		WN Degree F	WN Slope
8/17/17 CPP adder	56.8	95.00	121.43
8/6/18 DSM	61.792		
8/8/18 DSM	0.5		

A.P.S.C. DOCKET NO 32953
Energy ALA/GASP's EX. NO 2
WITNESS Burke Goss

ALABAMA POWER COMPANY

SUMMER PEAKS B2019 Development UPDATED

HISTORICAL - Updated						Approved 2018 BUDGET FORECAST			Approved 2019 BUDGET FORECAST		
Calendar Date	YEAR	MW Demand	Max Temp	WN Demand	% GROWTH	YEAR	MW Demand	% GROWTH	YEAR	MW Demand	% GROWTH
8-Aug-06	2006	11,933	98.61	11,495	-0.9%	2018	11,351	-2.1%	2018	11,360	1.9%
22-Aug-07	2007	12,496	101.69	11,683	1.6%	2019	11,364	0.1%	2019	11,272	-0.8%
21-Jul-08	2008	11,804	96.87	11,577	-0.9%	2020	11,392	0.2%	2020	11,436	1.5%
23-Jun-09	2009	11,153	94.10	11,262	-2.7%	2021	11,393	0.0%	2021	11,598	1.4%
2-Aug-10	2010	11,678	97.54	11,370	1.0%	2022	11,428	0.3%	2022	11,525	-0.6%
3-Aug-11	2011	11,786	97.59	11,471	0.9%	2023	11,432	0.0%	2023	11,510	-0.1%
29-Jun-12	2012	11,382	99.87	10,790	-5.9%	2024	11,426	-0.1%	2024	11,474	-0.3%
12-Jun-13	2013	10,882	93.10	11,113	3.0%	2025	11,429	0.0%	2025	11,423	-0.4%
22-Aug-14	2014	11,387	95.23	11,359	2.2%	2026	11,436	0.1%	2026	10,707	-6.3%
4-Aug-15	2015	11,600	96.79	11,382	0.2%	2027	11,462	0.2%	2027	10,704	0.0%
8-Jul-16	2016	11,233	95.74	11,143	-2.1%				2028	10,735	0.3%
17-Aug-17	2017	11,000	91.23	11,458	2.8%	at 16:00					
6-Aug-18	2018	10,937	93.69	11,096		at 16:00					
8-Aug-18	2018	10,860	90.07	11,459		at 16:00					
16-Aug-18	2018	10,610	89.64	11,261		at 16:00					

HISTORICAL Growth			Approved 2018 BUDGET FORECAST		Approved 2019 BUDGET FORECAST	
2006-2011	-0.2%	0.0%	2018-2023	0.1%	2018-2023	0.26%
2011-2016	-1.0%	-0.6%	2023-2027	0.1%	2023-2027	-1.80%
2006-2017	-0.6%	0.0%	2018-2027	0.1%	2018-2027	-0.66%

Note: 1) Theses figures reflect reductions due to passive demand side options

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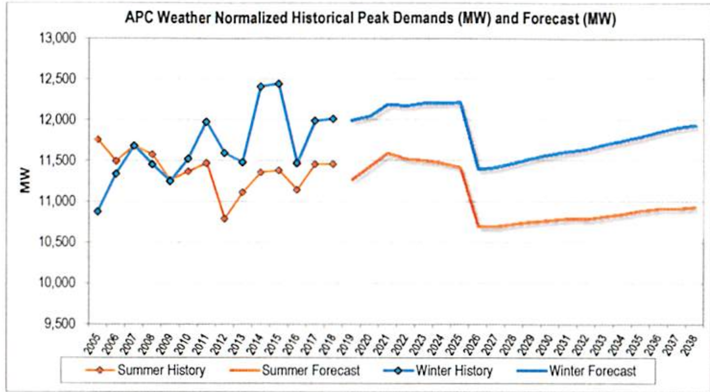
CAAGR 2013-2018	0.1%
CAAGR 2018-2023	0.1%
CAAGR 2023-2028	0.3%

GRAPH

Peak Demand

x Axis	HISTORICAL Su	WN Summe	2018 Summ	Sum Pk Temp	2019 BUDGET FORECAST
1998	10,329				
1999	10,959				
2000	11,239				
2001	10,418				
2002	10,910				
2003	10,709				
2004	11,207				
2005	11,462	11,758		92.56	
2006	11,933	11,495		98.61	
2007	12,496	11,683		101.69	
2008	11,804	11,577		96.87	
2009	11,153	11,262		94.10	
2010	11,678	11,370		97.54	
2011	11,786	11,471		97.59	
2012	11,382	10,790		99.87	
2013	10,882	11,113		93.10	
2014	11,387	11,359		95.23	
2015	11,600	11,382		96.79	
2016	11,233	11,143		95.74	
2017	11,000	11,458	11,351	91.23	
2018	10,937.2	11,261	11,364		11,360
2019	0	0	11,392		11,272
2020			11,393		11,436
2021			11,428		11,598
2022			11,432		11,525
2023			11,426		11,510
2024			11,429		11,474
2025			11,436		11,423
2026			11,462		10,707
2027			11,476		10,704
2028			11,503		10,735
2029			11,531		10,758
2030			11,573		10,780
2031			11,604		10,798
2032			11,642		10,793
2033			11,679		10,824
2034			11,712		10,853
2035			11,740		10,895
2036			11,776		10,916
2037			11,815		10,918
2038			11,848		10,940
2039			11,883		10,957
2040			11,919		10,958
2041			11,955		10,983
2042			11,955		11,018
2043					11,039
CAAGR 2018-2023			0.1%		0.3%
CAAGR 2022-2027			0.1%		-1.5%
CAAGR 2020-2043			0.2%		-0.2%

Figure III-B-1: Alabama Power Peak Demand Forecast-UPDATED



YEAR	Winter Peak DEMAND (MW)	GROWTH	Summer Peak DEMAND (MW)	GROWTH
2019	11,998		11,272	
2020	12,051	0.44%	11,436	1.45%
2021	12,197	1.21%	11,598	1.42%
2022	12,179	-0.15%	11,525	-0.63%
2023	12,209	0.25%	11,510	-0.13%
2024	12,210	0.01%	11,474	-0.31%
2025	12,221	0.09%	11,423	-0.44%
2026	11,401	-6.71%	10,707	-6.27%
2027	11,427	0.23%	10,704	-0.03%
2028	11,478	0.45%	10,735	0.29%
2029	11,535	0.50%	10,758	0.21%
2030	11,582	0.41%	10,780	0.20%
2031	11,617	0.30%	10,798	0.17%
2032	11,647	0.26%	10,793	-0.05%
2033	11,702	0.47%	10,824	0.29%
2034	11,749	0.40%	10,853	0.27%
2035	11,798	0.42%	10,895	0.39%
2036	11,857	0.50%	10,916	0.19%
2037	11,910	0.45%	10,918	0.02%
2038	11,938	0.24%	10,940	0.20%

	HISTORY SUMMER	WN-Summer	HISTORY WINTER	WN-Winter	Forecast Summer	Forecast Winter	
2005	11,462	11,758	9,615	10,875			
2006	11,933	11,495	8,994	11,338			
2007	12,496	11,683	10,334	11,682			
2008	11,804	11,577	10,938	11,456			
2009	11,153	11,262	10,891	11,249			
2010	11,678	11,370	11,539	11,523			TRUE
2011	11,786	11,471	11,743	11,974			TRUE
2012	11,382	10,790	10,475	11,594			TRUE
2013	10,882	11,113	9,537	11,482			TRUE
2014	11,387	11,359	12,610	12,409			TRUE
2015	11,600	11,382	12,398	12,443			TRUE
2016	11,233	11,143	10,582	11,470			TRUE
2017	11,000	11,458	10,660	11,989			TRUE
2018	10,860	11,459	11,989	12,014			TRUE
2019					11,272	11,998	
2020					11,436	12,051	
2021					11,598	12,197	
2022					11,525	12,179	
2023					11,510	12,209	
2024					11,474	12,210	
2025					11,423	12,221	
2026					10,707	11,401	
2027					10,704	11,427	
2028					10,735	11,478	
2029					10,758	11,535	
2030					10,780	11,582	
2031					10,798	11,617	
2032					10,793	11,647	
2033					10,824	11,702	
2034					10,853	11,749	
2035					10,895	11,798	
2036					10,916	11,857	
2037					10,918	11,910	
2038					10,940	11,938	

	Summer	Winter
CAAGR 2019-2023	0.52%	0.44%
CAAGR 2023-2038	-0.34%	-0.15%

WN Degree F	WN Slope	
16.59	-160.33	x+11,429

ALABAMA POWER COMPANY

WINTER PEAKS - B2019 Development UPDATED

HISTORICAL - Updated

	YEAR	MW Demand	Coinc Temp	WN Demand		
26-Jan-06	2006	8,994	31.21	11,338	4.3%	
29-Jan-07	2007	10,334	25.95	11,682	3.0%	
3-Jan-08	2008	10,938	19.82	11,456	-1.9%	
21-Jan-09	2009	10,891	18.82	11,249	-1.8%	
11-Jan-10	2010	11,539	15.18	11,313		
13-Jan-10	2010	10,787	21.18	11,523	2.4%	
14-Jan-11	2011	11,743	18.03	11,974	3.9%	
4-Jan-12	2012	10,475	23.57	11,594	-3.2%	
4-Jan-13	2013	9,537	28.72	11,482	-1.0%	
7-Jan-14	2014	12,610	12.05	11,882		
8-Jan-14	2014	12,191	17.95	12,409	8.1%	*see note2
8-Jan-15	2015	12,398	11.00	11,502		
9-Jan-15	2015	11,094	26.85	12,443	0.3%	
19-Jan-16	2016	10,582	22.13	11,470	-7.8%	
12-Jan-16	2016	9,983	27.85	11,331		
8-Jan-17	2017	10,660	20.46	11,281		8am Sunday
9-Jan-17	2017	10,641	26.52	11,989	4.5%	7am Monday
18-Jan-18	2018	11,989	16.75	12,014	0.2%	8am Thursday using average Temp
18-Jan-18	2018	11,989	19.00	12,376		8am Thursday using coincident Temp

Approved 2018 BUDGET FORECAST

YEAR	MW SALES	% GROWTH
2018	11,890	
2019	11,905	0.1%
2020	11,917	0.1%
2021	11,945	0.2%
2022	12,009	0.5%
2023	11,997	-0.1%
2024	11,997	0.0%
2025	12,009	0.1%
2026	12,024	0.1%
2027	12,044	0.2%

Approved 2019 BUDGET FORECAST

YEAR	MW SALES	% GROWTH
2018	12,014	0.2%
2019	11,998	-0.1%
2020	12,051	0.4%
2021	12,197	1.2%
2022	12,179	-0.1%
2023	12,209	0.2%
2024	12,210	0.0%
2025	12,221	0.1%
2026	11,401	-6.7%
2027	11,427	0.2%
2028	11,478	0.4%

HISTORICAL

2006-2011	5.5%	1.1%
2011-2016	-2.1%	-0.9%
2006-2017	1.6%	0.5%

Approved 2018 BUDGET FORECAST

2018-2023	0.2%
2023-2027	0.1%
2018-2027	0.1%

Approved 2019 BUDGET FORECAST

2018-2023	0.32%
2023-2027	-1.64%
2018-2027	-0.56%

Note: 1) These figures reflect reductions due to passive demand side options
2) The Jan 8, 2014 peaks were very close for hr 7 & hr 8. Hr 7 temperature was selected to minimize the magnitude of the weather adjustment.

