Chapter 1 - Appendix A
Supplemental Information

Company Description

Ameren Missouri has been providing electric and gas service for more than 100 years, and the company's electric rates are among the lowest in the nation. Ameren Missouri's mission is to power the quality of life for its 1.2 million electric and 127,000 natural gas customers in central and eastern Missouri. The company's service area covers 64 counties and more than 500 communities, including the greater St. Louis area. For more information, visit Ameren.com/Missouri or follow us at @AmerenMissouri or Facebook.com/AmerenMissouri.

Existing Purchase Power Arrangements

In June 2009, Ameren Missouri and Pioneer Prairie Wind Farm I LLC entered into a 15-year power purchase agreement. Ameren Missouri is purchasing 102.3 MWs of generation from the Pioneer Prairie Wind Farm consisting of 65 turbines, located in Northeast Iowa. The facility site covers approximately 10,000 acres of land located in Mitchell County, Iowa in Wayne and Stacyville Townships.

Uncertain Factors

The following uncertain factors have been considered in our planning analysis and the selection of the preferred resource plan:

- Natural gas prices – Approximately $2.40 to $3.60 per MMBtu in today's dollars.
- Carbon dioxide emissions price – See chart in Chapter 1
- Cost of demand side programs – A range of levels for the cost of inducing customer participation at those levels.

Existing Demand-Side Programs

The summary table below summarizes the programs included in the current MEEIA plan as approved by the PSC in File No. EO-2018-0211. The summary table provides the estimated budget allocation and filed gross energy and demand savings targets associated with each program. Final evaluation results for Program Year 2019 were approved by the PSC on August 5, 2020. The Independent Evaluator found first year net energy savings of 206,824 MWh (102% of filed goals) and first year net demand savings of 125.6 MW (121% of filed goals). Programs are currently being implemented for the period March 2019 to December 2022.

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Summary of MEEIA 2019-21 Approved Programs, including Program Year 2022 Extension

Portfolio Total	Total Allocated Costs ($Mil)				Incremental Gross MWh				Incremental Gross MW			
	2019	2020	2021	2022	2019	2020	2021	2022	2019	2020	2021	2022
Low Income	$ 5.41	$ 6.85	$ 8.19	$ 13.04	10,506	13,973	15,310	17,858	2.4	3.4	4.1	5.3
Residential	$ 26.58	$ 28.39	$ 29.37	$ 25.14	129,329	102,348	99,395	58,936	63.1	52.0	54.1	44.8
Business	$ 18.15	$ 31.58	$ 40.93	$ 31.82	83,688	162,571	218,099	159,181	45.6	67.0	80.7	64.9
Portfolio Total	**$ 50.14**	**$ 66.83**	**$ 78.48**	**$ 70.00**	**223,522**	**278,892**	**332,804**	**235,975**	**111.1**	**122.4**	**138.9**	**115.0**
Low Income												
Multifamily Low Income	$ 1.54	$ 2.27	$ 3.47	$ 6.45	900	1,650	2,680	9,754	0.4	0.7	1.2	3.3
Single Family Low Income	$ 3.53	$ 3.98	$ 4.09	$ 3.06	8,556	10,415	10,822	1,622	1.8	2.3	2.5	0.6
Targeted Community LED Lighting	$ -	$ -	$ -	$ 1.45	0	0	0	565	0.0	0.0	0.0	0.1
Business Social Services	$ 0.34	$ 0.60	$ 0.63	$ 2.08	1,049	1,908	1,808	5,918	0.2	0.4	0.4	1.4
Subtotal	*$ 5.41*	*$ 6.85*	*$ 8.19*	*$ 13.04*	*10,506*	*13,973*	*15,310*	*17,858*	*2.4*	*3.4*	*4.1*	*5.3*
Residential												
Appliance Recycling	$ 0.52	$ 0.59	$ 0.60	$ -	3,063	4,329	4,344	0	0.4	0.6	0.6	0.0
Efficient Products	$ 2.09	$ 2.03	$ 2.14	$ 2.18	11,335	12,660	13,527	10,161	2.9	3.3	3.6	3.4
Energy Efficient Kits	$ 1.38	$ 1.30	$ 1.15	$ -	7,279	7,279	4,666	0	1.3	1.3	0.9	0.0
Home Energy Report	$ 1.90	$ 1.97	$ 1.97	$ -	35,250	0	0	0	16.4	0.0	0.0	0.0
HVAC	$ 12.67	$ 13.32	$ 13.73	$ 11.65	48,963	52,594	53,484	33,087	26.8	29.2	30.0	17.2
Lighting	$ 1.93	$ 2.11	$ 1.67	$ -	19,762	20,542	17,388	0	2.9	3.1	2.6	0.0
Multifamily Market Rate	$ 0.97	$ 1.32	$ 1.49	$ 1.54	2,547	3,633	4,515	4,319	0.7	1.2	1.4	1.5
PAYS	$ -	$ -	*$ 1.82*	$ 3.19	0	0	4,367	8,735	0.0	0.0	2.0	4.1
Residential Demand Response	$ 4.28	$ 4.75	$ 5.60	$ 6.58	1,130	1,311	1,471	2,635	11.5	13.3	15.0	18.6
Residential Education	$ 0.85	$ 1.00	$ 1.00	$ -								
Subtotal	*$ 26.58*	*$ 28.39*	*$ 29.37*	*$ 25.14*	*129,329*	*102,348*	*99,395*	*58,936*	*63.1*	*52.0*	*54.1*	*44.8*
Business												
Custom	$ 7.22	$ 13.15	$ 17.87	$ 12.82	36,433	74,342	106,856	77,722	10.5	22.8	31.1	22.6
New Construction	$ 0.80	$ 1.84	$ 2.46	$ -	3,562	9,213	12,847	0	0.9	2.4	3.4	0.0
Retro-Commissioning	$ 0.60	$ 1.42	$ 2.29	$ 1.43	2,850	7,678	12,847	8,111	1.0	2.8	4.7	3.0
Small Business Direct Install	$ 2.39	$ 2.55	$ 2.75	$ 2.73	9,258	10,764	12,063	11,777	1.6	1.9	2.1	2.1
Standard	$ 5.80	$ 10.02	$ 11.70	$ 9.86	31,085	60,075	72,986	61,072	6.5	12.1	14.5	12.2
Business Demand Response	$ 1.26	$ 2.52	$ 3.78	$ 4.98	500	500	500	500	25.0	25.0	25.0	25.0
Business Education	$ 0.08	$ 0.08	$ 0.08	$ -								
Subtotal	*$ 18.15*	*$ 31.58*	*$ 40.93*	*$ 31.82*	*83,688*	*162,571*	*218,099*	*159,181*	*45.6*	*67.0*	*80.7*	*64.9*

