System Capacity			System Capacity Surplus (Deficit)
		Total System Peak Load	12% Capacity Margin	System Peak Responsibility <sup>1</sup>	Accredited Generation	Net Contracts	Total System Capacity	
Historical	2013	1147	156	1303	1145	144	1289	(14)
	2014	1114	152	1266	1281	144	1423	157
	2015	1033	141	1174	1288	144	143	256
	2016	980	134	1113	1127	142	1269	156
	2017	965	132	1096	1156	156	1308	212
Projected	2018	975	133	1108	1129	118	1247	139
	2019	962	131	1093	1129	(8.6)	1120	27
	2020	963	131	1095	1144	(8.6)	1135	40
	2021	942	129	1071	1144	5	1149	78
	2022	932	127	1059	1130	5	1135	76
	2023	922	126	1048	1124	5	1129	81
	2024	924	126	1050	1124	5	1129	79
	2025	926	126	1052	1124	5	1129	77
	2026	928	127	1055	1124	5	1129	74
	2027	918	125	1043	1109	0	1109	66
	2028	920	125	1046	1109	0	1109	63
	2029	921	126	1047	1100	0	1100	53
	2030	918	125	1043	1100	0	1100	57
	2031	918	125	1043	1024	0	1824	(19)
	2032	918	125	1044	1024	0	1024	(20)
	2033	914	125	1038	981	0	981	(57)
	2034	911	124	1035	981	0	981	(54)
	2035	908	124	1032	981	0	981	(51)
	2036	908	124	1032	981	0	981	(51)

<sup>1</sup> The System Peak Responsibility is the sum of the Total System Peak Load plus the 12% Capacity Margin less any interruptible load not included in this table.

## Appendix A-7—Kansas City Board of Public Utilities (KC-BPU)

The Kansas City Board of Public Utilities (KC-BPU) is a non-KCC jurisdictional municipal utility serving water customers in the Kansas City, Kansas Metropolitan areas of Wyandotte and Johnson Counties, and electric customers in the whole of Wyandotte County. In all, KC-BPU provides electric service to approximately 63,000 customers.

		System Peak				System Capacity			System Capacity Surplus (Deficit)
		Total System Peak Load	12% Capacity Margin	System Peak Responsibility <sup>1</sup>		Accredited Generation	Net Contracts	Total System Capacity	
Historical	2013	--	--	--		--	--	--	--
	2014	--	--	--		--	--	--	--
	2015	523	71	597		704	21	725	128
	2016	480	66	548		661	59	720	172
	2017	492	67	559		676	59	734	175
Projected	2018	496	68	564		676	59	734	170
	2019	496	68	564		676	93	768	204
	2020	496	68	564		676	93	768	204
	2021	496	68	564		676	93	768	204
	2022	498	68	566		676	93	768	202
	2023	498	68	566		676	93	768	202
	2024	500	68	568		676	93	768	200
	2025	500	68	568		676	93	768	200
	2026	502	68	570		676	93	768	198
	2027	502	68	570		676	93	768	198
	2028	504	69	573		676	93	768	195
	2029	504	69	573		676	93	768	195
	2030	506	69	575		676	93	768	193
	2031	506	69	575		676	93	768	193
	2032	506	69	575		676	93	768	193
	2033	506	69	575		676	93	768	193
	2034	506	69	575		676	93	768	193
	2035	506	69	575		676	93	768	193
	2036	506	69	575		676	93	768	193

<sup>1</sup> The System Peak Responsibility is the sum of the Total System Peak Load plus the 12% Capacity Margin less any interruptible load not included in this table.

## Appendix A-8—Kansas Municipal Energy Agency (KMEA)

The Kansas Municipal Energy Agency (KMEA) is an organization that finances projects for the purchase, sale, generation, and transmission of electricity on behalf of its 77 member municipal electric utilities. In addition to these functions, KMEA also manages the Mutual Aid Program where municipalities assist one another in the event of emergencies that affect the electric system, conducts power supply and transmission feasibility studies, and advocates members' positions before industry bodies, regulatory agencies and legislative bodies.

		System Peak				System Capacity			System Capacity Surplus (Deficit)
		Total System Peak Load	12% Capacity Margin	System Peak Responsibility <sup>1</sup>		Accredited Generation	Net Contracts	Total System Capacity	
Historical	2013	218	30	248		199	57	256	8
	2014	339	46	386		199	145	344	(42)
	2015	325	51	426		199	149	174	(252)
	2016	399	54	454		300	125	425	(29)
	2017	422	58	479		306	130	436	(43)
Projected	2018	425	58	483		327	186	513	30
	2019	408	56	464		327	189	516	52
	2020	412	56	468		327	189	516	48
	2021	415	57	472		327	161	489	17
	2022	419	57	476		327	166	493	17
	2023	422	58	479		327	166	493	14
	2024	425	58	483		327	151	478	(5)
	2025	428	58	487		327	151	478	(9)
	2026	432	59	491		327	151	478	(13)
	2027	435	59	495		327	151	478	(17)
	2028	439	60	499		327	151	478	(21)
	2029	442	60	503		327	151	478	(25)
	2030	446	61	507		327	151	478	(29)
	2031	449	61	510		327	151	478	(32)
	2032	453	62	514		327	151	478	(36)
	2033	456	62	518		327	151	478	(40)
	2034	460	63	522		327	151	478	(44)
	2035	463	63	526		327	151	478	(48)
	2036	466	64	530		327	151	478	(52)

<sup>1</sup> The System Peak Responsibility is the sum of the Total System Peak Load plus the 12% Capacity Margin less any interruptible load not included in this table.