70

CAAGR 2013-2018	0.2%
CAAGR 2018-2023	0.1%
CAAGR 2023-2028	0.4%

GRAPH

Peak Demand

x Axis	HISTORICAL Wi	WN Winter Pe	B2018 Winter Forecast	Trendline WN since 2	B2019 Winter Forec	B2019 estimate	Win Pk Temp
1999							
2000							
2001							
2002	9,352						
2003	10,636						
2004	9,615						
2005	9,615	10,875					
2006	8,994	11,338					
2007	10,334	11,682					25.95
2008	10,938	11,456					19.82
2009	10,891	11,249					18.82
2010	11,539	11,523		11,523			15.18
2011	11,743	11,974		11,974			18.03
2012	10,475	11,594		11,594			23.57
2013	9,537	11,482		11,482			28.72
2014	12,610	12,409		12,409			17.95
2015	12,398	12,443		12,443			26.85
2016	10,582	11,470		11,470			22.13
2017	10,660	11,989	11,890	11,989			26.52
2018	11,989	12,014	11,905	12,014	12,014		16.75
2019			11,917		11,998		
2020			11,945		12,051		
2021			12,009		12,197		
2022			11,997		12,179		
2023			11,997		12,209		
2024			12,009		12,210		
2025			12,024		12,221		
2026			12,044		11,401		
2027			12,064		11,427		
2028			12,106		11,478		
2029			12,158		11,535		
2030			12,198		11,582		
2031			12,256		11,617		
2032			12,316		11,647		
2033			12,373		11,702		
2034			12,432		11,749		
2035			12,500		11,798		
2036			12,571		11,857		
2037			12,629		11,910		
2038			12,692		11,938		
2039			12,764		11,972		
2040			12,838		12,015		
2041			12,902		12,065		
2042					12,102		
2043					12,155		
CAAGR 2018-2023			0.2%		0.3%		
CAAGR 2022-2027			0.1%		-1.3%		
CAAGR 2020-2041			0.4%		0.0%		

not confidential

A.P.S.C. DOCKET NO 32953

Energy Alabama/GASP's EX. NO 3

WITNESS Burke-Cross

		WN Degree F	WN Slope	
8/17/17 CPP adder	56.8	95.00	121.43	x - 3139.7
8/6/18 DSM	61.792			
8/8/18 DSM	0.5			
8/12/19 CPP adder	22.97			

ALABAMA POWER COMPANY

SUMMER PEAKS

HISTORICAL						Approved 2018 BUDGET FORECAST			Approved 2019 BUDGET FORECAST		
Calendar Date	YEAR	MW Demand	Max Temp	WN Demand	% GROWTH	YEAR	MW Demand	% GROWTH	YEAR	MW Demand	% GROWTH
8-Aug-06	2006	11,933	98.61	11,495	-0.9%	2018	11,351	-2.1%	2018	11,360	1.9%
22-Aug-07	2007	12,496	101.69	11,683	1.6%	2019	11,364	0.1%	2019	11,272	-0.8%
21-Jul-08	2008	11,804	96.87	11,577	-0.9%	2020	11,392	0.2%	2020	11,436	1.5%
23-Jun-09	2009	11,153	94.10	11,262	-2.7%	2021	11,393	0.0%	2021	11,598	1.4%
2-Aug-10	2010	11,678	97.54	11,370	1.0%	2022	11,428	0.3%	2022	11,525	-0.6%
3-Aug-11	2011	11,786	97.59	11,471	0.9%	2023	11,432	0.0%	2023	11,510	-0.1%
29-Jun-12	2012	11,382	99.87	10,790	-5.9%	2024	11,426	-0.1%	2024	11,474	-0.3%
12-Jun-13	2013	10,882	93.10	11,113	3.0%	2025	11,429	0.0%	2025	11,423	-0.4%
22-Aug-14	2014	11,387	95.23	11,359	2.2%	2026	11,436	0.1%	2026	10,707	-6.3%
4-Aug-15	2015	11,600	96.79	11,382	0.2%	2027	11,462	0.2%	2027	10,704	0.0%
8-Jul-16	2016	11,233	95.74	11,143	-2.1%				2028	10,735	0.3%
17-Aug-17	2017	11,062	91.50	11,487	3.1%						
6-Aug-18	2018	11,008	93.69	11,167							
8-Aug-18	2018	10,932	91.87	11,312							
16-Aug-18	2018	10,677	89.64	11,328							

HISTORICAL Growth			Approved 2018 BUDGET FORECAST		Approved 2019 BUDGET FORECAST	
2006-2011	-0.2%	0.0%	2018-2023	0.1%	2018-2023	0.26%
2011-2016	-1.0%	-0.6%	2023-2027	0.1%	2023-2027	-1.80%
2006-2017	-0.6%	-0.1%	2018-2027	0.1%	2018-2027	-0.66%

Note: 1) Theses figures reflect reductions due to passive demand side options

68

CAAGR 2013-2018	0.1%
CAAGR 2018-2023	0.1%
CAAGR 2023-2028	0.3%

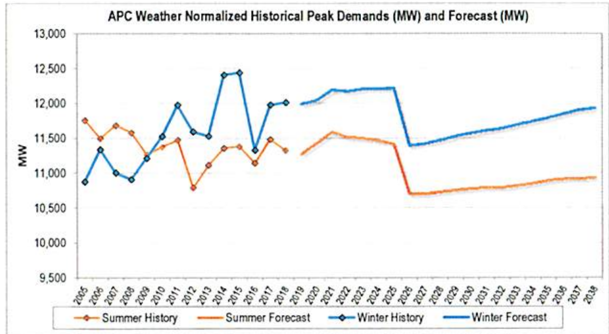
GRAPH

Peak Demand

x Axis	HISTORICAL Su	WN Summe	2018 Summ	Sum Pk Temp	2019 BUDGET FORECAST
1998	10,329				
1999	10,959				
2000	11,239				
2001	10,418				
2002	10,910				
2003	10,709				
2004	11,207				
2005	11,462	11,758		92.56	
2006	11,933	11,495		98.61	
2007	12,496	11,683		101.69	
2008	11,804	11,577		96.87	
2009	11,153	11,262		94.10	
2010	11,678	11,370		97.54	
2011	11,786	11,471		97.59	
2012	11,382	10,790		99.87	
2013	10,882	11,113		93.10	
2014	11,387	11,359		95.23	
2015	11,600	11,382		96.79	
2016	11,233	11,143		95.74	
2017	11,062	11,487	11,351	91.50	
2018	11,007.8	11,328	11,364		11,360
2019	0	0	11,392	0.00	11,272
2020			11,393		11,436
2021			11,428		11,598
2022			11,432		11,525
2023			11,426		11,510
2024			11,429		11,474
2025			11,436		11,423
2026			11,462		10,707
2027			11,476		10,704
2028			11,503		10,735
2029			11,531		10,758
2030			11,573		10,780
2031			11,604		10,798
2032			11,642		10,793
2033			11,679		10,824
2034			11,712		10,853
2035			11,740		10,895
2036			11,776		10,916
2037			11,815		10,918
2038			11,848		10,940
2039			11,883		10,957
2040			11,919		10,958
2041			11,955		10,983
2042			11,955		11,018
2043					11,039

CAAGR 2018-2023	0.1%	0.3%
CAAGR 2022-2027	0.1%	-1.5%
CAAGR 2020-2043	0.2%	-0.2%

Figure III-B-1: Alabama Power Peak Demand Forecast



YEAR	Winter Peak DEMAND (MW)	GROWTH	Summer Peak DEMAND (MW)	GROWTH
2019	11,998		11,272	
2020	12,051	0.44%	11,436	1.45%
2021	12,197	1.21%	11,598	1.42%
2022	12,179	-0.15%	11,525	-0.63%
2023	12,209	0.25%	11,510	-0.13%
2024	12,210	0.01%	11,474	-0.31%
2025	12,221	0.09%	11,423	-0.44%
2026	11,401	-6.71%	10,707	-6.27%
2027	11,427	0.23%	10,704	-0.03%
2028	11,478	0.45%	10,735	0.29%
2029	11,535	0.50%	10,758	0.21%
2030	11,582	0.41%	10,780	0.20%
2031	11,617	0.30%	10,798	0.17%
2032	11,647	0.26%	10,793	-0.05%
2033	11,702	0.47%	10,824	0.29%
2034	11,749	0.40%	10,853	0.27%
2035	11,798	0.42%	10,895	0.39%
2036	11,857	0.50%	10,916	0.19%
2037	11,910	0.45%	10,918	0.02%
2038	11,938	0.24%	10,940	0.20%