Notes:

[1] Pay As You Save totals for PY2021 are shown for informational purposes only, and are not included in Residential or Portfolio totals. The PY2021 PAYS program does not apply to portfolio targets or portfolio earnings opportunity. In PY2021, the total Portfolio budget (including PAYS) is equal to $80.31 million ($78.48 million approved budget + $1.82 million in PAYS costs).

[2] Currently approved MEEIA programs in EO-2018-0211 also include an additional $22 million budget for 2023 and 2024. Those totals are not included here.

Implementation

The following key steps will be part of our implementation of the preferred resource plan over the next three years:

- Completion of 700 MW of wind resources.
- Approval and implementation of our portfolio of energy efficiency and demand response programs to begin in 2023.
- Evaluation of responses to our renewable energy RFP and subsequent contract negotiations, regulatory approvals and project construction.
- Preparation for the retirement of Meramec Energy Center by the end of 2022, including construction of transmission infrastructure needed to ensure ongoing grid reliability.
- Preparation for the retirement of Sioux Energy Center by the end of 2028, including identification, approval, engineering and construction of transmission infrastructure needed to ensure ongoing grid reliability.

Ameren Missouri Base Load Forecasts

Without DSM

Average Annual Class Energy Forecast

Annual Energy Sales Forecast by Rate Class (MWh)