## Appendix A-9—Kansas Power Pool (KPP)

The Kansas Power Pool (KPP), created in May of 2005, is an organization that provides wholesale electric power, reserve sharing, collective resource planning and acquisition, network transmission service, and cost sharing of operations to its member municipal utilities. The KPP has continuously added new municipal electric utilities since its founding. Because of this, historical comparisons to previous years are inherently misleading and have been omitted from this report. KPP is comprised of 41 municipally-owned retail electric systems and is responsible for a total system capacity of approximately 586 MWs.

		System Peak			System Capacity			System Capacity Surplus (Deficit)
		Total System Peak Load	12% Capacity Margin	System Peak Responsibility <sup>1</sup>	Accredited Generation	Net Contracts	Total System Capacity	
Historical	2013	342	47	389	405	169	573	184
	2014	217	30	247	342	102	445	198
	2015	211	29	240	267	99	366	126
	2016	216	30	246	225	86	311	65
	2017	219	30	249	223	37	259	10
Projected	2018	214	29	243	223	37	259	16
	2019	218	30	248	223	62	284	36
	2020	219	30	248	223	62	284	36
	2021	218	30	248	223	62	284	36
	2022	220	30	251	223	87	309	58
	2023	221	30	252	223	28	250	(2)
	2024	222	30	253	223	28	250	(3)
	2025	224	31	254	223	28	250	(4)
	2026	225	31	255	223	28	250	(5)
	2027	226	31	257	223	12	235	(22)
	2028	227	31	258	223	12	235	(23)
	2029	228	31	259	223	12	235	(24)
	2030	229	31	260	223	12	235	(25)
	2031	230	31	262	223	11	234	(28)
	2032	231	32	263	223	11	234	(29)
	2033	233	32	264	223	11	234	(30)
	2034	234	32	266	223	11	234	(32)
	2035	235	32	267	223	11	234	(33)
	2036	236	32	268	223	11	234	(34)

<sup>1</sup> The System Peak Responsibility is the sum of the Total System Peak Load plus the 12% Capacity Margin less any interruptible load not included in this table.

## Appendix B—Renewable Capacity Requirements

### Appendix B-1—Empire District Electric Company (Empire)

Empire District Electric Company (Empire) currently has two long-term power purchase agreements with two wind farms operating in Kansas. Empire also operates a hydro-electric dam in Missouri. Empire is a multi-jurisdictional utility operating in the states of Missouri, Kansas, Arkansas, and Oklahoma. Empire currently satisfies a renewable energy standard (RES) in Missouri.

	Renewable Capacity			Renewable Capacity Inventory			Renewable Capacity Required for Other Jurisdictions	Total Renewable Capacity
	Renewable Energy Standard	Kansas Renewable Capacity		Wind	Hydro			
2013	10%	12		12	1		24	(11)
2014		12		12	1		61	(48)
2015		12		12	1		60	(47)
2016	15%	12		12	1		59	(46)
2017		12		12	1		61	(48)
2018		12		12	1		122	(109)
2019		12		12	1		123	(110)
2020		12		12	1		124	(111)
2021		12		12	1		187	(174)
2022		12		12	1		188	(175)
2023		12		12	1		189	(176)
2024		12		12	1		190	(177)
2025		12		12	1		190	(177)
2026		5		5	1		191	(178)
2027		5		5	1		191	(178)
2028		5		5	1		192	(179)
2029		--		--	1		192	(179)
2030		--		--	1		193	(180)
2031		--		--	1		193	(180)
2032		--		--	1		194	(180)



## Appendix B-2—Kansas City Power & Light (KCP&L)

Kansas City Power & Light (KCP&L) must currently satisfy an RES in place in Missouri.

	Renewable Capacity			Renewable Capacity Inventory			Renewable Capacity Required for Other Jurisdictions	Total Renewable Capacity
	Renewable Energy Standard	Kansas Renewable Capacity		Wind	Hydro			
2013	10%	397		397	--		219	511
2014		397		397	62		218	241
2015		397		397	62		218	241
2016	15%	730		730	60		417	373
2017		730		730	180		486	424
2018		730		730	360		588	502
2019		930		730	360		702	388
2020		930		930	360		702	588
2021		930		930	360		702	588
2022		930		930	360		702	588
2023		930		930	360		702	588
2024		930		930	300		702	328
2025		930		930	300		702	528
2026		930		930	300		702	528
2027		930		930	300		702	528
2028		930		930	300		702	528
2029		930		930	300		702	528
2030		930		930	300		702	528
2031		930		930	300		702	528
2032		799		799	300		628	405
2033		698		698	300		570	428
2034		698		698	300		570	428
2035		698		698	300		570	428
2036		348		348	300		570	78

### Appendix B-3—Westar Energy (Westar)

Westar Energy (Westar) currently owns Central Plains wind farm, and 50% of Flat Ridge wind farm in Wichita and Barber counties, respectively. Westar additionally has long-term power purchase agreement with Ironwood, Post Rock, Kingman, Cedar Bluff, Ninnescah, and Meridian Way wind farms. In addition to wind and biomass renewables, the utility also has a community solar project.