	HISTORY SUMMER	WN-Summer	HISTORY WINTER	WN-Winter	Forecast Summer	Forecast Winter	
2005	11,462	11,758	9,615	10,875			
2006	11,933	11,495	8,994	11,338			
2007	12,496	11,683	10,334	11,004			
2008	11,804	11,577	10,938	10,909			
2009	11,153	11,262	10,891	11,212			
2010	11,678	11,370	11,539	11,523			TRUE
2011	11,786	11,471	11,743	11,974			TRUE
2012	11,382	10,790	10,475	11,594			TRUE
2013	10,882	11,113	9,594	11,531			TRUE
2014	11,387	11,359	12,610	12,409			TRUE
2015	11,600	11,382	12,398	12,443			TRUE
2016	11,233	11,143	10,582	11,331			TRUE
2017	11,062	11,487	10,660	11,977			TRUE
2018	11,008	11,328	11,989	12,014			TRUE
2019					11,272	11,998	
2020					11,436	12,051	
2021					11,598	12,197	
2022					11,525	12,179	
2023					11,510	12,209	
2024					11,474	12,210	
2025					11,423	12,221	
2026					10,707	11,401	
2027					10,704	11,427	
2028					10,735	11,478	
2029					10,758	11,535	
2030					10,780	11,582	
2031					10,798	11,617	
2032					10,793	11,647	
2033					10,824	11,702	
2034					10,853	11,749	
2035					10,895	11,798	
2036					10,916	11,857	
2037					10,918	11,910	
2038					10,940	11,938	

	Summer	Winter
CAAGR 2019-2023	0.52%	0.44%
CAAGR 2023-2038	-0.34%	-0.15%

	Summer	Winter
2005	-2.5%	-11.6%
2006	3.8%	-20.7%
2007	7.0%	-6.1%
2008	2.0%	0.3%
2009	-1.0%	-2.9%
2010	2.7%	0.1%
2011	2.7%	-1.9%
2012	5.5%	-9.7%
2013	-2.1%	-16.8%
2014	0.2%	1.6%
2015	1.9%	-0.4%
2016	0.8%	-6.6%
2017	-3.7%	-11.0%
2018	-2.8%	-0.2%

WN Degree F	WN Slope	
16.59	-160.33	x+11,429

ALABAMA POWER COMPANY

WINTER PEAKS

	HISTORICAL				
	YEAR	MW Demand	Min Temp	WN Demand	
26-Jan-06	2006	8,994	31.21	11,338	4.3%
29-Jan-07	2007	10,334	20.77	11,004	-2.9%
3-Jan-08	2008	10,938	16.41	10,909	-0.9%
21-Jan-09	2009	10,891	18.59	11,212	2.8%
11-Jan-10	2010	11,539	15.18	11,313	0.9%
13-Jan-10	2010	10,787	21.18	11,523	2.8%
14-Jan-11	2011	11,743	18.03	11,974	5.8%
4-Jan-12	2012	10,475	23.57	11,594	-3.2%
4-Jan-13	2013	9,594	28.67	11,531	-0.5%
7-Jan-14	2014	12,610	10.23	11,590	0.5%
8-Jan-14	2014	12,191	17.95	12,409	7.6%
8-Jan-15	2015	12,398	11.00	11,502	-0.8%
9-Jan-15	2015	11,094	26.85	12,443	0.3%
19-Jan-16	2016	10,582	22.13	11,470	-0.3%
12-Jan-16	2016	9,983	27.85	11,331	-8.9%
8-Jan-17	2017	10,660	16.28	10,611	-7.5%
9-Jan-17	2017	10,629	26.52	11,977	4.4%
18-Jan-18	2018	11,989	16.75	12,014	13.2%

Approved 2018 BUDGET FORECAST		
YEAR	MW SALES	% GROWTH
2018	11,890	
2019	11,905	0.1%
2020	11,917	0.1%
2021	11,945	0.2%
2022	12,009	0.5%
2023	11,997	-0.1%
2024	11,997	0.0%
2025	12,009	0.1%
2026	12,024	0.1%
2027	12,044	0.2%

Approved 2019 BUDGET FORECAST		
YEAR	MW SALES	% GROWTH
2018	12,014	0.3%
2019	11,998	-0.1%
2020	12,051	0.4%
2021	12,197	1.2%
2022	12,179	-0.1%
2023	12,209	0.2%
2024	12,210	0.0%
2025	12,221	0.1%
2026	11,401	-6.7%
2027	11,427	0.2%
2028	11,478	0.4%

HISTORICAL		
2006-2011	5.5%	1.1%
2011-2016	-2.1%	-0.9%
2006-2017	1.6%	0.1%

Approved 2018 BUDGET FORECAST	
2018-2023	0.2%
2023-2027	0.1%
2018-2027	0.1%

Approved 2019 BUDGET FORECAST	
2018-2023	0.32%
2023-2027	-1.64%
2018-2027	-0.56%

Note: 1) Theses figures reflect reductions due to passive demand side options

CAAGR 2013-2018	0.2%
CAAGR 2018-2023	0.1%
CAAGR 2023-2028	0.4%

GRAPH

Peak Demand

x Axis	HISTORICAL Wi	WN Winter	B2018 Winter Forecast	Trendline	B2019 Winter Forec	B2019 estimate	Win Pk Temp
1999							
2000							
2001							
2002	9,352						
2003	10,636						
2004	9,615						
2005	9,615	10,875					
2006	8,994	11,338					
2007	10,334	11,004					25.95
2008	10,938	10,909					19.82
2009	10,891	11,212					18.82
2010	11,539	11,523		11,523			15.18
2011	11,743	11,974		11,974			18.03
2012	10,475	11,594		11,594			23.57
2013	9,594	11,531		11,531			28.72
2014	12,610	12,409		12,409			12.05
2015	12,398	12,443		12,443			11.00
2016	10,582	11,331		11,331			22.13
2017	10,660	11,977	11,890	11,977			26.52
2018	11,989	12,014	11,905	12,014	12,014		16.75
2019			11,917		11,998		
2020			11,945		12,051		
2021			12,009		12,197		
2022			11,997		12,179		
2023			11,997		12,209		
2024			12,009		12,210		
2025			12,024		12,221		
2026			12,044		11,401		
2027			12,064		11,427		
2028			12,106		11,478		
2029			12,158		11,535		
2030			12,198		11,582		
2031			12,256		11,617		
2032			12,316		11,647		
2033			12,373		11,702		
2034			12,432		11,749		
2035			12,500		11,798		
2036			12,571		11,857		
2037			12,629		11,910		
2038			12,692		11,938		
2039			12,764		11,972		
2040			12,838		12,015		
2041			12,902		12,065		
2042					12,102		
2043					12,155		

CAAGR 2018-2023	0.2%	0.3%
CAAGR 2022-2027	0.1%	-1.3%
CAAGR 2020-2041	0.4%	0.0%

		Annual			Winter			Non-Winter		
		EUE	Delta	ICE Factor	EUE	Delta	ICE Factor	EUE	Delta	ICE Factor
	Base Case	2,385			2,198			187		
250 MW	Tranche 1 CT	2,102	283		2,000	198		102	85	
	Tranche 1 Battery	2,123	262	92.68%	2,016	182	92.08%	107	80	94.06%
500 MW	Tranche 2 CT	1,886	499		1,833	365		52	135	
	Tranche 2 Battery	1,914	471	94.30%	1,852	346	94.86%	62	125	92.81%
750 MW	Tranche 3 CT	1,700	685		1,679	519		22	165	
	Tranche 3 Battery	1,840	545	79.66%	1,791	407	78.31%	48	139	83.89%
1000 MW	Tranche 4 CT	1,531	854		1,518	679		12	175	
	Tranche 4 Battery	1,816	569	66.58%	1,769	429	63.12%	47	140	80.03%
1500 MW	Tranche 5 CT	1,247	1,138		1,244	954		3	184	
	Tranche 5 Battery	1,828	557	48.94%	1,774	424	44.46%	54	133	72.12%
2000 MW	Tranche 6 CT	1,028	1,357		1,027	1,171		1	186	
	Tranche 6 Battery	1,824	561	41.36%	1,771	427	36.51%	53	134	71.88%
2500 MW	Tranche 7 CT	870	1,515		870	1,328		0	187	
	Tranche 7 Battery	1,784	601	39.70%	1,737	461	34.72%	47	140	75.15%

Battery Penetration - ICE Factors (with AS)			
	Annual	Winter	Non-Winter
Tranche 1 (250 MW)	92.68%	92.08%	94.06%
Tranche 2 (500 MW)	94.30%	94.86%	92.81%
Tranche 3 (750 MW)	79.66%	78.31%	83.89%
Tranche 4 (1,000 MW)	66.58%	63.12%	80.03%
Tranche 5 (1,500 MW)	48.94%	44.46%	72.12%
Tranche 6 (2,000 MW)	41.36%	36.51%	71.88%
Tranche 7 (2,500 MW)	39.70%	34.72%	75.15%

