Request IR-1:

Regarding the energy and demand savings target for 2019,

(a) Does NSP agree with the overall targets of energy and demand savings targets of 127.2 GWh and 20.2 MW, respectively, from the proposed 2019 DSM Plan? (Source: EfficiencyOne 2019 DSM Plan Filing – Evidence, Page 19 of 23, Line 13)

(b) What are all the impacts to NSP and its customers if the proposed energy and demand savings target are not met?

Response IR-1:

(a) NS Power agrees that the proposed mix of programs should achieve the demand and energy targets listed in the proposed 2019 DSM Plan.

(b) Energy and demand savings are evaluated and verified using engineering estimates through the UARB's established evaluation and verification process. The level of forecasted demand savings, on its own, would not have an immediate impact on NS Power or customers, but would mean that additional demand savings would have to be achieved in the future to contribute towards avoiding the need for additional peaking generators.

The question of not meeting energy savings reduction is more complex. In the short term, reduced electricity use by individual customers (absent associated demand reductions) actually increases costs for other customers due to the reduction in fixed cost recovery and the reallocation of those costs to those other customers. In the longer term, assuming all customers benefit from reduced electricity usage, then the customers overall energy cost should be lower.

Request IR-2:

Has NSP developed a procedure on allocating DSM costs on the cost-of-service study?

(a) If yes, please provide the details. And please state whether this procedure was developed prior to the 2019 DSM Plan filing.

(b) If no, please explain why the procedure for DSM cost allocation has not been developed so far.

Response IR-2:

(a-b) NS Power has had a procedure in place for allocating DSM costs in the cost-of-service study since the DSM Cost Recovery Rider (DCRR) was approved for use in 2009. NS Power has proposed to continue to follow this same cost allocation approach to allocate the costs of the DSM contract. Please refer to NS Power's Submission dated December 18, 2015 and NS Power's Reply Submission dated February 23, 2016 in matter M07151/E-R-15. [1]

In the Board's decision on that matter, the Board stated:

> Regarding true-ups, several parties favoured adjusting any required variances at the end of the DSM contract term. Although the SBA preferred to have variances corrected annually, legislation precludes rate adjustments prior to January 1, 2020. The Board approves NSPI's proposal to annually track comparisons of DSM cost recoveries to DSM expenditures, and then adjusting any required variances during the next GRA.[2]

[1] Nova Scotia Power Inc. – DSM Cost Allocation and Recovery – M07151/E-R-15, December 18, 2015, pages 5 and 6.
[2] M07151 – Nova Scotia Power Inc. – DSM Cost Allocation and Recovery (E-R-15), April 11, 2016, page 6.

Under this approach 25 percent of total expenditures are assumed to reflect System Benefit Costs and are allocated among rate classes using the Cost of Service methodology and the remaining 75 percent are Participating Class Benefits Costs assigned directly to participating classes. Further, NS Power applies this cost allocation methodology to allocate annual actual DSM expenditures to rate classes in order to track recovery of these costs for DSM cost true-up purposes at the next general rate application (GRA).

The year-to-date DSM cost true-up results from 2016-2017 show that E1 spent $52.3 million or $6.4 million ($6.8 million with interest) below the amount of $58.7 million approved by the Board for these two years in its 2016-2018 DSM Plan decision. Since NS Power under-recovered $2.1 million ($2.2 million with interest) of this amount from ratepayers due to actual kWh sales being 3.4 percent lower than forecasted during these two years, this portion is currently due to the Company with the remaining $4.3 million ($4.6 million with interest) being due to customers.

In the next general rate setting exercise, the Company will adjust the base cost rates to ensure recovery of its under- or over-recovered DSM cost payments to E1[3] and a credit to or recovery from customers of any outstanding amounts from previous DSM plans[4]. Please refer to Attachment 1 to see how NS Power applies the DSM cost allocation methodology to track recovery of actual DSM costs.

[3] In this instance, should the outstanding balance at the end of the 2016-2018 DSM Plan be $6.8 million, the costs of the next DSM plan would be reduced by $4.6 million, rather than $6.8 million to ensure that NS Power recovers its under-recovered DSM costs from that period.