Year	ResGen	ComSGS	ComLGS	ComSPS	ComLPS	IndSGS	IndLGS	IndSPS	IndLPS	Lighting	Total
2021	13,410,425	2,981,728	6,806,279	2,495,415	1,584,311	74,414	807,877	1,208,875	2,240,051	156,184	31,765,559
2022	13,376,292	2,943,669	6,757,817	2,479,731	1,583,638	71,366	792,816	1,197,858	2,234,982	146,286	31,584,455
2023	13,387,118	2,935,962	6,735,282	2,478,155	1,586,035	71,884	797,313	1,194,112	2,233,622	136,160	31,555,643
2024	13,438,184	2,939,114	6,763,215	2,480,734	1,592,017	72,322	804,686	1,192,274	2,235,175	133,176	31,650,897
2025	13,446,734	2,922,200	6,750,580	2,478,505	1,592,519	72,092	813,582	1,190,144	2,235,253	130,604	31,632,213
2026	13,764,266	2,920,932	6,991,032	2,485,486	1,597,682	71,924	1,213,124	1,188,870	2,236,319	127,960	32,597,595
2027	13,906,500	2,921,987	7,052,391	2,493,631	1,603,249	71,567	1,244,544	1,187,337	2,236,086	124,940	32,842,232
2028	14,095,703	2,930,962	7,132,911	2,509,899	1,613,393	71,035	1,275,101	1,187,731	2,237,268	124,689	33,178,692
2029	14,202,201	2,920,535	7,174,411	2,511,711	1,615,399	72,258	1,305,935	1,187,240	2,236,569	124,764	33,351,023
2030	14,339,070	2,909,474	7,225,196	2,516,819	1,617,208	73,317	1,338,221	1,188,441	2,237,575	124,819	33,570,140
2031	14,479,196	2,905,134	7,297,431	2,525,840	1,620,205	74,193	1,381,961	1,192,022	2,240,504	125,094	33,841,580
2032	14,665,824	2,911,526	7,404,551	2,556,632	1,628,844	76,011	1,426,667	1,197,804	2,242,925	125,034	34,235,818
2033	14,756,268	2,902,524	7,470,147	2,570,165	1,628,529	76,196	1,468,841	1,200,851	2,242,893	125,129	34,441,543
2034	14,899,717	2,903,740	7,562,882	2,586,242	1,635,369	76,859	1,508,989	1,208,105	2,242,771	124,950	34,749,624
2035	15,051,840	2,924,768	7,664,381	2,603,620	1,639,926	79,136	1,550,732	1,212,346	2,244,453	124,922	35,096,124
2036	15,253,238	2,955,801	7,808,414	2,632,408	1,649,872	82,414	1,606,835	1,222,416	2,249,107	125,124	35,585,629
2037	15,368,575	2,940,008	7,860,520	2,635,769	1,649,337	82,452	1,660,372	1,224,117	2,250,939	125,442	35,797,531
2038	15,558,442	2,915,603	7,902,037	2,638,469	1,651,731	80,182	1,708,862	1,221,883	2,249,810	125,295	36,052,314
2039	15,763,888	2,887,379	7,938,194	2,638,337	1,653,588	77,437	1,756,923	1,222,246	2,249,235	125,305	36,312,532
2040	15,990,376	2,860,612	7,986,850	2,642,751	1,658,104	74,228	1,803,924	1,218,709	2,247,915	124,994	36,608,463

Without DSM

Forecasted Total Demand at the Time of Annual System Peak

Forecast of Class Demand at the Time of Annual System Peak (MW)

Year	Residential	ComSGS	ComLGS	ComSPS	ComLPS	IndSGS	IndLGS	IndSPS	IndLPS	Lighting	System Demand
2021	3,787	679	1,491	491	324	11	130	188	311	0.00	7,411
2022	3,773	672	1,476	486	323	11	126	185	312	0.00	7,365
2023	3,787	673	1,472	486	324	11	119	179	306	0.00	7,357
2024	3,798	663	1,461	482	322	11	125	182	312	0.00	7,356
2025	3,818	670	1,466	483	323	10	119	176	304	0.00	7,370
2026	3,833	664	1,500	478	320	10	187	181	304	0.00	7,477
2027	3,858	664	1,509	478	320	10	194	182	306	0.00	7,522
2028	3,889	667	1,524	481	321	10	190	176	303	0.00	7,563
2029	3,946	659	1,514	484	324	11	168	185	310	0.00	7,602
2030	3,990	655	1,516	483	323	11	168	181	312	0.00	7,639
2031	3,982	665	1,551	479	319	10	204	174	301	0.00	7,685
2032	3,997	662	1,560	484	318	11	220	183	305	0.00	7,741
2033	4,013	664	1,580	489	319	11	225	182	307	0.00	7,791
2034	4,049	666	1,604	493	323	11	223	179	301	0.00	7,849
2035	4,130	656	1,591	503	328	12	188	190	311	0.00	7,909
2036	4,107	679	1,646	497	322	12	236	178	299	0.00	7,975
2037	4,129	678	1,655	497	320	12	251	184	301	0.00	8,026
2038	4,160	674	1,661	497	320	12	260	186	302	0.00	8,071
2039	4,190	673	1,670	496	320	11	265	185	304	0.00	8,115
2040	4,320	647	1,629	504	326	11	206	190	311	0.00	8,144