	Renewable Capacity		Renewable Capacity Inventory			Total Renewable Capacity
	Renewable Energy Standard	Kansas Renewable Capacity	Wind	Solar	Biomass	
<b>2013</b>	<b>10%</b>	<b>736</b>	730	--	6	<b>736</b>
<b>2014</b>		<b>737</b>	731	--	6	<b>737</b>
<b>2015</b>		<b>737</b>	731	--	6	<b>737</b>
<b>2016</b>	<b>15%</b>	<b>868</b>	1155	--	6	<b>1161</b>
<b>2017</b>		<b>1565</b>	1758	1	6	<b>1765</b>
<b>2018</b>		<b>1565</b>	1758	1	6	<b>1765</b>
<b>2019</b>		<b>1565</b>	1758	1	6	<b>1765</b>
<b>2020</b>		<b>1865</b>	2058	1	6	<b>2065</b>
<b>2021</b>		<b>1865</b>	2058	1	6	<b>2065</b>
<b>2022</b>		<b>1865</b>	2058	1	6	<b>2065</b>
<b>2023</b>		<b>1865</b>	2058	1	6	<b>2065</b>
<b>2024</b>		<b>1865</b>	2058	1	6	<b>2065</b>
<b>2025</b>		<b>1865</b>	2058	1	6	<b>2065</b>
<b>2026</b>		<b>1865</b>	2058	1	6	<b>2065</b>
<b>2027</b>		<b>1865</b>	2058	1	6	<b>2065</b>
<b>2028</b>		<b>1865</b>	2058	1	6	<b>2065</b>
<b>2029</b>		<b>1719</b>	1912	1	6	<b>1919</b>
<b>2030</b>		<b>1719</b>	1912	1	6	<b>1919</b>
<b>2031</b>		<b>1713</b>	1912	1	--	<b>1913</b>
<b>2032</b>		<b>1713</b>	1912	1	--	<b>1913</b>
<b>2033</b>		<b>1344</b>	1543	1	--	<b>1544</b>
<b>2034</b>		<b>1344</b>	1543	1	--	<b>1444</b>
<b>2035</b>		<b>1344</b>	1443	1	--	<b>1444</b>
<b>2036</b>		<b>1146</b>	1145	1	--	<b>1146</b>

#### Appendix B-4—Kansas Electric Power Cooperative, Inc. (KEPCo)

Kansas Electric Power Cooperative, Inc. (KEPCo), a federally defined rural non-profit utility, has received discounted power allocations from federally managed hydro-electric power marketers since the utility's inception. Western Area Power Administration is likewise, a series of 56 hydro-electric dams operated by the Bureau of Reclamation, U.S. Army Corps of Engineers, and International Boundary and Water Commission in a 15 state region.

	Renewable Capacity		Renewable Capacity Inventory			Total Renewable Capacity
	Renewable Energy Standard	Kansas Renewable Capacity	Wind	Hydro	Solar	
<b>2013</b>	<b>10%</b>	--	--	--	--	--
<b>2014</b>		--	--	--	--	--
<b>2015</b>		<b>16</b>	14	113	--	<b>127</b>
<b>2016</b>	<b>15%</b>	<b>23</b>	23	113	--	<b>136</b>
<b>2017</b>		<b>23</b>	22	113	1	<b>136</b>
<b>2018</b>		<b>23</b>	22	113	1	<b>136</b>
<b>2019</b>		<b>23</b>	22	113	1	<b>136</b>
<b>2020</b>		<b>23</b>	22	113	1	<b>136</b>
<b>2021</b>		<b>23</b>	22	113	1	<b>136</b>
<b>2022</b>		<b>23</b>	22	113	1	<b>136</b>
<b>2023</b>		<b>23</b>	22	113	1	<b>136</b>
<b>2024</b>		<b>23</b>	22	113	1	<b>136</b>
<b>2025</b>		<b>23</b>	22	113	1	<b>136</b>
<b>2026</b>		<b>23</b>	22	113	1	<b>136</b>
<b>2027</b>		<b>23</b>	22	113	1	<b>136</b>
<b>2028</b>		<b>23</b>	22	113	1	<b>136</b>
<b>2029</b>		<b>23</b>	22	113	1	<b>136</b>
<b>2030</b>		<b>23</b>	22	113	1	<b>136</b>
<b>2031</b>		<b>23</b>	22	113	1	<b>136</b>
<b>2032</b>		<b>23</b>	22	113	1	<b>136</b>
<b>2033</b>		<b>23</b>	22	113	1	<b>136</b>
<b>2034</b>		<b>23</b>	22	113	1	<b>136</b>
<b>2035</b>		<b>23</b>	22	113	1	<b>136</b>
<b>2036</b>		<b>23</b>	22	113	1	<b>136</b>

## **Appendix B-5—Midwest Energy (Midwest)**

THIS SECTION WAS INTENTIONALLY LEFT BLANK DUE TO MIDWEST ENERGY'S REQUEST THAT THE INFORMATION REMAIN CONFIDENTIAL

### Appendix B-6—Sunflower Electric Power Company (Sunflower)

Sunflower Electric Power Company (Sunflower) and the Mid-Kansas Electric Company (Mid-Kansas) currently have long-term power purchase agreements with two wind farms located in Kansas, Gray County and Smoky Hills located in Lincoln and Ellsworth counties. As federally defined non-profit rural utilities, these companies also receive electricity from the federally managed hydro-electric power marketer.

	Renewable Capacity		Renewable Capacity Inventory			Total Renewable Capacity
	Renewable Energy Standard	Kansas Renewable Capacity	Wind	Hydro	Solar	
2013	10%	250	250	5	--	260
2014		250	250	3	--	253
2015		250	250	3	--	253
2016	15%	250	250	3	--	253
2017		177	177	3	--	181
2018		177	177	3	--	181
2019		177	177	3	--	181
2020		197	197	3	20	220
2021		197	197	3	20	220
2022		197	197	3	20	220
2023		197	197	3	20	220
2024		197	197	3	20	220
2025		197	197	3	20	220
2026		197	197	3	20	220
2027		197	197	3	20	220
2028		197	197	3	20	220
2029		124	124	3	20	147
2030		124	124	3	20	147
2031		124	124	3	20	147
2032		124	124	3	20	147
2033		124	124	3	20	147

## Appendix B-7—Kansas City Board of Public Utilities (KC-BPU)

Kansas City Board of Public Utilities currently has long-term power purchase agreements with wind farms, as well as federally managed hydro-electric power marketers. The Company also has agreements for biomass and additional hydro.

