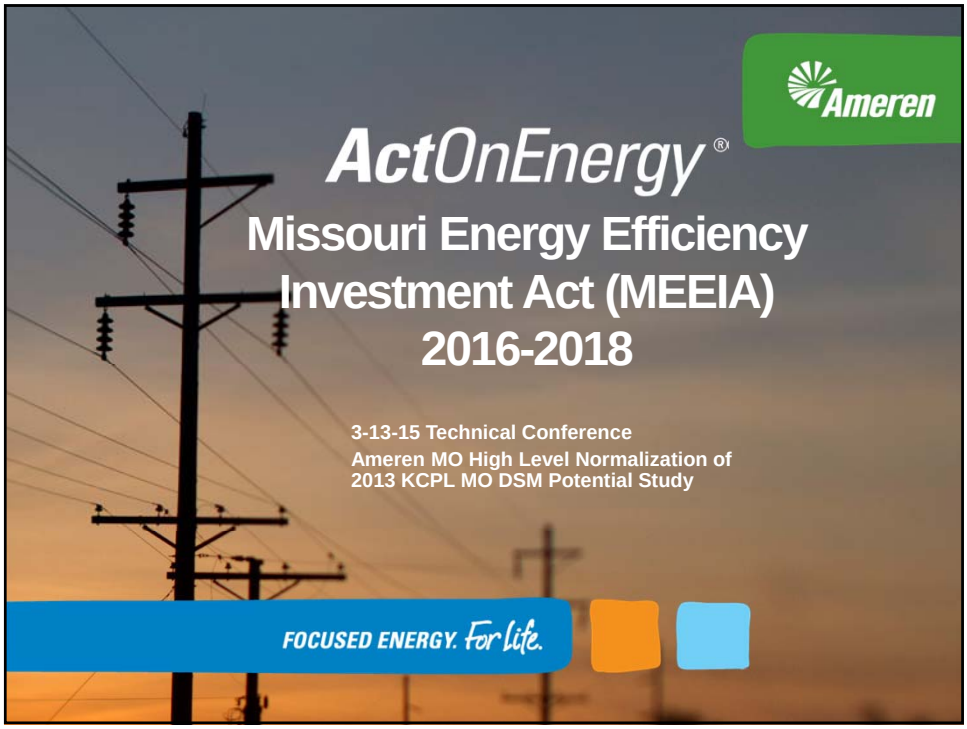

Objective

ActOnEnergy®

- Attempt To Normalize (at least directionally) KCPL MO DSM Potential Study to Ameren MO 2013 DSM Potential Study
- Account for and attempt to quantify (if there is a plausible basis):
  1. Results reported on a gross basis with no deduction for naturally occurring energy efficiency
  2. Removal of opt-out customers from results
  3. Inclusion of natural gas benefits in electric cost effectiveness analyses
  4. Differences between EM&V and Deemed TRM incremental measure energy savings
  5. Measure vs. program level potential
  6. Removal of CHP
  7. Calibration or lack thereof to Company end-use sales forecast
  8. EUL – revert to inefficient baseline at end of EUL
  9. Sales forecast differences
  10. Avoided cost assumptions
  11. Baseline technology assumptions
  12. Emerging but unknown efficient technologies

Comparing (2) studies done by (2) contractors using (2) proprietary models on a measure by measure basis would require significant resources.

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Naturally Occurring Energy Efficiency Adjustment

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Naturally Occurring Energy Efficiency

The first step in assessing naturally occurring energy efficiency is to define it. Codes and standards are typically not included in the definition of naturally occurring conservation, while consumer response to energy prices (short and long term) and early technology adoption are.

The first step in quantifying naturally occurring energy efficiency is to develop a codes and standards baseline that reflects the appropriate assumptions about codes and standards. This baseline should not include changes in retail energy price or the effects of early adoption of new high-efficiency technologies. The next step is to characterize a baseline forecast that includes an energy price forecast and assumptions about early adopters. The latter can be obtained from the EIA Annual Energy Outlook forecast and adjust it to reflect information for a specific utility. The difference between the codes and standards baseline forecast and the second baseline forecast with naturally occurring conservation will be the estimate of naturally occurring energy efficiency.

Naturally Occurring energy efficiency is not free ridership.

Based On A Compilation Of Studies Used By The EPA In The Development of Building Block #4, Assume 20% Reduction in Gross Potential To Account For Naturally Occurring Energy Efficiency.