Battery Penetration - ICE Factors
w/o 400 MW included in Base

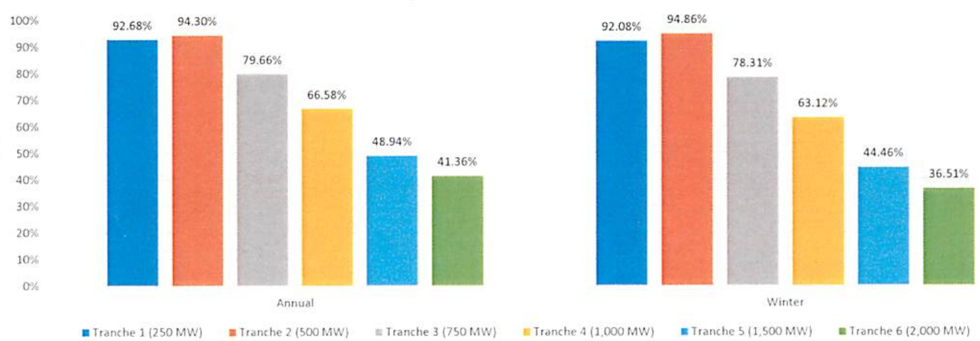
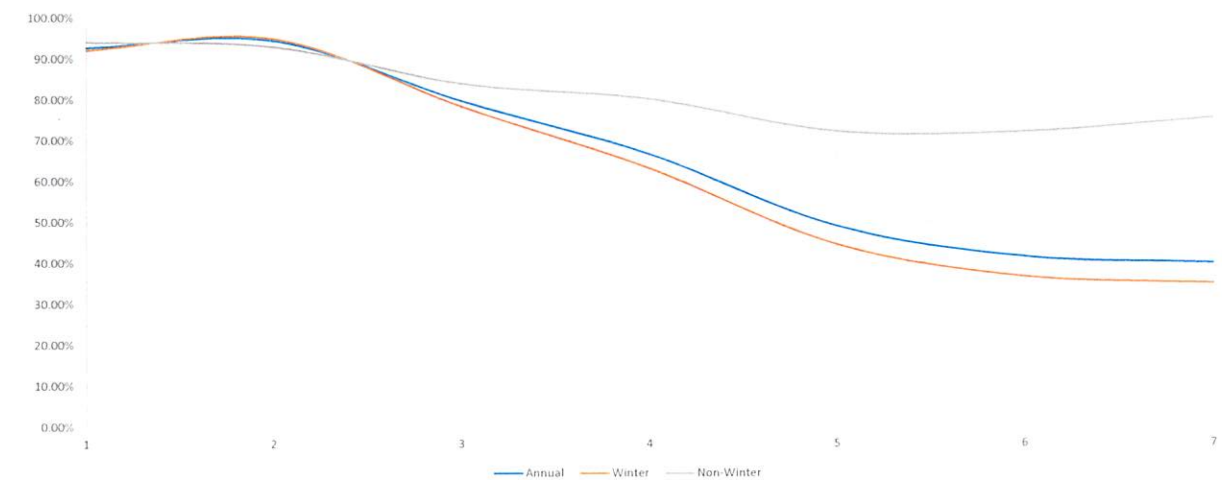


Chart Title



A.P.S.C. DOCKET NO 32953
Energy Ala/GASP 's EX. NO 5
WITNESS

Estimated Supply Side Resource Impacts

2024 Retail Revenue Requirement		2024 Energy Cost Impact	Net Pressure (Retail Revenue Requirement + Energy Cost Impact)	Percent Impact (Net Pressure / Forecasted 2020 Total Retail Revenue*)
$207,465,214	MG0 Scenario	($76,637,135)	$130,828,079	2.28%
$207,465,214	LG0 Scenario	($115,071,997)	$92,393,218	1.61%

** Forecasted 2020 Total Retail Revenue from B2019 Forecast is $5,731,645,121*

Incremental ECR Factor Calculation		
MG0 Scenario		
2024 Energy Cost Impact	($76,637,135)	
Forecasted 2020 Total Retail kWh	54,444,357,995	
Incremental ECR Factor ($/kWh)	**-0.00141**	*= 2024 Energy Cost Impact / Forecasted 2020 Total Retail kWh from B2019 Forecast*
LG0 Scenario		
2024 Energy Cost Impact	($115,071,997)	
Forecasted 2020 Total Retail kWh	54,444,357,995	
Incremental ECR Factor ($/kWh)	**-0.00211**	*= 2024 Energy Cost Impact / Forecasted 2020 Total Retail kWh from B2019 Forecast*

2024 Retail Revenue Requirement Allocation for Rate FD		
*FD Revenue**	$1,843,545,331	
*Base Retail Revenue**	$4,071,340,515	
FD % of Base Retail Revenue	45.281%	*= FD Revenue / Base Retail Revenue*
FD Allocation	$93,942,324	*= FD % of Base Retail Revenue * 2024 Retail Revenue Requirement*
FD kWh	17,239,371,267	
Incremental FD Factor ($/kWh)	**0.005449**	*= FD Allocation / FD kWh*

** Forecasted 2020 Revenue from B2019 Forecast*

Typical Monthly Bill Impact (vs. 2019 Tariff Pricing) | 1,000 kWh FD Bill

	New Typical Bill	2019 Typical Bill	$ Change
MGO Scenario	$151.84	$147.60	$4.24
LGO Scenario	$151.08	$147.60	$3.48

Estimated Supply Side Resource Impacts

2024 Retail Revenue Requirement		2024 Energy Cost Impact	Net Pressure (Retail Revenue Requirement + Energy Cost Impact)	Percent Impact (Net Pressure / Forecasted 2020 Total Retail Revenue*)
$210,274,845	MG0 Scenario	($74,178,192)	$136,096,653	2.37%
$210,274,845	LG0 Scenario	($112,640,999)	$97,633,846	1.70%

** Forecasted 2020 Total Retail Revenue from B2019 Forecast is $5,731,645,121*

Incremental ECR Factor Calculation		
MG0 Scenario		
2024 Energy Cost Impact	($74,178,192)	
Forecasted 2020 Total Retail kWh	54,444,357,995	
Incremental ECR Factor ($/kWh)	**-0.00136**	*= 2024 Energy Cost Impact / Forecasted 2020 Total Retail kWh from B2019 Forecast*
LG0 Scenario		
2024 Energy Cost Impact	($112,640,999)	
Forecasted 2020 Total Retail kWh	54,444,357,995	
Incremental ECR Factor ($/kWh)	**-0.00207**	*= 2024 Energy Cost Impact / Forecasted 2020 Total Retail kWh from B2019 Forecast*

2024 Retail Revenue Requirement Allocation for Rate FD		
*FD Revenue**	$1,843,545,331	
*Base Retail Revenue**	$4,071,340,515	
FD % of Base Retail Revenue	45.281%	*= FD Revenue / Base Retail Revenue*
FD Allocation	$95,214,553	*= FD % of Base Retail Revenue * 2024 Retail Revenue Requirement*
FD kWh	17,239,371,267	
Incremental FD Factor ($/kWh)	**0.005523**	*= FD Allocation / FD kWh*

** Forecasted 2020 Revenue from B2019 Forecast*

Typical Monthly Bill Impact (vs. 2019 Tariff Pricing) | 1,000 kWh FD Bill

	New Typical Bill	2019 Typical Bill	$ Change
MGO Scenario	$151.97	$147.60	$4.37
LGO Scenario	$151.20	$147.60	$3.60

A.P.S.C. DOCKET NO 32953

Energy AL/GUSP'S EX. NO. 6

WITNESS ____

Typical FD Residential Bill Calculations (1000 kWh)

2019 Inputs Used for FD Calculations													
Base Charge $/Month	1st Step Winter $/KWH	2nd Step Winter $/KWH	1st Step Summer $/KWH	2nd Step Summer $/KWH	NDR	Actual ECR Factor	Winter ECR - Secondary	Summer ECR - Secondary	RDF Secondary Factor - Winter	RDF Secondary Factor - Summer	Utility Tax	Tax Adjustment	Gross Rec Tax
14.50	0.102269	0.090269	0.102269	0.104798	0.75	0.023530	0.022980	0.026057	0.976630	1.107400	0.018	1.022	0.040

Current 2019 Pricing

	Rate FD Monthly Inputs					Other Tax And Monthly Factors				
Billing Month	Base Charge $/Month	1st Step Winter $/KWH	2nd Step Winter $/KWH	1st Step Summer $/KWH	2nd Step Summer $/KWH	NDR	ECR	Utility Tax	Tax Adjustment	Gross Rec Tax
Jan	14.50	0.102269	0.090269			0.750000	0.022980	0.018	1.022	0.040
Feb	14.50	0.102269	0.090269			0.750000	0.022980			
Mar	14.50	0.102269	0.090269			0.750000	0.022980			
Apr	14.50	0.102269	0.090269			0.750000	0.022980			
May	14.50	0.102269	0.090269			0.750000	0.022980			
Jun	14.50			0.102269	0.104798	0.750000	0.026057			
Jul	14.50			0.102269	0.104798	0.750000	0.026057			
Aug	14.50			0.102269	0.104798	0.750000	0.026057			
Sept	14.50			0.102269	0.104798	0.750000	0.026057			
Oct	14.50	0.102269	0.090269			0.750000	0.022980			
Nov	14.50	0.102269	0.090269			0.750000	0.022980			
Dec	14.50	0.102269	0.090269			0.750000	0.022980			

Typical Bill Estimate - 2019 Pricing

Month	Base	NDR	kWh	1st kWh	2nd kWh	1st Rev	2nd Rev	ECR Rev	SubTotal	SPULT	SubTotal	Tax Sub	GRT	Total	Monthly Average
Jan	$14.50	$0.75	1,000	750	250	$76.70	$22.57	$22.98	$137.50	$2.47	$139.97	$136.96	$5.48	$145.45	
Feb	$14.50	$0.75	1,000	750	250	$76.70	$22.57	$22.98	$137.50	$2.47	$139.97	$136.96	$5.48	$145.45	
Mar	$14.50	$0.75	1,000	750	250	$76.70	$22.57	$22.98	$137.50	$2.47	$139.97	$136.96	$5.48	$145.45	
Apr	$14.50	$0.75	1,000	750	250	$76.70	$22.57	$22.98	$137.50	$2.47	$139.97	$136.96	$5.48	$145.45	
May	$14.50	$0.75	1,000	750	250	$76.70	$22.57	$22.98	$137.50	$2.47	$139.97	$136.96	$5.48	$145.45	
Jun	$14.50	$0.75	1,000	1,000	0	$102.27	$0.00	$26.06	$143.58	$2.58	$146.16	$143.01	$5.72	$151.88	
Jul	$14.50	$0.75	1,000	1,000	0	$102.27	$0.00	$26.06	$143.58	$2.58	$146.16	$143.01	$5.72	$151.88	
Aug	$14.50	$0.75	1,000	1,000	0	$102.27	$0.00	$26.06	$143.58	$2.58	$146.16	$143.01	$5.72	$151.88	
Sept	$14.50	$0.75	1,000	1,000	0	$102.27	$0.00	$26.06	$143.58	$2.58	$146.16	$143.01	$5.72	$151.88	
Oct	$14.50	$0.75	1,000	750	250	$76.70	$22.57	$22.98	$137.50	$2.47	$139.97	$136.96	$5.48	$145.45	
Nov	$14.50	$0.75	1,000	750	250	$76.70	$22.57	$22.98	$137.50	$2.47	$139.97	$136.96	$5.48	$145.45	
Dec	$14.50	$0.75	1,000	750	250	$76.70	$22.57	$22.98	$137.50	$2.47	$139.97	$136.96	$5.48	$145.45	
			12,000											$1,771.14	$147.60