[4] See treatment of outstanding DSM balance of $8.5 million from 2014 owed by E1 to ratepayers under the 2016-2018 DSM Plan in Board's Order M06733, Schedule B which provides for netting of this amount from the total approved DSM amount of $102.15 million.

REDACTED (CONFIDENTIAL INFORMATION REMOVED)

WACC 7.01% (2016) 6.96% (2017)

2016

Rate Class	GWh Sales: Actual	GWh Sales: Test Year	GWh Sales: Ratio	DSM Expenditures: 2014 Balance Adjustment Credit[1]	DSM Expenditures: 2015 DSM Cost - first of 8 annual instalments	DSM Expenditures: 2016 DSM: Allocation of Actual Expenditures as reported by E1	DSM Expenditures: Total	DSM Cost Recovery – Payments by customers to Nova Scotia Power: 2014 Balance Adjustment Credit	2015 DSM Cost - first of 8 annual instalments	2016 DSM Budget	Total	DSM Cost Recovery – Payments by NS Power to E1[2]: 2016 DSM Budget	2014 Balance Adjustment	Total	Variance: Balance Adjustment applicable to Customers	Balance Adjustment applicable to NS Power[2]	Balance Adjustment applicable to E1
Residentials	4,318	4,485	0.96	-$5,365,775	$2,779,524	$16,607,210	$14,020,960	-$5,166,381	$2,676,236	$16,965,301	$14,475,156	$17,620,067	-$5,365,775	$12,254,292	-$454,196	-$558,660	$1,012,857
Small General	272	248	1.10	-$653,838	$170,993	$946,144	$463,299	-$717,555	$187,657	$1,664,479	$1,134,580	$1,516,677	-$653,838	$862,839	-$671,281	$100,748	$570,533
General Demand	2,379	2,509	0.95	-$1,476,269	$1,422,918	$7,950,063	$7,896,712	-$1,399,621	$1,349,040	$7,895,102	$7,844,521	$8,327,463	-$1,476,269	$6,851,194	$52,191	-$429,592	$377,400
Large General	411	407	1.01	-$531,388	$164,970	$1,008,427	$642,009	-$537,742	$166,942	$1,717,798	$1,346,998	$1,697,501	-$531,388	$1,166,113	-$704,989	$15,916	$689,074
Small Industrial	249	252	0.99	-$254,170	$158,253	$984,791	$888,875	-$250,614	$156,040	$714,240	$619,665	$724,374	-$254,170	$470,204	$269,210	-$8,792	-$260,417
Medium Industrial	462	471	0.98	-$300,973	$194,714	$1,028,052	$921,793	-$295,152	$190,948	$959,424	$855,221	$978,345	-$300,973	$677,372	$66,573	-$16,866	-$49,707
Large Industrial	681	691	0.98	$486,703	$301,138	$1,315,848	$2,103,689	$479,400	$296,619	$1,588,173	$2,364,192	$1,612,368	$486,703	$2,099,071	-$260,503	-$36,017	$296,520
Municipal	165	181	0.91	$166,565	$134,135	$731,044	$1,031,744	$151,525	$122,024	$536,448	$809,997	$589,693	$166,565	$756,258	$221,747	-$80,396	-$141,351
Unmetered	87	108	0.80	-$606,010	$16,642	$79,924	-$509,444	-$487,630	$13,391	$89,757	-$384,483	$111,547	-$606,010	-$494,463	-$124,962	$93,339	$31,623
[redacted]																	
Total	**9,075**	**9,377**		**-$8,518,030**	**$5,348,243**	**$30,677,964**	**$27,508,177**	**-$8,186,790**	**$5,175,674**	**$32,232,009**	**$29,220,894**	**$33,210,000**	**-$8,518,030**	**$24,691,970**	**-$1,712,717**	**-$819,319**	**$2,532,036**