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3

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Step 1: Remove CHP From Potential (Focus On Energy Efficient Equipment)

BACK

	Realistic Achievable Potential				
	Cumulative Energy Savings Potential (MWh)				
KCP&L MO	Energy Efficiency	Demand Response	CHP	Total	% of Baseline
2014	60,448	0	0	60,448	0.7%
2015	142,326	0	2,880	145,207	1.6%
2016	243,564	0	5,761	249,324	2.8%
2017	361,950	0	14,402	376,352	4.2%
2018	493,627	0	25,924	519,551	5.7%
2019	632,391	0	40,326	672,717	7.4%
2020	771,622	0	57,814	829,436	9.0%
2021	903,953	0	77,977	981,930	10.5%
2022	1,024,713	0	99,580	1,124,293	12.0%
2023	1,132,386	0	121,389	1,253,775	13.2%
2024	1,229,458	0	141,551	1,371,010	14.3%
2025	1,316,357	0	158,628	1,474,985	15.2%
2026	1,397,328	0	172,413	1,569,741	16.0%
2027	1,473,661	0	182,906	1,656,567	16.7%
2028	1,545,620	0	190,313	1,735,932	17.3%
2029	1,613,966	0	195,456	1,809,422	17.8%
2030	1,677,600	0	198,748	1,876,348	18.3%
2031	1,739,195	0	200,806	1,940,001	18.7%
2032	1,799,322	0	202,040	2,001,362	19.0%
2033	1,858,858	0	202,863	2,061,721	19.3%

BACK

	Realistic Achievable Potential				
	Cumulative Energy Savings Potential (MWh)				
KCP&L MO	Energy Efficiency	Demand Response	CHP	Total	% of Baseline
2014	60,448	0		60,448	0.7%
2015	142,326	0		142,326	1.6%
2016	243,564	0		243,564	2.7%
2017	361,950	0		361,950	4.0%
2018	493,627	0		493,627	5.4%
2019	632,391	0		632,391	6.9%
2020	771,622	0		771,622	8.4%
2021	903,953	0		903,953	9.7%
2022	1,024,713	0		1,024,713	10.9%
2023	1,132,386	0		1,132,386	11.9%
2024	1,229,458	0		1,229,458	12.8%
2025	1,316,357	0		1,316,357	13.6%
2026	1,397,328	0		1,397,328	14.3%
2027	1,473,661	0		1,473,661	14.9%
2028	1,545,620	0		1,545,620	15.4%
2029	1,613,966	0		1,613,966	15.9%
2030	1,677,600	0		1,677,600	16.3%
2031	1,739,195	0		1,739,195	16.7%
2032	1,799,322	0		1,799,322	17.1%
2033	1,858,858	0		1,858,858	17.4%

See Appendix L In KCPL DSM Potential Study For A Copy Of This Spreadsheet.

4

Step 2: Adjust For Naturally Occurring Energy Efficiency

BACK

	Realistic Achievable Potential				
	Cumulative Energy Savings Potential (MWh)				
KCP&L MO	Energy Efficiency	20% Deduction	CHP	Total	% of Baseline
2014	60,448	48,359		48,359	0.5%
2015	142,326	113,861		113,861	1.3%
2016	243,564	194,851		194,851	2.2%
2017	361,950	289,560		289,560	3.2%
2018	493,627	394,901		394,901	4.4%
2019	632,391	505,913		505,913	5.5%
2020	771,622	617,297		617,297	6.7%
2021	903,953	723,162		723,162	7.8%
2022	1,024,713	819,770		819,770	8.7%
2023	1,132,386	905,909		905,909	9.5%
2024	1,229,458	983,566		983,566	10.3%
2025	1,316,357	1,053,086		1,053,086	10.9%
2026	1,397,328	1,117,863		1,117,863	11.4%
2027	1,473,661	1,178,929		1,178,929	11.9%
2028	1,545,620	1,236,496		1,236,496	12.3%
2029	1,613,966	1,291,173		1,291,173	12.7%
2030	1,677,600	1,342,080		1,342,080	13.1%
2031	1,739,195	1,391,356		1,391,356	13.4%
2032	1,799,322	1,439,457		1,439,457	13.7%
2033	1,858,858	1,487,086		1,487,086	13.9%

1 5

Removal Of Opt Out Customers

From KCPL DSM Potential Study

Opt Out Customers – The potential results of this study does not exclude opt-out customers. At the time of this report development, the list of opt-out customers was very much in flux due to changes in customer decision-making regarding opt-out. As such, we collectively agreed with the Companies that we would not reduce the potential results of this study to exclude opt-out customers. However, we note that the latest data available indicated that, for GMO, approximately 19% (on an energy consumption basis) of GMO's large C&I customers were likely to opt out[4]. Data were not available for KCP&L MO and KCP&L KS.