MGO Scenario

Incremental Factors	
FD	0.005449
MGO ECR	-0.001410

	Rate FD Monthly Inputs					Other Tax And Monthly Factors				
Billing Month	Base Charge $/Month	1st Step Winter $/KWH	2nd Step Winter $/KWH	1st Step Summer $/KWH	2nd Step Summer $/KWH	NDR	ECR	Utility Tax	Tax Adjustment	Gross Rec Tax
Jan	14.50	0.107718	0.095718			0.750000	0.021603	0.018	1.022	0.040
Feb	14.50	0.107718	0.095718			0.750000	0.021603			
Mar	14.50	0.107718	0.095718			0.750000	0.021603			
Apr	14.50	0.107718	0.095718			0.750000	0.021603			
May	14.50	0.107718	0.095718			0.750000	0.021603			
Jun	14.50			0.107718	0.110247	0.750000	0.024496			
Jul	14.50			0.107718	0.110247	0.750000	0.024496			
Aug	14.50			0.107718	0.110247	0.750000	0.024496			
Sept	14.50			0.107718	0.110247	0.750000	0.024496			
Oct	14.50	0.107718	0.095718			0.750000	0.021603			
Nov	14.50	0.107718	0.095718			0.750000	0.021603			
Dec	14.50	0.107718	0.095718			0.750000	0.021603			

Typical Bill Estimate - MGO Scenario

Month	Base	NDR	kWh	1st kWh	2nd kWh	1st Rev	2nd Rev	ECR Rev	SubTotal	SPULT	SubTotal	Tax Sub	GRT	Total	Monthly Average
Jan	$14.50	$0.75	1,000	750	250	$80.79	$23.93	$21.60	$141.57	$2.55	$144.12	$141.02	$5.64	$149.76	
Feb	$14.50	$0.75	1,000	750	250	$80.79	$23.93	$21.60	$141.57	$2.55	$144.12	$141.02	$5.64	$149.76	
Mar	$14.50	$0.75	1,000	750	250	$80.79	$23.93	$21.60	$141.57	$2.55	$144.12	$141.02	$5.64	$149.76	
Apr	$14.50	$0.75	1,000	750	250	$80.79	$23.93	$21.60	$141.57	$2.55	$144.12	$141.02	$5.64	$149.76	
May	$14.50	$0.75	1,000	750	250	$80.79	$23.93	$21.60	$141.57	$2.55	$144.12	$141.02	$5.64	$149.76	
Jun	$14.50	$0.75	1,000	1,000	0	$107.72	$0.00	$24.50	$147.46	$2.65	$150.12	$146.89	$5.88	$155.99	
Jul	$14.50	$0.75	1,000	1,000	0	$107.72	$0.00	$24.50	$147.46	$2.65	$150.12	$146.89	$5.88	$155.99	
Aug	$14.50	$0.75	1,000	1,000	0	$107.72	$0.00	$24.50	$147.46	$2.65	$150.12	$146.89	$5.88	$155.99	
Sept	$14.50	$0.75	1,000	1,000	0	$107.72	$0.00	$24.50	$147.46	$2.65	$150.12	$146.89	$5.88	$155.99	
Oct	$14.50	$0.75	1,000	750	250	$80.79	$23.93	$21.60	$141.57	$2.55	$144.12	$141.02	$5.64	$149.76	
Nov	$14.50	$0.75	1,000	750	250	$80.79	$23.93	$21.60	$141.57	$2.55	$144.12	$141.02	$5.64	$149.76	
Dec	$14.50	$0.75	1,000	750	250	$80.79	$23.93	$21.60	$141.57	$2.55	$144.12	$141.02	$5.64	$149.76	
			12,000											$1,822.05	$151.84

LGO Scenario

Incremental Factors	
FD	0.005449
LGO ECR	-0.002110

	Rate FD Monthly Inputs					Other Tax And Monthly Factors				
Billing Month	Base Charge $/Month	1st Step Winter $/KWH	2nd Step Winter $/KWH	1st Step Summer $/KWH	2nd Step Summer $/KWH	NDR	ECR	Utility Tax	Tax Adjustment	Gross Rec Tax
Jan	14.50	0.107718	0.095718			0.750000	0.020919	0.018	1.022	0.040
Feb	14.50	0.107718	0.095718			0.750000	0.020919			
Mar	14.50	0.107718	0.095718			0.750000	0.020919			
Apr	14.50	0.107718	0.095718			0.750000	0.020919			
May	14.50	0.107718	0.095718			0.750000	0.020919			
Jun	14.50			0.107718	0.110247	0.750000	0.023721			
Jul	14.50			0.107718	0.110247	0.750000	0.023721			
Aug	14.50			0.107718	0.110247	0.750000	0.023721			
Sept	14.50			0.107718	0.110247	0.750000	0.023721			
Oct	14.50	0.107718	0.095718			0.750000	0.020919			
Nov	14.50	0.107718	0.095718			0.750000	0.020919			
Dec	14.50	0.107718	0.095718			0.750000	0.020919			

Typical Bill Estimate - LGO Scenario

Month	Base	NDR	kWh	1st kWh	2nd kWh	1st Rev	2nd Rev	ECR Rev	SubTotal	SPULT	SubTotal	Tax Sub	GRT	Total	Monthly Average
Jan	$14.50	$0.75	1,000	750	250	$80.79	$23.93	$20.92	$140.89	$2.54	$143.42	$140.34	$5.61	$149.04	
Feb	$14.50	$0.75	1,000	750	250	$80.79	$23.93	$20.92	$140.89	$2.54	$143.42	$140.34	$5.61	$149.04	
Mar	$14.50	$0.75	1,000	750	250	$80.79	$23.93	$20.92	$140.89	$2.54	$143.42	$140.34	$5.61	$149.04	
Apr	$14.50	$0.75	1,000	750	250	$80.79	$23.93	$20.92	$140.89	$2.54	$143.42	$140.34	$5.61	$149.04	
May	$14.50	$0.75	1,000	750	250	$80.79	$23.93	$20.92	$140.89	$2.54	$143.42	$140.34	$5.61	$149.04	
Jun	$14.50	$0.75	1,000	1,000	0	$107.72	$0.00	$23.72	$146.69	$2.64	$149.33	$146.11	$5.84	$155.17	
Jul	$14.50	$0.75	1,000	1,000	0	$107.72	$0.00	$23.72	$146.69	$2.64	$149.33	$146.11	$5.84	$155.17	
Aug	$14.50	$0.75	1,000	1,000	0	$107.72	$0.00	$23.72	$146.69	$2.64	$149.33	$146.11	$5.84	$155.17	
Sept	$14.50	$0.75	1,000	1,000	0	$107.72	$0.00	$23.72	$146.69	$2.64	$149.33	$146.11	$5.84	$155.17	
Oct	$14.50	$0.75	1,000	750	250	$80.79	$23.93	$20.92	$140.89	$2.54	$143.42	$140.34	$5.61	$149.04	
Nov	$14.50	$0.75	1,000	750	250	$80.79	$23.93	$20.92	$140.89	$2.54	$143.42	$140.34	$5.61	$149.04	
Dec	$14.50	$0.75	1,000	750	250	$80.79	$23.93	$20.92	$140.89	$2.54	$143.42	$140.34	$5.61	$149.04	
			12,000											$1,812.99	$151.08

32453

A.P.S.C. DOCKET NO 6A
Energy ALA/GASP 's EX. NO. 6A (Corrected)
WITNESS Baker Loss

NON-PUBLIC VERSION
CONTAINS CONFIDENTIAL INFORMATION

Typical FD Residential Bill Calculations (1000 kWh)

2019 Inputs Used for FD Calculations													
Base Charge $/Month	1st Step Winter $/KWH	2nd Step Winter $/KWH	1st Step Summer $/KWH	2nd Step Summer $/KWH	NDR	Actual ECR Factor	Winter ECR - Secondary	Summer ECR - Secondary	RDF Secondary Factor - Winter	RDF Secondary Factor - Summer	Utility Tax	Tax Adjustment	Gross Rec Tax
14.50	0.102269	0.090269	0.102269	0.104798	0.75	0.023530	0.022980	0.026057	0.976630	1.107400	0.018	1.022	0.040

Current 2019 Pricing

	Rate FD Monthly Inputs					Other Tax And Monthly Factors				
Billing Month	Base Charge $/Month	1st Step Winter $/KWH	2nd Step Winter $/KWH	1st Step Summer $/KWH	2nd Step Summer $/KWH	NDR	ECR	Utility Tax	Tax Adjustment	Gross Rec Tax
Jan	14.50	0.102269	0.090269			0.750000	0.022980	0.018	1.022	0.040
Feb	14.50	0.102269	0.090269			0.750000	0.022980			
Mar	14.50	0.102269	0.090269			0.750000	0.022980			
Apr	14.50	0.102269	0.090269			0.750000	0.022980			
May	14.50	0.102269	0.090269			0.750000	0.022980			
Jun	14.50			0.102269	0.104798	0.750000	0.026057			
Jul	14.50			0.102269	0.104798	0.750000	0.026057			
Aug	14.50			0.102269	0.104798	0.750000	0.026057			
Sept	14.50			0.102269	0.104798	0.750000	0.026057			
Oct	14.50	0.102269	0.090269			0.750000	0.022980			
Nov	14.50	0.102269	0.090269			0.750000	0.022980			
Dec	14.50	0.102269	0.090269			0.750000	0.022980			