	Renewable Capacity			Renewable Capacity Inventory				Total Renewable Capacity
	Renewable Energy Standard	Kansas Renewable Capacity		Wind	Hydro	Solar	Biomass	
<b>2013</b>	<b>10%</b>	--		--	--	--	--	--
<b>2014</b>		--		--	--	--	--	--
<b>2015</b>		<b>64</b>		64	48	--	--	<b>108</b>
<b>2016</b>	<b>15%</b>	<b>64</b>		64	48	--	4	<b>112</b>
<b>2017</b>		<b>259</b>		250	48	1	4	<b>302</b>
<b>2018</b>		<b>259</b>		250	48	1	4	<b>303</b>
<b>2019</b>		<b>259</b>		250	48	1	4	<b>303</b>
<b>2020</b>		<b>259</b>		250	48	1	4	<b>303</b>
<b>2021</b>		<b>259</b>		250	48	1	4	<b>303</b>
<b>2022</b>		<b>259</b>		250	48	1	4	<b>303</b>
<b>2023</b>		<b>259</b>		250	48	1	4	<b>303</b>
<b>2024</b>		<b>259</b>		250	48	1	4	<b>303</b>
<b>2025</b>		<b>259</b>		250	48	1	4	<b>303</b>
<b>2026</b>		<b>259</b>		250	48	1	4	<b>303</b>
<b>2027</b>		<b>259</b>		250	48	1	4	<b>303</b>
<b>2028</b>		<b>259</b>		250	48	1	4	<b>303</b>
<b>2029</b>		<b>259</b>		250	48	1	4	<b>303</b>
<b>2030</b>		<b>259</b>		250	48	1	4	<b>303</b>
<b>2031</b>		<b>259</b>		250	48	1	4	<b>303</b>
<b>2032</b>		<b>259</b>		250	48	1	4	<b>303</b>

**Appendix B-8 – Kansas Municipal Energy Agency (KMEA)**

	Renewable Capacity			Renewable Capacity Inventory		Total Renewable Capacity
	Renewable Energy Standard	Kansas Renewable Capacity		Wind		
<b>2013</b>	<b>10%</b>	<b>61</b>		61		<b>61</b>
<b>2014</b>		<b>57</b>		57		<b>57</b>
<b>2015</b>		<b>58</b>		58		<b>58</b>
<b>2016</b>	<b>15%</b>	<b>41</b>		41		<b>41</b>
<b>2017</b>		<b>27</b>		27		<b>27</b>
<b>2018</b>		<b>27</b>		27		<b>27</b>
<b>2019</b>		<b>29</b>		29		<b>29</b>
<b>2020</b>		<b>29</b>		29		<b>29</b>
<b>2021</b>		<b>2</b>		2		<b>2</b>
<b>2022</b>		<b>2</b>		2		<b>2</b>
<b>2023</b>		<b>2</b>		2		<b>2</b>
<b>2024</b>		<b>2</b>		2		<b>2</b>
<b>2025</b>		<b>2</b>		2		<b>2</b>
<b>2026</b>		<b>2</b>		2		<b>2</b>
<b>2027</b>		<b>2</b>		2		<b>2</b>
<b>2028</b>		<b>2</b>		2		<b>2</b>
<b>2029</b>		<b>2</b>		2		<b>2</b>
<b>2030</b>		<b>2</b>		2		<b>2</b>
<b>2031</b>		<b>2</b>		2		<b>2</b>
<b>2032</b>		<b>2</b>		2		<b>2</b>
<b>2033</b>		<b>2</b>		2		<b>2</b>
<b>2034</b>		<b>2</b>		2		<b>2</b>
<b>2035</b>		<b>2</b>		2		<b>2</b>
<b>2036</b>		<b>2</b>		2		<b>2</b>

**Appendix B-9—Kansas Power Pool (KPP)**

	Renewable Capacity		Renewable Capacity Inventory		Total Renewable Capacity
	Renewable Energy Standard	Kansas Renewable Capacity	Wind	Hydro	
<b>2013</b>	<b>10%</b>	<b>14</b>	14	14	<b>28</b>
<b>2014</b>		<b>14</b>	14	14	<b>28</b>
<b>2015</b>		<b>41</b>	41	14	<b>55</b>
<b>2016</b>	<b>15%</b>	<b>38</b>	38	14	<b>55</b>
<b>2017</b>		<b>38</b>	38	14	<b>52</b>
<b>2018</b>		<b>38</b>	38	14	<b>51</b>
<b>2019</b>		<b>38</b>	38	14	<b>51</b>
<b>2020</b>		<b>38</b>	38	14	<b>51</b>
<b>2021</b>		<b>38</b>	38	14	<b>51</b>
<b>2022</b>		<b>38</b>	38	14	<b>51</b>
<b>2023</b>		<b>38</b>	38	14	<b>51</b>
<b>2024</b>		<b>38</b>	38	14	<b>51</b>
<b>2025</b>		<b>38</b>	38	14	<b>51</b>
<b>2026</b>		<b>38</b>	38	14	<b>51</b>
<b>2027</b>		<b>38</b>	38	8	<b>46</b>
<b>2028</b>		<b>38</b>	38	8	<b>46</b>
<b>2029</b>		<b>38</b>	38	8	<b>46</b>
<b>2030</b>		<b>38</b>	38	8	<b>46</b>
<b>2031</b>		<b>25</b>	25	8	<b>33</b>
<b>2032</b>		<b>25</b>	25	8	<b>33</b>
<b>2033</b>		<b>25</b>	25	8	<b>33</b>
<b>2034</b>		<b>26</b>	26	8	<b>33</b>
<b>2035</b>		<b>26</b>	26	8	<b>33</b>
<b>2036</b>		<b>0</b>	0	8	<b>8</b>