Assume 10% Of KCPL-MO C&I Customers Opt Out of DSM Programs. Approximately 70% of KCPL MO's portfolio is C&I. 10% x 70% = 7% portfolio reduction to account for Opt Out.

6

Step 3: Adjust For Opt-Out

BACK

	Realistic Achievable Potential				
	Cumulative Energy Savings Potential (MWh)				
KCP&L MO	Energy Efficiency	20% Deduction	Opt -Out Out	Total	% of Baseline
2014	60,448	48,359	44,974	44,974	0.5%
2015	142,326	113,861	105,891	105,891	1.2%
2016	243,564	194,851	181,211	181,211	2.0%
2017	361,950	289,560	269,291	269,291	3.0%
2018	493,627	394,901	367,258	367,258	4.0%
2019	632,391	505,913	470,499	470,499	5.1%
2020	771,622	617,297	574,087	574,087	6.2%
2021	903,953	723,162	672,541	672,541	7.2%
2022	1,024,713	819,770	762,387	762,387	8.1%
2023	1,132,386	905,909	842,495	842,495	8.9%
2024	1,229,458	983,566	914,717	914,717	9.5%
2025	1,316,357	1,053,086	979,370	979,370	10.1%
2026	1,397,328	1,117,863	1,039,612	1,039,612	10.6%
2027	1,473,661	1,178,929	1,096,404	1,096,404	11.1%
2028	1,545,620	1,236,496	1,149,941	1,149,941	11.5%
2029	1,613,966	1,291,173	1,200,791	1,200,791	11.8%
2030	1,677,600	1,342,080	1,248,135	1,248,135	12.1%
2031	1,739,195	1,391,356	1,293,961	1,293,961	12.4%
2032	1,799,322	1,439,457	1,338,695	1,338,695	12.7%
2033	1,858,858	1,487,086	1,382,990	1,382,990	13.0%

1 7

The Inclusion Of Natural Gas Benefits In KCPL MO Electric Program TRCs (extract from 8/28/2013 Navigant slide)

- *KCP&L's last DSM potential study was conducted by Navigant (Summit Blue) in 2007. The 2007 study did not include a baseline study.*
- *A fresh study was needed to support the rollout of the MEEIA programs. The objectives for the current study are:*
  - *Develop an accurate baseline to facilitate estimation of savings potential going forward.*
  - *Estimate electric efficiency and demand response potential from 2014-2033 for both KCP&L and KCP&L Greater Missouri Operations (GMO).*
  - *Satisfy the requirements of MO 4 CSR 240 regarding rules for conducting a potential study.*
  - *Develop savings/cost estimates for input to KCP&L/GMO Integrated Resource Plans.*
  - *Develop a set of EE/DR programs with the ultimate goal of achieving all cost-effective demand-side savings.*
  - *Impact type scope: Energy (MWh) and Peak Coincident Demand (MW).*
  - ***Conduct benefit-cost analyses of DSM measures and programs. This analysis includes gas impacts from electric measures.***

The exclusion of natural gas benefits may make home energy reports and most building shell measures (both RES and C&I) cost ineffective. We estimate a 25% reduction to the portfolio.