Typical Bill Estimate - 2019 Pricing

Month	Base	NDR	kWh	1st kWh	2nd kWh	1st Rev	2nd Rev	ECR Rev	SubTotal	SPULT	SubTotal	Tax Sub	GRT	Total	Monthly Average
Jan	$14.50	$0.75	1,000	750	250	$76.70	$22.57	$22.98	$137.50	$2.47	$139.97	$136.96	$5.48	$145.45	
Feb	$14.50	$0.75	1,000	750	250	$76.70	$22.57	$22.98	$137.50	$2.47	$139.97	$136.96	$5.48	$145.45	
Mar	$14.50	$0.75	1,000	750	250	$76.70	$22.57	$22.98	$137.50	$2.47	$139.97	$136.96	$5.48	$145.45	
Apr	$14.50	$0.75	1,000	750	250	$76.70	$22.57	$22.98	$137.50	$2.47	$139.97	$136.96	$5.48	$145.45	
May	$14.50	$0.75	1,000	750	250	$76.70	$22.57	$22.98	$137.50	$2.47	$139.97	$136.96	$5.48	$145.45	
Jun	$14.50	$0.75	1,000	1,000	0	$102.27	$0.00	$26.06	$143.58	$2.58	$146.16	$143.01	$5.72	$151.88	
Jul	$14.50	$0.75	1,000	1,000	0	$102.27	$0.00	$26.06	$143.58	$2.58	$146.16	$143.01	$5.72	$151.88	
Aug	$14.50	$0.75	1,000	1,000	0	$102.27	$0.00	$26.06	$143.58	$2.58	$146.16	$143.01	$5.72	$151.88	
Sept	$14.50	$0.75	1,000	1,000	0	$102.27	$0.00	$26.06	$143.58	$2.58	$146.16	$143.01	$5.72	$151.88	
Oct	$14.50	$0.75	1,000	750	250	$76.70	$22.57	$22.98	$137.50	$2.47	$139.97	$136.96	$5.48	$145.45	
Nov	$14.50	$0.75	1,000	750	250	$76.70	$22.57	$22.98	$137.50	$2.47	$139.97	$136.96	$5.48	$145.45	
Dec	$14.50	$0.75	1,000	750	250	$76.70	$22.57	$22.98	$137.50	$2.47	$139.97	$136.96	$5.48	$145.45	
			12,000											$1,771.14	$147.60

MGO Scenario

Incremental Factors	
FD	0.005523
MGO ECR	-0.001360

	Rate FD Monthly Inputs					Other Tax And Monthly Factors				
Billing Month	Base Charge $/Month	1st Step Winter $/KWH	2nd Step Winter $/KWH	1st Step Summer $/KWH	2nd Step Summer $/KWH	NDR	ECR	Utility Tax	Tax Adjustment	Gross Rec Tax
Jan	14.50	0.107792	0.095792			0.750000	0.021652	0.018	1.022	0.040
Feb	14.50	0.107792	0.095792			0.750000	0.021652			
Mar	14.50	0.107792	0.095792			0.750000	0.021652			
Apr	14.50	0.107792	0.095792			0.750000	0.021652			
May	14.50	0.107792	0.095792			0.750000	0.021652			
Jun	14.50			0.107792	0.110321	0.750000	0.024551			
Jul	14.50			0.107792	0.110321	0.750000	0.024551			
Aug	14.50			0.107792	0.110321	0.750000	0.024551			
Sept	14.50			0.107792	0.110321	0.750000	0.024551			
Oct	14.50	0.107792	0.095792			0.750000	0.021652			
Nov	14.50	0.107792	0.095792			0.750000	0.021652			
Dec	14.50	0.107792	0.095792			0.750000	0.021652			

Typical Bill Estimate - MGO Scenario

Month	Base	NDR	kWh	1st kWh	2nd kWh	1st Rev	2nd Rev	ECR Rev	SubTotal	SPULT	SubTotal	Tax Sub	GRT	Total	Monthly Average
Jan	$14.50	$0.75	1,000	750	250	$80.84	$23.95	$21.65	$141.69	$2.55	$144.24	$141.14	$5.65	$149.89	
Feb	$14.50	$0.75	1,000	750	250	$80.84	$23.95	$21.65	$141.69	$2.55	$144.24	$141.14	$5.65	$149.89	
Mar	$14.50	$0.75	1,000	750	250	$80.84	$23.95	$21.65	$141.69	$2.55	$144.24	$141.14	$5.65	$149.89	
Apr	$14.50	$0.75	1,000	750	250	$80.84	$23.95	$21.65	$141.69	$2.55	$144.24	$141.14	$5.65	$149.89	
May	$14.50	$0.75	1,000	750	250	$80.84	$23.95	$21.65	$141.69	$2.55	$144.24	$141.14	$5.65	$149.89	
Jun	$14.50	$0.75	1,000	1,000	0	$107.79	$0.00	$24.55	$147.59	$2.66	$150.25	$147.02	$5.88	$156.13	
Jul	$14.50	$0.75	1,000	1,000	0	$107.79	$0.00	$24.55	$147.59	$2.66	$150.25	$147.02	$5.88	$156.13	
Aug	$14.50	$0.75	1,000	1,000	0	$107.79	$0.00	$24.55	$147.59	$2.66	$150.25	$147.02	$5.88	$156.13	
Sept	$14.50	$0.75	1,000	1,000	0	$107.79	$0.00	$24.55	$147.59	$2.66	$150.25	$147.02	$5.88	$156.13	
Oct	$14.50	$0.75	1,000	750	250	$80.84	$23.95	$21.65	$141.69	$2.55	$144.24	$141.14	$5.65	$149.89	
Nov	$14.50	$0.75	1,000	750	250	$80.84	$23.95	$21.65	$141.69	$2.55	$144.24	$141.14	$5.65	$149.89	
Dec	$14.50	$0.75	1,000	750	250	$80.84	$23.95	$21.65	$141.69	$2.55	$144.24	$141.14	$5.65	$149.89	
			12,000											$1,823.64	$151.97

LG0 Scenario

Incremental Factors	
FD	0.005523
LG0 ECR	-0.002070

	Rate FD Monthly Inputs					Other Tax And Monthly Factors				
Billing Month	Base Charge $/Month	1st Step Winter $/KWH	2nd Step Winter $/KWH	1st Step Summer $/KWH	2nd Step Summer $/KWH	NDR	ECR	Utility Tax	Tax Adjustment	Gross Rec Tax
Jan	14.50	0.107792	0.095792			0.750000	0.020958	0.018	1.022	0.040
Feb	14.50	0.107792	0.095792			0.750000	0.020958			
Mar	14.50	0.107792	0.095792			0.750000	0.020958			
Apr	14.50	0.107792	0.095792			0.750000	0.020958			
May	14.50	0.107792	0.095792			0.750000	0.020958			
Jun	14.50			0.107792	0.110321	0.750000	0.023765			
Jul	14.50			0.107792	0.110321	0.750000	0.023765			
Aug	14.50			0.107792	0.110321	0.750000	0.023765			
Sept	14.50			0.107792	0.110321	0.750000	0.023765			
Oct	14.50	0.107792	0.095792			0.750000	0.020958			
Nov	14.50	0.107792	0.095792			0.750000	0.020958			
Dec	14.50	0.107792	0.095792			0.750000	0.020958			

Typical Bill Estimate - LGO Scenario

Month	Base	NDR	kWh	1st kWh	2nd kWh	1st Rev	2nd Rev	ECR Rev	SubTotal	SPULT	SubTotal	Tax Sub	GRT	Total	Monthly Average
Jan	$14.50	$0.75	1,000	750	250	$80.84	$23.95	$20.96	$141.00	$2.54	$143.54	$140.45	$5.62	$149.16	
Feb	$14.50	$0.75	1,000	750	250	$80.84	$23.95	$20.96	$141.00	$2.54	$143.54	$140.45	$5.62	$149.16	
Mar	$14.50	$0.75	1,000	750	250	$80.84	$23.95	$20.96	$141.00	$2.54	$143.54	$140.45	$5.62	$149.16	
Apr	$14.50	$0.75	1,000	750	250	$80.84	$23.95	$20.96	$141.00	$2.54	$143.54	$140.45	$5.62	$149.16	
May	$14.50	$0.75	1,000	750	250	$80.84	$23.95	$20.96	$141.00	$2.54	$143.54	$140.45	$5.62	$149.16	
Jun	$14.50	$0.75	1,000	1,000	0	$107.79	$0.00	$23.76	$146.81	$2.64	$149.45	$146.23	$5.85	$155.30	
Jul	$14.50	$0.75	1,000	1,000	0	$107.79	$0.00	$23.76	$146.81	$2.64	$149.45	$146.23	$5.85	$155.30	
Aug	$14.50	$0.75	1,000	1,000	0	$107.79	$0.00	$23.76	$146.81	$2.64	$149.45	$146.23	$5.85	$155.30	
Sept	$14.50	$0.75	1,000	1,000	0	$107.79	$0.00	$23.76	$146.81	$2.64	$149.45	$146.23	$5.85	$155.30	
Oct	$14.50	$0.75	1,000	750	250	$80.84	$23.95	$20.96	$141.00	$2.54	$143.54	$140.45	$5.62	$149.16	
Nov	$14.50	$0.75	1,000	750	250	$80.84	$23.95	$20.96	$141.00	$2.54	$143.54	$140.45	$5.62	$149.16	
Dec	$14.50	$0.75	1,000	750	250	$80.84	$23.95	$20.96	$141.00	$2.54	$143.54	$140.45	$5.62	$149.16	
			12,000											$1,814.45	$151.20

U.S. DEPARTMENT OF
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ENERGY EFFICIENCY & RENEWABLE ENERGY

ELECTRICITY COSTS: Rates, Bills, and Burdens

Electricity costs for a household can be explained in several ways, reflecting different aspects of costs to the consumer:

- Electricity ***rates*** are the prices that utilities charge for each unit of electricity used.
- Electricity ***bills*** are the total charges that households pay each month for electricity. They are determined by the amount of electricity used, the rates (prices) for that electricity, and other fees.
- Electricity ***burden*** is a measure of affordability that is the percent of household income spent on electricity bills.