## Appendix C—Commercial-Size Renewable Energy Generation

### Appendix C-1—Existing Renewable Generators within Kansas

Renewable Generator (Total Nameplate Capacity)	County	Developer	Initial Month and Year of Operation	Utility Purchaser	Size
East Kansas Agri-Energy (2 MW)	Anderson	East Kansas Agri-Energy	June 2005	-----	2 MW
Flat Ridge Wind Farm (100 MW)	Barber	BP Alternative Energy	March 2009	Westar Energy	100 MW
Elk River Wind Facility (150 MW)	Butler	PPM Energy (Ibedrola SA)	December 2005	Empire District Electric	150 MW
Prairie Sky Solar Farm (1 MW)	Butler	Kansas Electric Power Coop Inc.	February 2017	Kansas Electric Power Coop Inc.	1 MW
Bloom Wind (178 MW)	Clark and Ford	Norvento	June 2017	Capital Power (IPP)	178 MW
Cimarron Bend Wind Project I (200 MW)	Clark	Tradewind Energy for Enel Green Power North America (EGPNA)	December 2016	Kansas City Board of Public Utilities	100 MW
				Google	100 MW
Cimarron Bend Wind Project II (200 MW)	Clark	Tradewind Energy for Enel Green Power North America (EGPNA)	March 2017	Kansas City Board of Public Utilities	100 MW
				Google	100 MW
Cloud County (Meridian Way) Wind Farm (201 MW)	Cloud	Horizon Wind Energy	November 2008	Empire District Electric	105 MW
				Westar Energy	96 MW
Meridian Way I Wind Farm (105 MW)	Cloud	EDP Renewables North America LLC	December 2008	Empire District Electric Co.	105 MW
Meridian Way II Wind Farm (96 MW)	Cloud	EDP Renewables North America LLC	December 2008	Westar Energy Inc.	96 MW
Waverly Wind (199.5 MW)	Coffey	EDP Renewables	2016	KCP&L	199.5 MW
Oak Grove Landfill (1.6 MW)	Crawford	Waste Corporation of Kansas	March 2010	Kansas City Board of Public Utilities	1.6 MW
Bowersock Hydro-electric Dam (7.1 MW)	Douglas	Kansas River Hydro Project	1922/2012	Kansas City Board of Public Utilities	7.1 MW
Caney River (200 MW)	Elk	Trade Wind Energy	December 2011	Tennessee Valley Authority	200 MW
Buckeye Wind Energy (200 MW)	Ellis	Invenergy, LLC	December 2015	-----	200 MW
Fort Hays State University Wind Farm I (2 MW)	Ellis	Harvest the Wind Network, LLC	November 2013		2 MW
Fort Hays State University Wind Farm II (2 MW)	Ellis	Harvest the Wind Network, LLC	November 2013		2 MW
Post Rock (201 MW)	Ellsworth and Lincoln	Wind Capital Group	November 2012	Westar	201 MW

Renewable Generator (Total Nameplate Capacity)	County	Developer	Initial Month and Year of Operation	Utility Purchaser	Size
Smoky Hills Phase 1 (100.8 MW)	Ellsworth and Lincoln	Trade Wind Energy	January 2008	Sunflower Electric	50.4 MW
				Kansas City Board of Public Utilities	25.2 MW
				Midwest Energy	25.2 MW
Smoky Hills Phase 2 (148.5 MW)	Ellsworth and Lincoln	Trade Wind Energy	January 2009	Sunflower Electric (allocated to MKEC system)	24 MW
				Midwest Energy	24 MW
				City Power and Light (Independence, Mo.)	15 MW
				City Utilities of Springfield, Mo.	50 MW
				<i>Unallocated (SPP EIM)<sup>1</sup></i>	35.5 MW
Spearville Wind Energy Facility Phase I (100.5 MW)	Ford	enXco (EDF Renewable Energy)	August 2006	Kansas City Power and Light	100.5 MW
Spearville Wind Energy Facility Phase II (48 MW)	Ford	enXco (EDF Renewable Energy)	December 2010	Kansas City Power and Light	48 MW
Spearville Wind Energy Facility Phase III (101 MW)	Ford	enXco (EDF Renewable Energy)	October 2012	Kansas City Power and Light	101 MW
Western Plains Wind Farm (280 MW)	Ford	Infinity Wind	March 2017		280 MW
Ironwood (168 MW)	Ford and Hodgeman	Duke Energy Generation Services	October 2012	Westar	168 MW
Buffalo Dunes (250 MW)	Grant and Haskell	Trade Wind Energy	December 2013	Alabama Power Company	250 MW
Cimarron Energy Project (Cimarron I) (165 MW)	Gray	CPV Renewable Energy	November 2012	Tennessee Valley Authority	165 MW
Cimarron Energy Project (Cimarron II) (131 MW)	Gray	Duke Energy Generation Services	June 2012	Kansas City Power & Light	131 MW
Ensign Wind Energy (99 MW)	Gray	NextEra Energy Resources	November 2012	Kansas City Power and Light – Greater Missouri Operations	99 MW
Gray County Wind Farm (112.2 MW)	Gray	NextEra (Florida Power & Light)	November 2001	Sunflower Electric (allocated to MKEC system)	51 MW
				Kansas City Power and Light – Greater Missouri Operations	60 MW
				<i>Unallocated</i>	1 MW
Flat Ridge 2 Wind Farm (470.2 MW)	Harper, Kingman, Barber, and Sumner	BP Alternative Energy	December 2012	Associated Electric Cooperative	310.4 MW
				Arkansas Electric Coop Corp	51.2 MW
				<i>Southwestern Electric Power Company</i>	108.8 MW