8

Step 4: Remove Natural Gas Benefits

BACK	Realistic Achievable Potential					
	Cumulative Energy Savings Potential (MWh)					
KCP&L MO	Energy Efficiency	20% Deduction	Opt-Out Out	No Natural Gas	Total	% of Baseline
2014	60,448	48,359	44,974	33,730	33,730	0.4%
2015	142,326	113,861	105,891	79,418	79,418	0.9%
2016	243,564	194,851	181,211	135,908	135,908	1.5%
2017	361,950	289,560	269,291	201,968	201,968	2.2%
2018	493,627	394,901	367,258	275,444	275,444	3.0%
2019	632,391	505,913	470,499	352,874	352,874	3.9%
2020	771,622	617,297	574,087	430,565	430,565	4.7%
2021	903,953	723,162	672,541	504,406	504,406	5.4%
2022	1,024,713	819,770	762,387	571,790	571,790	6.1%
2023	1,132,386	905,909	842,495	631,872	631,872	6.7%
2024	1,229,458	983,566	914,717	686,038	686,038	7.2%
2025	1,316,357	1,053,086	979,370	734,527	734,527	7.6%
2026	1,397,328	1,117,863	1,039,612	779,709	779,709	8.0%
2027	1,473,661	1,178,929	1,096,404	822,303	822,303	8.3%
2028	1,545,620	1,236,496	1,149,941	862,456	862,456	8.6%
2029	1,613,966	1,291,173	1,200,791	900,593	900,593	8.9%
2030	1,677,600	1,342,080	1,248,135	936,101	936,101	9.1%
2031	1,739,195	1,391,356	1,293,961	970,471	970,471	9.3%
2032	1,799,322	1,439,457	1,338,695	1,004,021	1,004,021	9.5%
2033	1,858,858	1,487,086	1,382,990	1,037,243	1,037,243	9.7%

1 9

Update TRM To Reflect KCPL Specific EM&V Based On Primary Data

– Significant differences: examples from Ameren MO EM&V include…
  - Refrigerator recycling from 1465 to 800 kWh per unit
  - RES Lighting HOU from 2.9 to 2.0
  - 80% realization rate for RES HVAC in general
  - No home or business electronics
  - No copiers
  - No dehumidifiers
  - No occupancy sensors
  - 50% reduction for smart power strips
  - No commercial open refrigeration cases

Assume an arbitrary adjustment of 10% to the entire portfolio – too difficult to analyze and quantify without more knowledge of measure screening process.

10

Step 5: Adjust TRM For EM&V

BACK	Realistic Achievable Potential						
	Cumulative Energy Savings Potential (MWh)						
KCP&L MO	Energy Efficiency	20% Deduction	Opt -Out Out	No Natural Gas	Adjust For EM&V	Total	% of Baseline
2014	60,448	48,359	44,974	33,730	30,357	30,357	0.3%
2015	142,326	113,861	105,891	79,418	71,476	71,476	0.8%
2016	243,564	194,851	181,211	135,908	122,318	122,318	1.4%
2017	361,950	289,560	269,291	201,968	181,771	181,771	2.0%
2018	493,627	394,901	367,258	275,444	247,899	247,899	2.7%
2019	632,391	505,913	470,499	352,874	317,587	317,587	3.5%
2020	771,622	617,297	574,087	430,565	387,508	387,508	4.2%
2021	903,953	723,162	672,541	504,406	453,965	453,965	4.9%
2022	1,024,713	819,770	762,387	571,790	514,611	514,611	5.5%
2023	1,132,386	905,909	842,495	631,872	568,684	568,684	6.0%
2024	1,229,458	983,566	914,717	686,038	617,434	617,434	6.4%
2025	1,316,357	1,053,086	979,370	734,527	661,075	661,075	6.8%
2026	1,397,328	1,117,863	1,039,612	779,709	701,738	701,738	7.2%
2027	1,473,661	1,178,929	1,096,404	822,303	740,073	740,073	7.5%
2028	1,545,620	1,236,496	1,149,941	862,456	776,210	776,210	7.7%
2029	1,613,966	1,291,173	1,200,791	900,593	810,534	810,534	8.0%
2030	1,677,600	1,342,080	1,248,135	936,101	842,491	842,491	8.2%
2031	1,739,195	1,391,356	1,293,961	970,471	873,424	873,424	8.4%
2032	1,799,322	1,439,457	1,338,695	1,004,021	903,619	903,619	8.6%
2033	1,858,858	1,487,086	1,382,990	1,037,243	933,518	933,518	8.8%

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Measure Vs. Program Level Potential

(It Appears KCPL Study Based On Measure Level Potential)

"2.1.4 Energy Consumption Breakdown and Forecast

Navigant's potential study analysis is conducted at the measure level and is disaggregated by customer segment. As a result, the breakdown of energy consumption at the customer segment level combined with measure-level savings characteristics (which in some cases vary by customer segment) are the key drivers of potential study output. As a result, the potential study approach does not rely on a forecast that is broken down by customer end-use category. Some potential study approaches rely heavily on the end-use category breakdown, as they estimate savings as a fraction of the end-use category consumption. However, since this model is more granular and uses a bottom-up approach aggregating the savings of each measure, the end-use breakdown assumptions provided in this section are for information purposes only."