With DSM

Average Annual Class Energy Forecast

Annual Energy Sales Forecast by Rate Class (MWh)[1]

Year	ResGen	ComSGS	ComLGS	ComSPS	ComLPS	IndSGS	IndLGS	IndSPS	IndLPS	Lighting	Total
2021	13,410,425	2,981,728	6,806,279	2,495,415	1,584,311	74,414	807,877	1,208,875	2,240,051	156,184	31,765,559
2022	13,247,179	2,915,256	6,692,588	2,455,796	1,568,352	70,677	785,163	1,186,296	2,213,409	146,286	31,281,001
2023	13,138,764	2,881,495	6,610,331	2,432,181	1,556,611	70,550	782,521	1,171,959	2,192,184	136,160	30,972,757
2024	13,065,285	2,857,556	6,575,541	2,411,895	1,547,840	70,315	782,357	1,159,189	2,173,151	133,176	30,776,304
2025	12,943,385	2,812,814	6,497,887	2,385,728	1,532,907	69,393	783,127	1,145,594	2,151,581	130,604	30,453,019
2026	13,130,109	2,786,357	6,668,936	2,370,973	1,524,073	68,610	1,157,232	1,134,096	2,133,286	127,960	31,101,632
2027	13,124,443	2,757,664	6,655,787	2,353,397	1,513,087	67,542	1,174,555	1,120,565	2,110,336	124,940	31,002,316
2028	13,211,344	2,747,074	6,685,395	2,352,429	1,512,169	66,578	1,195,102	1,113,213	2,096,903	124,689	31,104,896
2029	13,211,242	2,716,755	6,673,816	2,336,456	1,502,685	67,216	1,214,813	1,104,400	2,080,512	124,764	31,032,660
2030	13,237,731	2,686,006	6,670,251	2,323,510	1,492,995	67,686	1,235,436	1,097,161	2,065,714	124,819	31,001,310
2031	13,267,657	2,662,049	6,686,823	2,314,492	1,484,635	67,985	1,266,326	1,092,280	2,053,031	125,094	31,020,372
2032	13,355,236	2,651,342	6,742,855	2,328,163	1,483,285	69,218	1,299,175	1,090,764	2,042,490	125,034	31,187,562
2033	13,348,456	2,625,611	6,757,463	2,324,960	1,473,160	68,927	1,328,707	1,086,285	2,028,911	125,129	31,167,608
2034	13,398,823	2,611,237	6,801,050	2,325,722	1,470,633	69,117	1,356,984	1,086,409	2,016,850	124,950	31,261,774
2035	13,459,700	2,615,394	6,853,665	2,328,217	1,466,459	70,765	1,386,700	1,084,108	2,007,041	124,922	31,396,971
2036	13,573,182	2,630,237	6,948,362	2,342,463	1,468,148	73,337	1,429,851	1,087,774	2,001,381	125,124	31,679,858
2037	13,617,284	2,604,986	6,964,793	2,335,416	1,461,391	73,056	1,471,168	1,084,626	1,994,438	125,442	31,732,600
2038	13,731,689	2,573,275	6,974,240	2,328,680	1,457,797	70,768	1,508,221	1,078,419	1,985,655	125,295	31,834,039
2039	13,863,277	2,539,255	6,981,106	2,320,240	1,454,219	68,101	1,545,095	1,074,883	1,978,051	125,305	31,949,532
2040	14,018,847	2,507,914	7,002,114	2,316,914	1,453,669	65,076	1,581,510	1,068,449	1,970,759	124,994	32,110,244

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[1] The DSM Potential Study is not performed at the rate class level; therefore, allocation factors were used to attribute RAP energy efficiency impacts to the classes reported.