2017

Rate Class	GWh Sales: Actual	GWh Sales: Test Year	GWh Sales: Ratio	DSM Expenditures: 2014 Balance Adjustment Credit[1]	DSM Expenditures: 2015 DSM Cost - first of 8 annual instalments	DSM Expenditures: 2016 DSM: Allocation of Actual Expenditures as reported by E1	DSM Expenditures: Total	DSM Cost Recovery – Payments by customers to Nova Scotia Power: 2014 Balance Adjustment Credit	2015 DSM Cost - first of 8 annual instalments	2016 DSM Budget	Total	DSM Cost Recovery – Payments by NS Power to E1[2]: 2016 DSM Budget	2014 Balance Adjustment	Total	Variance: Balance Adjustment applicable to Customers	Balance Adjustment applicable to NS Power[2]	Balance Adjustment applicable to E1
Residentials	4,374	4,551	0.96	$0	$2,779,524	$15,053,388	$17,832,912	$0	$2,671,048	$17,999,852	$20,670,899	$18,730,861	$0	$18,730,861	-$2,837,988	-$839,486	$3,677,473
Small General	280	242	1.16	$0	$170,993	$916,043	$1,087,036	$0	$197,806	$1,708,896	$1,906,702	$1,477,254	$0	$1,477,254	-$819,666	$258,455	$561,211
General Demand	2,379	2,522	0.94	$0	$1,422,918	$8,524,978	$9,947,896	$0	$1,342,449	$7,700,388	$9,042,837	$8,161,966	$0	$8,161,966	$905,059	-$542,047	-$363,012
Large General	401	401	1.00	$0	$164,970	$1,258,657	$1,423,627	$0	$164,688	$1,645,408	$1,810,096	$1,648,224	$0	$1,648,224	-$386,469	-$3,097	$389,566
Small Industrial	246	252	0.98	$0	$158,253	$1,015,427	$1,173,680	$0	$154,992	$693,723	$848,714	$708,323	$0	$708,323	$324,966	-$17,862	-$307,104
Medium Industrial	466	481	0.97	$0	$194,714	$976,969	$1,171,683	$0	$188,972	$939,992	$1,128,964	$968,556	$0	$968,556	$42,719	-$34,306	-$8,413
Large Industrial	709	688	1.03	$0	$301,138	$1,418,132	$1,719,271	$0	$310,346	$1,623,241	$1,933,587	$1,575,080	$0	$1,575,080	-$214,317	$57,369	$156,948
Municipal	143	183	0.78	$0	$134,135	$883,328	$1,017,463	$0	$104,278	$469,010	$573,288	$603,301	$0	$603,301	$444,176	-$164,148	-$280,028
Unmetered	82	109	0.76	$0	$16,642	$70,955	$87,598	$0	$12,588	$85,747	$98,335	$113,360	$0	$113,360	-$10,737	-$31,667	$42,404
[redacted]																	
Total	**9,117**	**9,454**		**$0**	**$5,348,243**	**$30,136,478**	**$35,484,721**	**$0**	**$5,158,408**	**$32,935,822**	**$38,094,230**	**$34,020,000**	**$0**	**$34,020,000**	**-$2,609,509**	**-$1,274,013**	**$3,883,522**

Year-to-date Variance

Rate Class	Balance Adjustment applicable to Customers	Balance Adjustment applicable to NS Power	Balance Adjustment applicable to E1
Residentials	-$3,439,586	-$1,487,187	$4,926,772
Small General	-$1,591,358	$378,986	$1,212,372
General Demand	$994,336	-$1,036,507	$42,171
Large General	-$1,180,404	$14,415	$1,165,989
Small Industrial	$634,314	-$28,217	-$606,097
Medium Industrial	$117,908	-$54,172	-$63,736
Large Industrial	-$510,175	$19,491	$490,684
Municipal	$705,126	-$258,866	-$446,260
Unmetered	-$149,455	$70,565	$78,889
[redacted]			
Total	**-$4,596,451**	**-$2,225,408**	**$6,821,859**

(1) Source: Appendix B, 2014 BA, Efficiency Nova Scotia - 2016 DSM Annual Progress Report, Date Filed: March 31, 2016.
(2) Order M06733, Schedule B Compensation

Table 1: 2015 PCR - Allocation of 25% of 2015 program costs associated with system benefits

COLUMN A B C D E F G H

Program Cost Recovery by Benefits

System Benefits	25%	$7,980,896
Combined Class and Participant Benefits	75%	$23,942,688
Total[1]	100%	$31,923,584