Program potential is less than measure potential. Not all measures, i.e., electronics are suitable for utility DSM programs. Interactive effects eliminate many measures from being cost effective in whole building programs such as RES New Construction. Interactive effects make many business measures such as occupancy sensors and commercial refrigerator cases cost ineffective.

For Ameren MO, Program RAP is 54% of Measure RAP. For KCPL, assume Program RAP is 80% of Measure RAP.

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Step 6: Adjust To Show Program RAP

BACK

	Realistic Achievable Potential							
	Cumulative Energy Savings Potential (MWh)							
KCP&L MO	Energy Efficiency	20% Deduction	Opt -Out Out	No Natural Gas	Adjust For EM&V	Adj. For Prog. Pot.	Total	% of Baseline
2014	60,448	48,359	44,974	33,730	30,357	24,286	24,286	0.3%
2015	142,326	113,861	105,891	79,418	71,476	57,181	57,181	0.6%
2016	243,564	194,851	181,211	135,908	122,318	97,854	97,854	1.1%
2017	361,950	289,560	269,291	201,968	181,771	145,417	145,417	1.6%
2018	493,627	394,901	367,258	275,444	247,899	198,320	198,320	2.2%
2019	632,391	505,913	470,499	352,874	317,587	254,069	254,069	2.8%
2020	771,622	617,297	574,087	430,565	387,508	310,007	310,007	3.4%
2021	903,953	723,162	672,541	504,406	453,965	363,172	363,172	3.9%
2022	1,024,713	819,770	762,387	571,790	514,611	411,689	411,689	4.4%
2023	1,132,386	905,909	842,495	631,872	568,684	454,948	454,948	4.8%
2024	1,229,458	983,566	914,717	686,038	617,434	493,947	493,947	5.2%
2025	1,316,357	1,053,086	979,370	734,527	661,075	528,860	528,860	5.5%
2026	1,397,328	1,117,863	1,039,612	779,709	701,738	561,391	561,391	5.7%
2027	1,473,661	1,178,929	1,096,404	822,303	740,073	592,058	592,058	6.0%
2028	1,545,620	1,236,496	1,149,941	862,456	776,210	620,968	620,968	6.2%
2029	1,613,966	1,291,173	1,200,791	900,593	810,534	648,427	648,427	6.4%
2030	1,677,600	1,342,080	1,248,135	936,101	842,491	673,993	673,993	6.6%
2031	1,739,195	1,391,356	1,293,961	970,471	873,424	698,739	698,739	6.7%
2032	1,799,322	1,439,457	1,338,695	1,004,021	903,619	722,895	722,895	6.9%
2033	1,858,858	1,487,086	1,382,990	1,037,243	933,518	746,815	746,815	7.0%

High Electric Sales Forecast
(Excerpt From 2013 Ameren MO Study)

Economic Growth

Another major driver for the analysis is the economic growth assumption in the baseline projection. The reference case aligns with the assumptions used for Ameren's load forecast. For this sensitivity analysis, a low-high band was developed.

- For the low load growth case, customer growth was assumed to be flat in each sector.
- For the high load growth case, customer growth was 20% over the reference case in each year.

As expected and shown in Table 7-3, the potential savings are lower in the low economic case and higher in the high economic case.

Table 7-3: Comparison of Baseline Projection, MAP and RAP for Economic-Growth Sensitivity

	2016	2017	2018	2025	2030
RAP Potential Energy Savings (GWh)					
Reference case	339	561	806	2,697	3,958
Low load growth	301	492	698	2,180	3,155
High load growth	421	690	1,000	3,383	4,861
MAP Potential Energy Savings (GWh)					
Reference case	510	833	1,179	3,753	5,377
Low load growth	452	729	1,018	3,026	4,278
High load growth	635	1,029	1,466	4,719	6,616

KCPL MO Study Assumes a **1.0% CAGR sales forecast**. Ameren MO Study Assumes **0.6%**. Could Account For As Much As **20% Increase In KCPL MO Potential**. ***However, This Difference Is Not Quantified In This Analysis.***