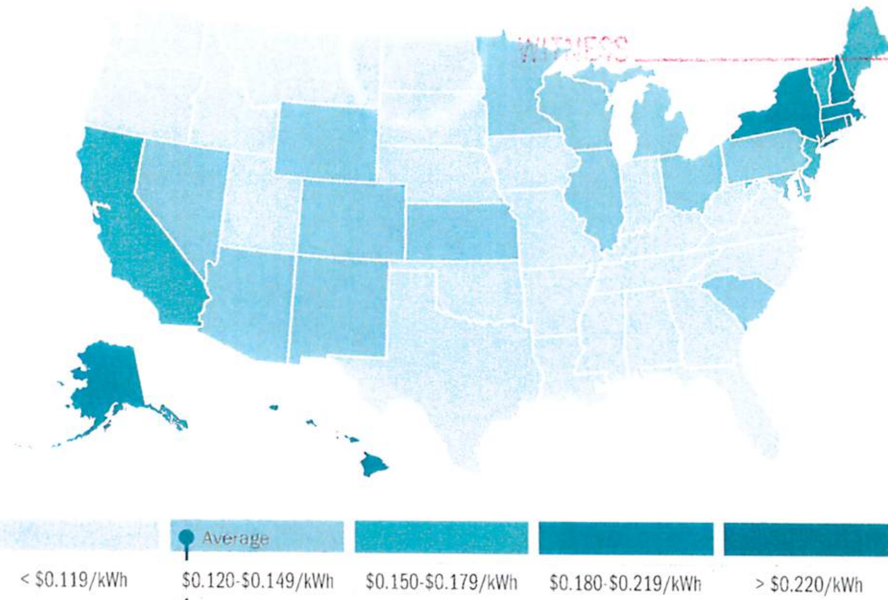
These aspects of electricity costs can relate to one another in different — sometimes unexpected — ways. Lower rates may not result in a lower bill if people use more energy. The same monthly bill amount may be less affordable for households in areas with lower incomes versus higher incomes. Through these distinct relationships, the highest and lowest rates, bills, and burdens vary across states.

The maps to the right show some of these differences, for example:

- Low rates but high bills and burdens (e.g., Alabama)
- High rates but low bills and burdens (e.g., New York)
- High bills but low burdens (e.g., New Hampshire)

Electricity **RATES**

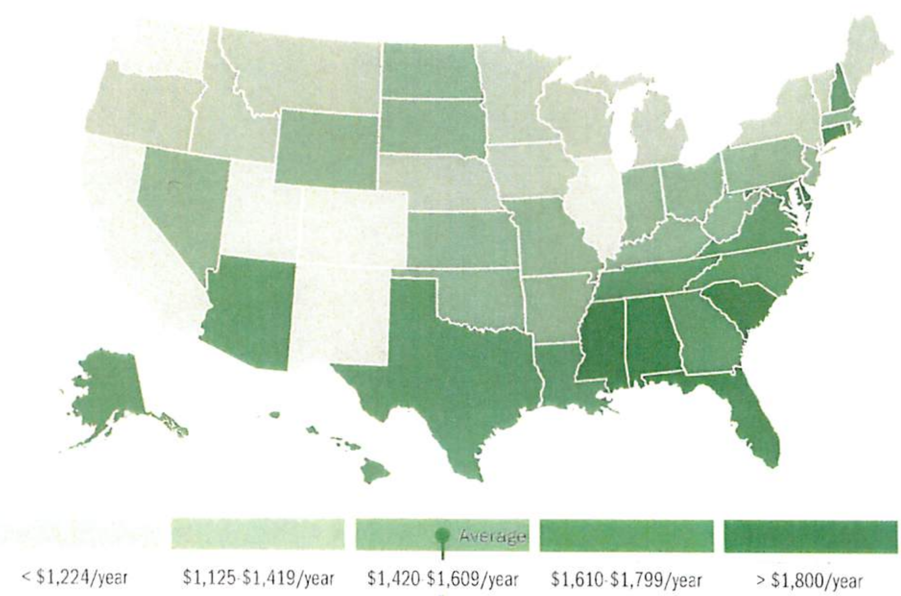
Prices that utilities charge for each unit of electricity used



U.S. Average Residential Electricity Rate: **$0.127/kWh**

Electricity **BILLS**

Total charges that households pay each month for electricity



U.S. Average Residential Electricity Bill: **$1,509 Per Year**

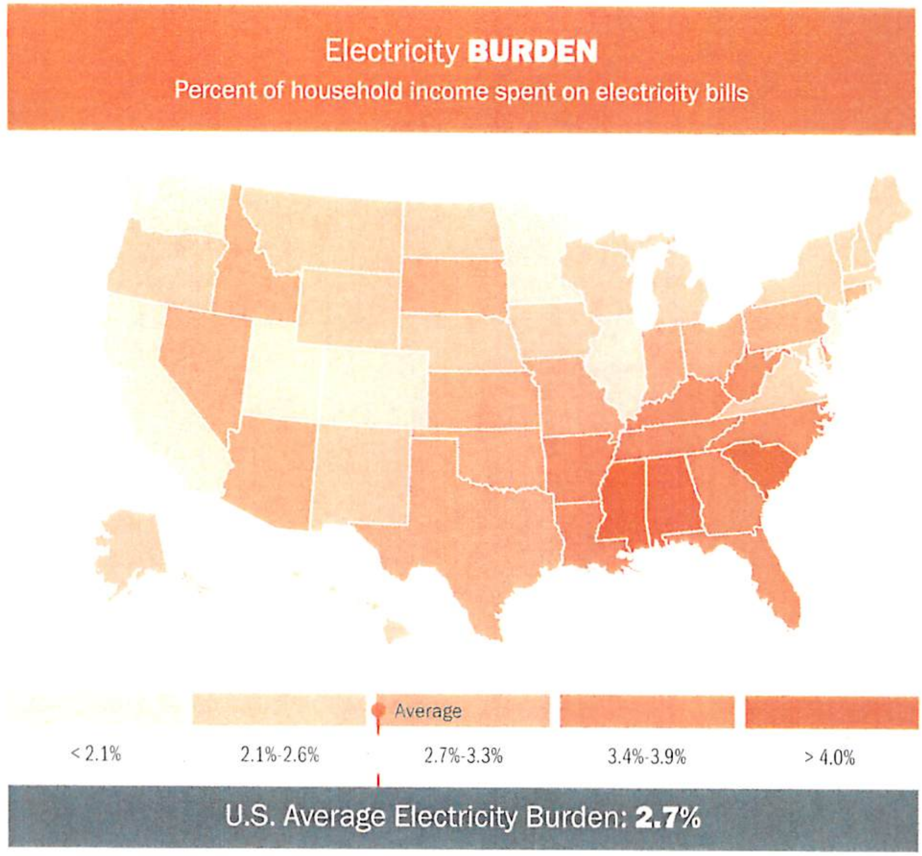
When and Why Do Electricity Costs Differ?

Some of the differences are due to location and weather. Hotter southeastern states need more air conditioning (which uses a lot of electricity), while colder northeastern states need more heating (which uses electricity or other fuels).

Other differences are due to the actions of utilities and state policymakers. Fixed utility charges (e.g., meter reading and billing costs) and electricity rates are decided in formal decision making processes. Some utilities also run energy efficiency and demand response programs that help households use less electricity, which can lower bills and burdens.

Homeowners also have some control over how much electricity they use. They can increase the energy efficiency of their home (e.g., how well a home is insulated and sealed against air leaks) and the efficiency of the equipment in the home (e.g., refrigerator, air conditioning, heating, and electronics). Higher efficiency can lower bills and burdens by reducing how much electricity is used.

The impact of electricity costs also depends on the financial resources of the household. High electricity burdens can make it hard for households to afford other necessary expenses. Households with lower incomes and higher electricity bills may have to make difficult tradeoffs within their household budgets among common expenses like groceries, medical expenses, and rent or mortgage payments. These maps show statewide averages, but electricity burdens that disparately affect low and moderate income households exist in every state.



Sources and Methodology

Sources: For electricity consumption, sales revenue and rates, EIA Annual Electric Sales, Revenue & Price, October 2016 release of 2015 data; for numbers of households and household median income by state, U.S. Census American Community Survey, 2015.

Methodology: State average residential electric rates and total residential electricity consumption are drawn from annual electric industry data reported by the U.S. Energy Information Administration (EIA). State average household bills were calculated as state residential average rates multiplied by state residential usage, then divided by the number of households in each state, as reported by the U.S. Census Bureau. These average household bills were divided by state median household income (reported by the U.S. Census Bureau) to arrive at each state's household average electricity burden.

Retail rates are calculated as total utility revenue from residential electricity sales divided by total residential sales (with fixed charges converted to volumetric charges). This method requires no adjustment for rate assistance payments because these are transfers among ratepayers. The U.S. average retail rate is as reported by EIA. It is higher than the rates calculated for many states because of the volume of sales at generally higher rates in more populous states.

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DOE/EE-1696 • October 2017

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Low-Income Household Energy Burden Varies Among States — Efficiency Can Help In All of Them

Nationally, low-income households[1] spend a larger portion of their income on home energy costs (e.g., electricity, natural gas, and other home heating fuels) than other households spend. This measure is often referred to as a household's "energy burden." One recent study found that low-income households face an energy burden three times higher than other households.[2] High energy burdens can threaten a household's ability to pay for energy, and force tough choices between paying energy bills and buying food, medicine, or other essentials.

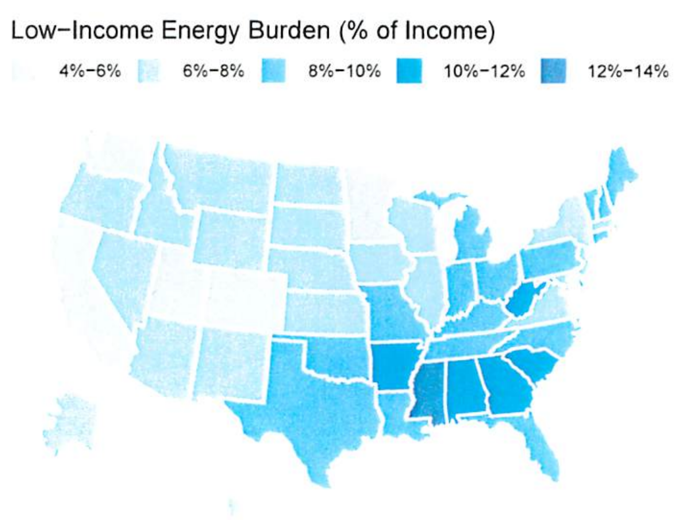
But national averages do not tell the full story. While families facing a high energy burden live in every state, there is also significant regional variation in the energy burdens that low-income households face. As seen in the map to the left below, low-income households (those making less than 80% of the Area Median Income) in many Southeast states face energy burdens of 10% or higher. Many factors contribute to high energy burdens, including a home's heating fuel and local weather. Another key factor is high consumption of electricity.