Functionalization of system Benefit DSM Costs

	Factors
Generation	100%
Transmission	0%
Distribution	0%
Retail	0%

Classification of System Benefit DSM Costs

	Factors[2]
Demand-related	35.81%
Energy-related	64.19%
Total	100.00%

	Demand-Related Costs			Energy-Related Costs			Total	
Rate Class	3 CP kW Demands[3]	Relative Share	($)	MWh Energy Requirement[4]	Relative Share	($)	Relative Share	Total Amount ($)
Residential[5]	3,570,218	60.1%	$1,718,849	4,897,552	48.6%	$2,490,895	52.7%	$4,209,743
Small General	140,773	2.4%	$67,774	294,931	2.9%	$150,002	2.7%	$217,776
General Demand	1,252,745	21.1%	$603,123	2,598,157	25.8%	$1,321,423	24.1%	$1,924,545
Large General	163,591	2.8%	$78,759	439,535	4.4%	$223,547	3.8%	$302,307
Small Industrial	104,113	1.8%	$50,124	271,056	2.7%	$137,859	2.4%	$187,983
Medium Industrial	188,434	3.2%	$90,720	502,045	5.0%	$255,340	4.3%	$346,060
Large Industrial	292,614	4.9%	$140,877	709,512	7.0%	$360,858	6.3%	$501,734
Municipal	123,818	2.1%	$59,611	204,612	2.0%	$104,066	2.1%	$163,677
Unmetered	77,310	1.3%	$37,220	118,508	1.2%	$60,273	1.2%	$97,493
[redacted]								
Total	**5,937,085**	**100.0%**	**$2,858,355**	**10,071,846**	**100.0%**	**$5,122,541**	**100.0%**	**$7,980,896**
	5,913,616			35,938				
Classification Breakdown		35.81%		10,035,908	64.19%			100.0%

Numbers may not add due to rounding

[1] Source: EfficiencyOne 2017 DSM Annual Progress Report filed in March 31, 2017

[2] Source: Source:"2015 FAM AA True Up Calculations as used in Appendix B- Part 2 FAM BA COS (Partially confidential), as provided in NSPI Responses to NSUARB Information Requests ; NSUARB M07703

[3] Source: "2015 FAM AA True Up Calculations as used in Appendix B- Part 2 FAM BA COS (Partially confidential), as provided in NSPI Responses to NSUARB Information Requests ; NSUARB M07703

4Source: "2015 FAM AA True Up Calculations as used in Appendix B- Part 2 FAM BA COS (Partially confidential), as provided in NSPI Responses to NSUARB Information Requests ; NSUARB M07703.

[5] All residential rate classes use the same unit fixed cost estimate

Table 2: 2015 PCR - Allocation of 75% of actual 2015 DSM Program expenditures associated with benefits realized by participating classes