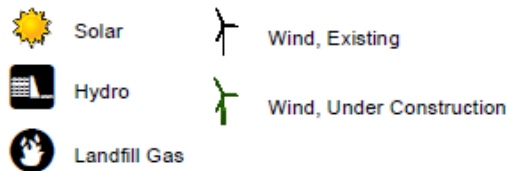
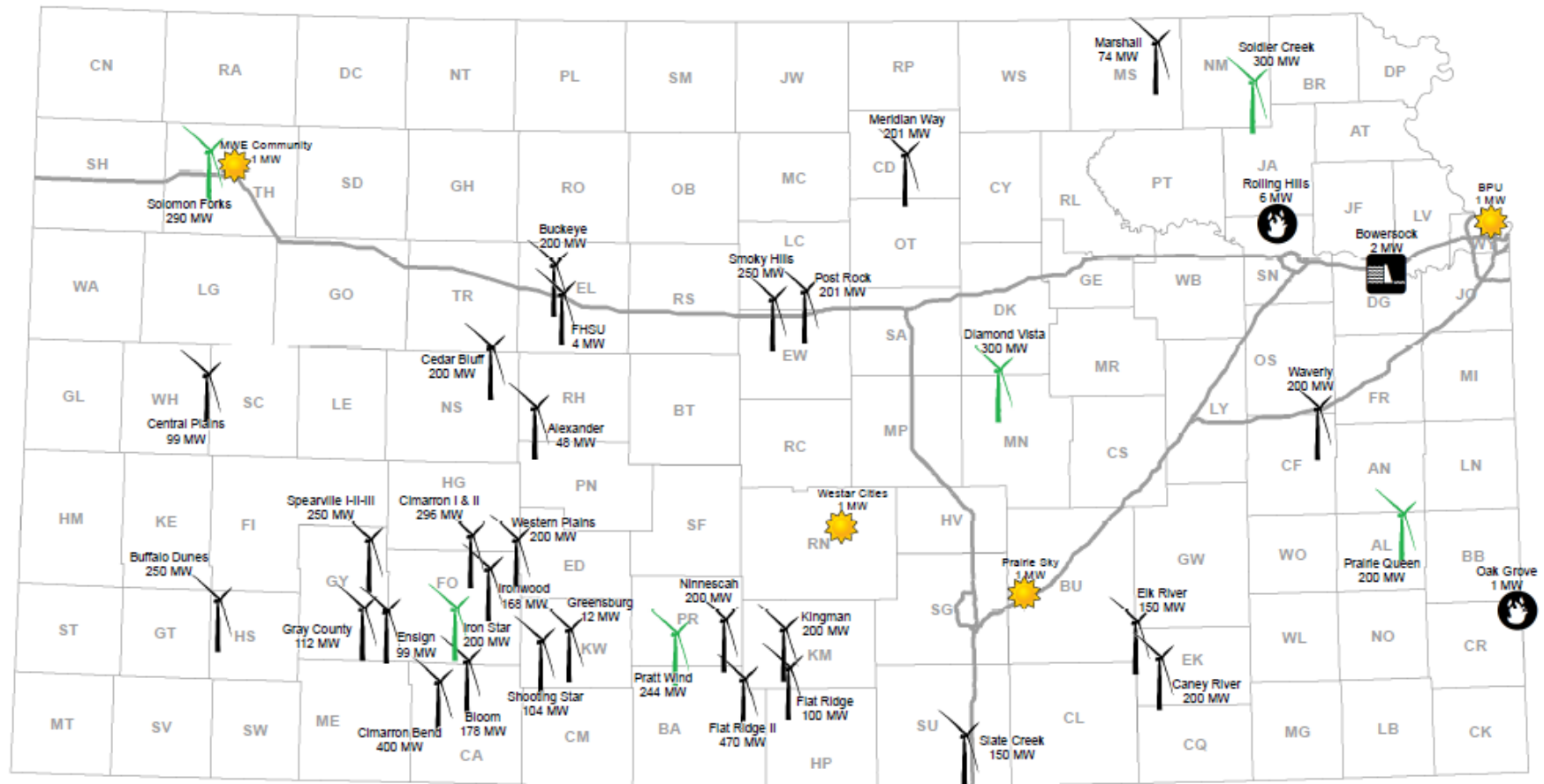
<sup>1</sup> Unallocated wind energy can be sold through the Southwest Power Pool's Energy Imbalance Market place.

<b>Renewable Generator (Total Nameplate Capacity)</b>	<b>County</b>	<b>Developer</b>	<b>Initial Month and Year of Operation</b>	<b>Utility Purchaser</b>	<b>Size</b>
<b>Kingman Wind Energy I (200 MW)</b>	Kingman	NextEra Energy Resources, LLC	December 2016	Westar Energy Inc.	200 MW
<b>Shooting Star (105 MW)</b>	Kiowa	Infinity Wind Power	September 2012	Sunflower	105 MW
<b>Greensburg (12.5 MW)</b>	Kiowa	John Deere / Excelon	March 2010	Kansas Power Pool	12.5 MW
<b>Marshall Energy (74 MW)</b>	Marshall	RPM Access	May 2016	Missouri Joint Municipal Electric Utility Commission	74 MW
<b>Marshall Wind Farm (72 MW)</b>	Marshall	BHE Renewables, LLC	May 2016	Kansas Municipal Energy Association	7 MW
				Missouri Joint Municipal Electric Utility Commission	20 MW
				Kansas Power Pool	25 MW
				City of Independence, MO	20 MW
<b>Cedar Bluff Wind Farm (200 MW)</b>	Ness	NextEra Energy Resources	December 2015	Westar Energy, Inc.	200 MW
<b>Ninnescah Wind Energy (208 MW)</b>	Pratt	NextEra Energy Resources, LLC	December 2016	Westar Energy Inc.	208 MW
<b>Westar Community Solar (1.2 MW)</b>	Reno	SoCore Energy	July 2017	Westar Energy Inc.	1.2 MW
<b>Alexander Wind Farm (50 MW)</b>	Rush	New Jersey Resources Corp.	October 2015	Kansas City Board of Public Utilities & Yahoo! Inc.	48.3 MW
<b>Rolling Meadows Landfill (5.6 MW)</b>	Shawnee	Waste Management	January 2010	Westar Energy	5.6 MW
<b>Slate Creek Wind Project (150 MW)</b>	Sumner	EDF Renewable Energy	December 2015	Great Plains Energy Inc.	150 MW
<b>Midwest Energy Community Solar Garden (1 MW)</b>	Thomas	Clean Energy Collective	February 2015	Midwest Energy	1 MW
<b>Central Plains Wind Farm (99 MW)</b>	Wichita	RES America	March 2009	Westar	99 MW
<b>Board of Public Utilities Solar Farm (1 MW)</b>	Wyandotte	Board of Public Utilities	September 2017	Board of Public Utilities	1 MW