Higher Avoided Costs
(Excerpt From 2013 Ameren MO Study)

Table 7-2 EE Potential - Comparison of Avoided Cost Sensitivity Cases (GWh)

	2016	2017	2018	2025	2030
RAP Potential Energy Savings (GWh)					
Reference case	339	561	806	2,697	3,958
Higher avoided costs	395	650	932	2,968	4,229
Increase in potential savings	*56*	*89*	*126*	*270*	*271*
RAP Potential Energy Savings (% of Baseline)					
Reference case	1.1%	1.8%	2.6%	8.4%	11.7%
Higher avoided costs	1.3%	2.1%	3.0%	9.2%	12.5%
Increase in potential savings	*0.2%*	*0.3%*	*0.4%*	*0.8%*	*0.8%*
MAP Potential Energy Savings (GWh)					
Reference case	510	833	1,179	3,753	5,377
Higher avoided costs	592	963	1,360	4,116	5,727
Increase in potential savings	*82*	*130*	*181*	*363*	*350*
MAP Potential Energy Savings (% of Baseline)					
Reference case	1.7%	2.7%	3.8%	11.6%	15.9%
Higher avoided costs	2.0%	3.2%	4.4%	12.8%	17.0%
Increase in potential savings	*0.3%*	*0.5%*	*0.6%*	*1.1%*	*1.0%*

Avoided Costs For KCPL and Ameren MO Are Highly Confidential and not published. Assuming Costs Are Not An Order of Magnitude Different, Higher Avoided Costs For KCPL Could Increase Potential Between KCPL and Ameren MO By 7%. ***This difference is not quantified in this analysis.***

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High Level Final Observations

BACK

	Realistic Achievable Potential							
	Cumulative Energy Savings Potential (MWh)							
KCP&L MO	Energy Efficiency	20% Deduction	Opt -Out Out	No Natural Gas	Adjust For EM&V	Adj. For Prog. Pot.	Total	% of Baseline
2014	60,448	48,359	44,974	33,730	30,357	24,286	24,286	0.3%
2015	142,326	113,861	105,891	79,418	71,476	57,181	57,181	0.6%
2016	243,564	194,851	181,211	135,908	122,318	97,854	97,854	1.1%
2017	361,950	289,560	269,291	201,968	181,771	145,417	145,417	1.6%
2018	493,627	394,901	367,258	275,444	247,899	198,320	198,320	2.2%
2019	632,391	505,913	470,499	352,874	317,587	254,069	254,069	2.8%
2020	771,622	617,297	574,087	430,565	387,508	310,007	310,007	3.4%
2021	903,953	723,162	672,541	504,406	453,965	363,172	363,172	3.9%
2022	1,024,713	819,770	762,387	571,790	514,611	411,689	411,689	4.4%
2023	1,132,386	905,909	842,495	631,872	568,684	454,948	454,948	4.8%
2024	1,229,458	983,566	914,717	686,038	617,434	493,947	493,947	5.2%
2025	1,316,357	1,053,086	979,370	734,527	661,075	528,860	528,860	5.5%
2026	1,397,328	1,117,863	1,039,612	779,709	701,738	561,391	561,391	5.7%
2027	1,473,661	1,178,929	1,096,404	822,303	740,073	592,058	592,058	6.0%
2028	1,545,620	1,236,496	1,149,941	862,456	776,210	620,968	620,968	6.2%
2029	1,613,966	1,291,173	1,200,791	900,593	810,534	648,427	648,427	6.4%
2030	1,677,600	1,342,080	1,248,135	936,101	842,491	673,993	673,993	6.6%
2031	1,739,195	1,391,356	1,293,961	970,471	873,424	698,739	698,739	6.7%
2032	1,799,322	1,439,457	1,338,695	1,004,021	903,619	722,895	722,895	6.9%
2033	1,858,858	1,487,086	1,382,990	1,037,243	933,518	746,815	746,815	7.0%

The Ameren MO Potential Study starts in 2016 rather than 2014. When 2014 and 2015 are removed from the KCPL Potential study the **cumulative RAP in 2033 is 6.4%** when normalized to the Ameren MO study. Additional adjustments for different load forecast growth rates and different avoided costs were not made. Conversely, if the Ameren MO DSM Potential study was normalized to the KCPL study, Ameren MO estimates of potential would increase commensurately.

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