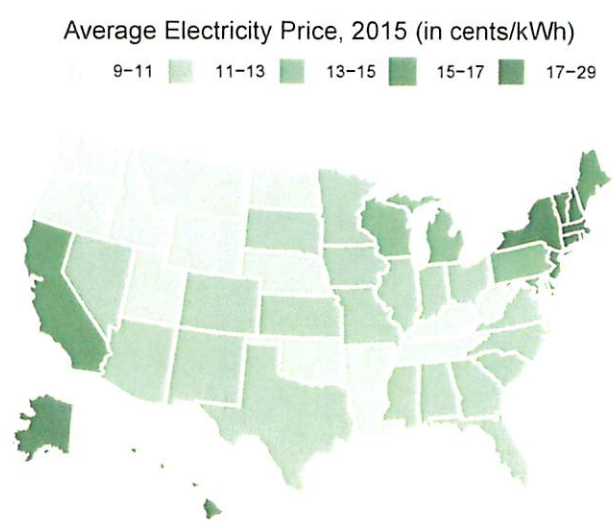
In the five states with the highest low-income energy burden—Mississippi, South Carolina, Alabama, Georgia, and Arkansas—low-income households use 36% more electricity than the low-income national average. In these states, electricity is the dominant heating fuel and high air conditioning demand also contributes to high consumption. These factors contribute to the relatively high total energy burden, despite households paying lower prices per kilowatt of electricity, as shown in the map on the right. While weather, home age, and home size can also have an impact on energy consumption, low-income households in this region generally consume more energy and more electricity than most other regions, even when controlling for these factors.

One way to address high energy burdens is by implementing cost-effective energy efficiency measures to help reduce consumption of electricity and other fuels. Efficiency is a low-cost resource across the country and can reduce household energy costs regardless of climate, heating fuel, or energy price factors in a state. The map on page 2 presents analysis from a new study which found cost-effective efficiency improvements, such as insulation and more efficient lighting and appliances, in low-income households can reduce electricity consumption by 13% to 31%. These measures reduce a household's energy costs, freeing up money for other vital budget items.

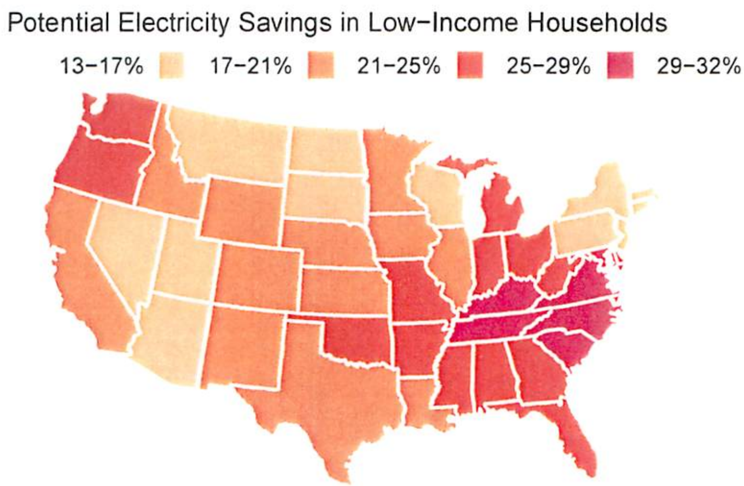
In addition to reducing energy costs, household energy efficiency improvements result in multiple benefits for families.[3] For example, properly insulating a home reduces heating and cooling costs, but also improves indoor air quality. This results in healthier environments and can decrease sick days and hospital visits for families.[4,5]

There are unique barriers to achieving energy savings in low-income households,[6] which means efficiency





Electricity prices are just one factor that contributes to a household's total energy cost. States with the highest electricity prices in the nation do not have the highest total energy burden.



Recent analysis of cost effective energy efficiency potential among households below 80% of Area Median income (AMI) showed potential household electricity savings between 13% and 31% for each of the contigous 48 states. *Source: https://resstock.nrel.gov/page/publications*

programs serving low-income customers must be thoughtfully designed and implemented. The U.S. Department of Energy (DOE)'s **Weatherization Assistance Program** has partnered with states and community agencies for over 40 years to achieve energy and cost savings in low-income homes. DOE's Clean Energy for Low Income Communities Accelerator (CELICA) partnered with state and local leaders that committed $335 million to help 155,000 low-income households access renewable energy and efficiency to save up to 30% or more on energy bills. CELICA also developed the Low-income Energy Affordability Data (LEAD) Tool, which provides state, city, and county data on energy burden. In addition to energy burden, there are a number of other factors that could make it difficult for low-income households to afford their energy bills, some of which can be explored through the Home Energy Affordability Tool (HEAT). More resources and tools to inform low-income program development are available at DOE's **State and Local Solution Center:** energy.gov/eere/slsc.

[1]There are a variety of methods for defining low-income households. Unless otherwise specified, the DOE analysis presented in this document defined low-income households as below 80 percent of the Area Median Income, as defined by the U.S. Department of Housing and Urban Development.

[2]For more information, see https://www.energy.gov/eere/slsc/low-income-community-energy-solutions

[3]DOE's Weatherization Assistance Program found an estimated $2.78 in non energy benefits for every $1.00 invested in weatherizing homes. More info is available at https://www.energy.gov/sites/prod/files/2017/05/f34/wap_factsheet_08.2017.pdf

[4]Tonn, Bruce et al. "Health and Household-Related Benefits Attributable to the Weatherization Assistance Program. Oak Ridge National Laboratory, 2014. https://weatherization.ornl.gov/wp-content/uploads/pdf/WAPRetroEvalFinalReports/ORNL_TM-2014_345.pdf

[5]Wilson, Jonathan et al. "Home Rx: The Health Benefits of Home Performance." DOE, December 2016. https://betterbuildingssolutioncenter.energy.gov/sites/default/files/attachments/Home%20Rx%20The%20Health%20Benefits%20of%20Home%20Performance%20-%20A%20Review%20of%20the%20Current%20Evidence.pdf

[6]More information on these barriers, and resources for addressing them, is available at https://www.energy.gov/eere/slsc/low-income-community-energy-solutions

DOE is grateful for support from Ian Hoffman at LBNL for his contributions to the concept and framing of this document.

Data Sources

Low-income Energy Affordability Data (LEAD) Tool https://openei.org/doe-opendata/datasnet/celica-data.

2009 EIA Residential Energy Consumption Survey (RECS) https://www.eia.gov/consumption/residential/

NREL ResStock Low Income EE Estimates (forthcoming) https://resstock.nrel.gov/

Additional Resources

Clean Energy Low-Income Accelerator (CELICA): https://betterbuildingsinitiative.energy.gov/accelerators/clean-energy-low-income-communities

Low-income Energy Affordability Data (LEAD) Tool: https://openei.org/doe-opendata/dataset/celica-data

Solar for All, Home Energy Affordablility Tool (HEAT) layer: https://maps.nrel.gov/solar-for-all

State and Local Solution Center: https://energy.gov/eere/slsc

Weatherization Assistance Program: https://energy.gov/eere/wipo/weatherization-assistance-program

U.S. DEPARTMENT OF ENERGY

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For more information, visit:
energy.gov/eere/wipo

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1.4 Conclusions

A potential for increased energy efficiency exists in Alabama, where the economy could benefit from effects associated with reduced energy consumption. Participating customers could specifically benefit from any financial incentives that might be offered by programs intended to accelerate markets for the purchase and installation of high-efficiency measures. Furthermore, consideration should also be given to the inherent uncertainties of forward looking estimates of energy efficiency potential, because the implementation of energy efficiency programs could cause electricity rates to rise faster than they would ordinarily.

1.4.1 Uncertainty

The interpretation of results presented in this study (and in general, all studies of this nature) should include consideration of inherent uncertainty. A key determinant of the potential for achievable energy efficiency savings is the market penetration rate, yet these estimates of customer response represent a substantial source of uncertainty in the projections of achievable potential.

In an effort to minimize uncertainty, Nexant and APC identified reasonable implementation scenarios, which were expected to influence market penetration rates such as levels of urgency in program implementation, tolerance for rate impacts, macroeconomic conditions, and other policy situations.

Nexant updated market penetration curves from the prior 2010 study that correspond to implementation scenarios aligned with program type or a combination of market segment and end-use and reflect current market conditions. Two examples are provided to illustrate this approach to characterizing market adoption. Penetration curves for lighting, appliances, and plug loads, for instance, could reflect the likelihood that these measures are typically easy to market, install, and understand by the customer. On the other hand, commercial HVAC, refrigeration and cooking measures, for example, are likely to have lower acceptance rates due to their complexity and relatively difficult installation and would be modeled using a different penetration curve than any of those for the end-uses from the earlier example.

The estimated impact of efficient technologies on energy consumption is another key determinant of savings potential, yet these inputs also have substantial uncertainty. In the near term, while efficient technology options can be reasonably well defined, customer behavior and electricity usage patterns vary widely and can differ significantly from assumptions necessarily made to model "typical" usage profiles. In future years, uncertainties are exacerbated by lack of information about future technology choices. Alabama Power's forecasting models already incorporate the effects of trend increases in end-use energy efficiency that reflect historical trends. There is no sound basis, however, for estimating potential impacts of unknown future technologies that are incrementally even more efficient than the higher efficiency end-uses implicitly incorporated in the forecast. As a result, the availability and magnitude of future impacts are inherently speculative.