## Appendix C-2—Announced New Renewable Generation within Kansas

<b>Renewable Generator (Total Nameplate Capacity)</b>	<b>County</b>	<b>Developer</b>	<b>Initial Month and Year of Operation</b>	<b>Utility Purchaser</b>	<b>Size</b>
<b>Prairie Queen Wind Farm (200 MW)</b>	Allen	EDP Renewables	May 2019	KCP&L	200 MW
<b>Iron Star (200 MW)</b>	Ford	Infinity Renewables	-----	Missouri Joint Municipal Electric Utility Commission	200 MW
<b>Ringneck Prairie Wind Farm (70 MW)</b>	Graham	Apex Clean Energy	2020	-----	70 MW
<b>Reading Wind Farm (200 MW)</b>	Lyon/Osage	Southern Power	June 2020	Royal Caribbean	200 MW
<b>Diamond Vista (300 MW)</b>	Marion and Dickenson	Enel Green Power North America	December 2018	Kohler, City of Springfield, Tri-County Electric Coop	300 MW
<b>Soldier Creek Wind Farm (300 MW)</b>	Nemaha	NextEra energy Resources, LLC	December 2020		300 MW
<b>Pratt Wind Energy Center (244 MW)</b>	Pratt	NextEra Energy Resources, LLC	December 2018		244 MW
<b>Pretty Prairie Wind Farm (220 MW)</b>	Reno		2019	Iron Mountain	220 MW
<b>Johnson Corner Solar Project (20 MW)</b>	Stanton		December 2019	Mid-Kansas Electric Company, Inc., Sunflower Electric Power Corporation, lightsourcebp, National Renewables Coop.	20 MW
<b>Solomon Forks and Solomon Forks East (474 MW)</b>	Thomas	Infinity Revewables and MAP© Energy	June 2019	T-Mobile, Target	474 MW

# Commercial-Size Renewable Generation in Kansas



## Appendix D— Inventory of Major Power Plants Serving Kansas Loads

Operating Utility	Power Plant Name Unit / Primary Fuel Source (B-Base, I-Intermediate, P-Peaking)	County	Ownership	Nameplate Capacity (MW)	Initial Year of Operation	2017 Net Generation (MWh)
<b>Wolf Creek Nuclear Operating Corporation</b>	<b>Wolf Creek</b> Nuclear (B)	Coffey	KCP&L (47%) Westar (47%) KEPCo (6%)	1,205	1985	5,004,571
<b>Westar Energy, Inc. (Westar)</b>	<b>Jeffrey Energy Center</b> Coal (B)	Pottawatomie	Westar (92%) Mid-Kansas (8%)	2,179	1978 - 1983	10,189,135
	<b>Lawrence Energy Center</b> Coal (B)	Douglas	Westar (100%)	531	1955 - 1971	2,3447,673
	<b>Hutchinson</b> Natural gas (P)	Reno	Westar (100%)	396	1965	2869
	<b>Tecumseh</b> Coal (B) and Natural gas (P)	Shawnee	Westar (100%)	205	1957 - 1972	289,084
	<b>Gordon Evans</b> Natural gas (P) Diesel (P)	Sedgwick	Westar (100%)	821	1961 - 2001	375,475
	<b>Murray Gill</b> Natural gas (P)	Sedgwick	Westar (100%)	293	1952 - 1959	56,786
	<b>Emporia Energy Center</b> Natural gas (LF) and Natural gas (P)	Lyon	Westar (100%)	660	2008-2009	284,400
	<b>Spring Creek Energy Center</b> Natural gas (P)	Logan, Oklahoma	Westar (100%)	279	2001	9,096
	<b>Central Plains Wind Farm</b> Wind	Wichita	Westar (100%)	99	2009	274,815
	<b>Flat Ridge 1 Wind Farm</b> Wind	Barber	Westar (100%)	100	2009	149,633
<b>Kansas City Power and Light (KCP&amp;L)</b>	<b>LaCygne</b> Coal (B)	Linn	KCP&L (50%) Westar (50%)	1,421.2	1973 - 1977	917,061
	<b>Osawatomie</b> Natural gas (P)	Miami	KCP&L (100%)	186	2003	1,540
	<b>West Gardner</b> Natural gas (P)	Johnson	KCP&L (100%)	360	2003	14,228