With DSM

Forecasted Total Demand at the time of Annual System Peak

Forecast of Class Demand at the Time of Annual System Peak (MW)[2]

Year	Residential	ComSGS	ComLGS	ComSPS	ComLPS	IndSGS	IndLGS	IndSPS	IndLPS	Lighting	System Demand
2021	3,787	679	1,491	491	324	11	130	188	311	0.00	7,412
2022	3,639	648	1,423	469	312	11	122	178	301	0.00	7,102
2023	3,585	637	1,393	460	307	10	113	169	290	0.00	6,964
2024	3,527	616	1,357	448	299	10	116	169	290	0.00	6,832
2025	3,473	610	1,334	439	294	9	108	160	277	0.00	6,704
2026	3,424	593	1,340	427	286	9	167	162	272	0.00	6,679
2027	3,378	581	1,321	418	280	9	170	159	268	0.00	6,585
2028	3,359	576	1,316	415	277	9	164	152	262	0.00	6,530
2029	3,356	561	1,288	412	276	9	143	157	264	0.00	6,465
2030	3,341	548	1,269	404	270	9	141	152	261	0.00	6,396
2031	3,301	551	1,286	397	264	8	169	144	250	0.00	6,371
2032	3,271	542	1,277	396	260	9	180	150	250	0.00	6,335
2033	3,242	537	1,277	395	258	9	182	147	248	0.00	6,294
2034	3,232	532	1,280	394	258	9	178	143	240	0.00	6,265
2035	3,262	518	1,257	397	259	9	148	150	246	0.00	6,246
2036	3,208	530	1,286	388	251	9	184	139	234	0.00	6,229
2037	3,211	527	1,287	386	249	9	195	143	234	0.00	6,242
2038	3,210	520	1,282	384	247	9	201	144	233	0.00	6,229
2039	3,214	516	1,281	380	245	8	203	142	233	0.00	6,224
2040	3,290	493	1,241	384	248	8	157	145	237	0.00	6,203

[2] The DSM Potential Study is not performed at the rate class level; therefore, allocation factors were used to attribute RAP energy efficiency impacts to the classes reported.

Economic Assumptions

Several economic indicators were used as independent variables (independent variables in the forecasting models are often referred to as "drivers") in our energy forecasting process.

- For the residential class, income, population, and the number of households in the service territory were used as drivers. These drivers are consistent with drivers used in all recent IRP forecasts.

- For the four classes of commercial sales (small general service, large general service, small primary service, large primary service), gross domestic product ("GDP") for one or more of four sectors of the economy were used as drivers. Those four sectors were Retail Trade, Information Services, Financial Services, and Education/Health Services, and these four sectors account for almost all of the non-manufacturing and non-government entries in the top employers list. These drivers are consistent with drivers used in all recent IRP forecasts except to the extent that a different sector may have been included for a particular rate class as compared with a previous forecast, only if the analysis of historical correlation of that driver to the historical loads indicated a better relationship between the two.

- For the four classes of industrial sales (same classes as in commercial listed above), one or more of the following drivers were used: GDP, Manufacturing GDP, Employment, and Manufacturing Employment. These variables are consistent with past load forecast drivers for the industrial class.

- The table below illustrates these drivers and their expected growth over the IRP horizon.

Growth Rates of Select Economic Drivers

	2020-2040 Compound Growth Rate
Households	0.4%
Population	0.1%
Real Personal Income	4.2%
GDP Retail	1.8%
GDP Info	2.3%
GDP Financial	1.3%
GDP Education/Health	1.9%
GDP Total	1.7%
GDP Manufacturing	1.5%
Employment Total	0.3%
Employment Manufacturing	-0.8%

As in prior IRPs and IRP Annual Updates, the economic forecasting firm Moody's Analytics was used as the source for the forecasts of these economic drivers. Moody's Analytics is a highly reputable firm in the macroeconomic forecasting arena with a
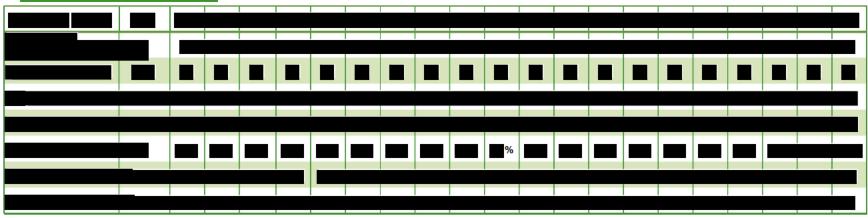
specialized competency in doing this work, and Ameren Missouri has extensive history using their forecasts and has consistently found them to be credible. Their forecasts are done for individual counties and Ameren Missouri aggregates those counties that make up its service territory. The forecasting models used by Moody's are proprietary and not available to Ameren Missouri.

Performance Measures – Preferred Resource Plan

Annual Revenue Requirements and Rates

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Financial Measures[3]

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[3] The table includes an adjusted debt/adjusted capitalization ratio.