Operating Utility	Power Plant Name Unit / Primary Fuel Source (B-Base, I-Intermediate, P-Peaking)	County	Ownership	Nameplate Capacity (MW)	Initial Year of Operation	2017 Net Generation (MWh)
	<b>Iatan I</b> Coal (B)	Platte, Missouri	KCP&L (70%) KCP&L-GMO (18%) Empire (12%)	704.7	1980	1,266,686
	<b>Iatan II</b> Coal (B)	Platte, Missouri	KCP&L (54.71%) KCP&L-GMO (18%) Empire (12%) MJMEUC (11.76%) KEPCo (3.53%)	881	2010	1,597,184
	<b>Montrose</b> Coal (B)	Henry, Missouri	KCP&L (100%)	510	1958	154,607
	<b>Hawthorn</b> Coal (B)	Jackson, Missouri	KCP&L (100%)	564	1969	112,788
	<b>Hawthorn Combine Cycle</b> Natural gas (P)	Jackson, Missouri	KCP&L (100%)	306	1997 - 2000	29,202
	<b>Hawthorn Combustion Turbine</b> Natural gas (P)	Jackson, Missouri	KCP&L (100%)	180	2000	9,418
	<b>Northeast Station</b> Natural gas (P) and Distillate fuel oil (P)	Jackson, Missouri	KCP&L (100%)	520	1972	(46)
	<b>Spearville Wind Farm</b> Wind	Ford	KCP&L (100%)	249	2006 - 2012	133,114
<b>Kansas City Board of Public Utilities (KC-BPU)</b>	<b>Quindaro</b> Coal (B)	Wyandotte	KC-BPU (100%)	10	1965 - 1971	0
	<b>Quindaro Combustion Turbine</b> Natural gas (P) and Distillate fuel oil (P)	Wyandotte	KC-BPU (100%)	176	1969 - 1977	7,929
	<b>Nearman Creek</b> Coal (B)	Wyandotte	KC-BPU (100%)	238	1981	952,612
	<b>Nearman Creek Combustion Turbine</b> Natural gas (P)	Wyandotte	KC-BPU (100%)	76 (with 45MW additional announced)	2006	6,635
<b>Kansas Electric Power Cooperative, Inc. (KEPCo)</b>	<b>Sharpe</b> Distillate fuel oil (I)	Coffey	KEPCo (100%)	20	2002	25

Operating Utility	Power Plant Name Unit / Primary Fuel Source (B-Base, I-Intermediate, P-Peaking)	County	Ownership	Nameplate Capacity (MW)	Initial Year of Operation	2017 Net Generation (MWh)
Sunflower Electric Power Corporation (Sunflower)	<b>Holcomb Station</b> Coal (B)	Finney	Sunflower (100%)	358.8	1983	1,020,633
	<b>Garden City Station</b> Natural gas (I) and Natural gas (P)	Finney	Sunflower (100%)	239.2	1962 - 1979	40,406
	<b>Fort Dodge 4</b>	Ford	Mid-Kansas (100%)	149	1968	3,822
	<b>Great Bend 3</b>	Barton	Mid-Kansas (100%)	82	1963	2,009
	<b>Cimarron River 1</b> Natural Gas (B)	Seward	Mid-Kansas (100%)	50	1963	24
	<b>Cimarron River 2</b> Natural Gas (P)	Seward	Mid-Kansas (100%)	15	1967	38
	<b>Clifton 1</b> Natural Gas (P)	Washington	Mid-Kansas (100%)	85	1974	3,268
	<b>Rubart Station</b> Natural Gas (I)	Grant	Sunflower (100%)	110	2014	37,123
Mid-Kansas Electric Company (Mid-Kansas)	<b>Colby</b> Natural gas (I)	Barton	Mid-Kansas (100%)	13	1970	879
	<b>Clifton Station</b> Natural gas (P) and Distillate fuel oil (P)	Washington	Mid-Kansas (100%)	75.5	1974	3,107
	<b>Goodman Energy Center</b> Natural gas (P) <i>(formerly Judson Large)</i>	Ford	Mid-Kansas (100%)	50	73.8	68,892
	<b>Great Bend Station</b> Natural gas (I) <i>(formerly Arthur Mullergren)</i>	Barton	Mid-Kansas (100%)	0	1963	(51)
	<b>Bird City</b> Distillate fuel oil(P)	Cheyenne		4		(10)
Empire District Electric Company (Empire)	<b>Riverton</b> Coal (B)	Cherokee	Empire (100%)	92	1950	0
	<b>Riverton Combustion Turbine</b> Natural gas (P)	Cherokee	Empire (100%)	283	1964	1,034,616
	<b>Asbury</b> Coal (B)	Jasper, Missouri	Empire (100%)	189	1970 - 1986	1,079,076
	<b>Empire Energy Center</b> Natural gas (P)	Jasper, Missouri	Empire (100%)	300	1978 - 2003	27,722



Operating Utility	Power Plant Name Unit / Primary Fuel Source (B-Base, I-Intermediate, P-Peaking)	County	Ownership	Nameplate Capacity (MW)	Initial Year of Operation	2017 Net Generation (MWh)
	<b>Ozark Beach</b> Hydro (B)	Taney, Missouri	Empire (100%)	16	1931	41,927
	<b>State Line Combine Cycle</b> Natural gas (P)	Jasper, Missouri	Empire (60%) Westar (40%)	499	2001	1,827,310
	<b>State Line Combustion Turbine</b> Natural gas (P)	Jasper, Missouri	Empire (100%)	96	1995	18,633
<b>Plum Point Energy Associates, LLC</b>	<b>Plum Point Energy</b> Coal (B)	Mississippi, Arkansas	EIF Plum Point (29.6%) John Hancock (27.25%) MJMEUC (22.11%) Empire (7.52%) East Texas Coop. (7.52%) Mississippi Municipal Energy Agency (6%)	670	2010	3,716,051
<b>Midwest Energy, Inc. (Midwest)</b>	<b>Colby</b> Dual Fuel (P)	Thomas	Midwest (100%)	13	1970	879
	<b>Great Bend</b> Dual Fuel (P)	Barton	Midwest (100%)	10	1948 - 1956	(51)
	<b>Bird City</b> Distillate fuel oil (P)	Cheyenne	Midwest (100%)	4	1965	(10)
	<b>Goodman Energy Center</b> Natural gas (P)	Ellis	Midwest (100%)	73.8	2008	34,446



Jeff McClanahan, Director of Utilities

1500 SW Arrowhead Road | Topeka, Kansas 66604-4027 | <http://kcc.ks.gov/>