Line #													
1													
2	COLUMN	A	B	C	D	E	F	G	H	I	J	K	
3	FORMULA										∑ col A to I	J * 75%	
4													
5	Program	Efficient Product (RES)	Existing Houses	New Residential	Energy Saving Actions	Efficient Product Rebates (BNI)	Custom Incentives	Direct Installation (BNI)	Education and Outreach	Development and Research	Other Enabling Strategies	All Program Costs Combined	Program Costs Directly Assigned to Participating rate classes (75% of the total)
6	**Rate Class**												
7	Residential	$3,837,121	$7,478,798	$1,168,353	$1,034,081.32	$498,276	$93,851	$489,398	$917,038	$460,331	$531,011	$16,508,259	$12,381,194
8	Small General	$8,514	$7,344	$0	$0	$326,133	$16,112	$513,905	$54,738	$32,433	$111,328	$1,070,507	$802,880
9	General Demand	$7,659	$22,055	$0	$0	$2,915,577	$2,614,284	$2,338,932	$329,032	$222,787	$308,118	$8,758,442	$6,568,831
10	Large General	$792	$0	$0	$0	$497,128	$328,730	$0	$34,347	$24,918	$23,943	$909,859	$682,394
11	Small Industrial	$1,585	$0	$0	$0	$217,144	$214,421	$405,571	$34,853	$24,908	$110,356	$1,008,839	$756,629
12	Medium Industrial	$1,056	$0	$0	$0	$332,186	$565,237	$91,164	$41,059	$29,078	$28,468	$1,088,248	$816,186
13	Large Industrial	$1,056	$0	$0	$0	$873,535	$697,487	$0	$65,424	$45,361	$44,811	$1,727,675	$1,295,756
14	Municipal	$61,871	$136,739	$33,486	$0	$174,551	$315,723	$41,401	$37,384	$23,753	$24,390	$849,297	$636,973
15	Unmetered	$0	$0	$0	$0	$2,238	$0	$0	$93	$63	$63	$2,457	$1,843
16	[redacted]												
17													
18	**Total**	**$3,919,655**	**$7,644,936**	**$1,201,839**	**$1,034,081**	**$5,836,768**	**$4,845,846**	**$3,880,371**	**$1,513,968**	**$863,632**	**$1,182,488**	**$31,923,584**	**$23,942,688**
19													
22	**Total Spending per Audited I**	**$3,947,105**	**$7,696,734**	**$1,210,031**	**$1,042,674**	**$5,864,086**	**$4,832,346**	**$3,891,022**	**$ 1,501,111**	**$ 864,464**	**$ 1,180,372**	**$32,029,946**	
23	Interest earned on DSM fur	-$35,703	-$69,140	-$10,883	-$9,804	-$49,135	-$30,529	-$30,535	-$7,190	-$6,453	-$7,898	-$257,269	
24	Amortization on Capital Ass	$8,253	$17,341	$2,691	$1,211	$21,817	$44,029	$19,884	$20,048	$5,620	$10,014	$150,907	
25	**Actual Spending Total**	**$3,919,655**	**$7,644,936**	**$1,201,839**	**$1,034,081**	**$5,836,768**	**$4,845,846**	**$3,880,371**	**$1,513,968**	**$863,632**	**$1,182,488**	**$31,923,584**	
26													
27	Numbers may not add due to rounding												**Table 1, 2015 Actual Spending**

Table 3: 2015 PCR -2015 DSM program participation by rate class (Relative Shares)

COLUMN	A	B	C	D	D	E	F	G	H	I
Program	Efficient Product (RES)	Existing Houses	New Houses	Energy Savings Actions	Efficient Product (BNI)	Custom Incentives	Direct Installation	Education and Outreach	Development and Research	Other Enabling Strategies
Rate Class										
Residential	97.9%	97.8%	97.2%	100.0%	8.5%	1.9%	12.6%	60.6%	53.3%	44.9%
Small General	0.2%	0.1%	0.0%	0.0%	5.6%	0.3%	13.2%	3.6%	3.8%	9.4%
General Demand	0.2%	0.3%	0.0%	0.0%	50.0%	53.9%	60.3%	21.7%	25.8%	26.1%
Large General	0.0%	0.0%	0.0%	0.0%	8.5%	6.8%	0.0%	2.3%	2.9%	2.0%
Small Industrial	0.0%	0.0%	0.0%	0.0%	3.7%	4.4%	10.5%	2.3%	2.9%	9.3%
Medium Industrial	0.0%	0.0%	0.0%	0.0%	5.7%	11.7%	2.3%	2.7%	3.4%	2.4%
Large Industrial	0.0%	0.0%	0.0%	0.0%	15.0%	14.4%	0.0%	4.3%	5.3%	3.8%
Municipal	1.6%	1.8%	2.8%	0.0%	3.0%	6.5%	1.1%	2.5%	2.8%	2.1%
Unmetered	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
[redacted]										
Total	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**

2015 Actual Spending

Table 4: 2015 PCR - Allocation of 2015 program costs among rate classes

Line #							
1							
2	**COLUMN**	**A**	**B**	**C**	**D**	**E**	**F**
3							
4							
5		**Table 1**		**Table 2**			
6	**FORMULA**	**Column H**		**Column K**		**A + C**	
7		**System Benefit Costs (25% of the total expenditure allocated to classes using COS methodology)**		**Participating Class Benefit Costs (75% of the total expenditure directly assigned to participating classes)**		**2017 PCR**	
8		**($)**	**Relative Share**	**($)**	**Relative Share**	**($)**	**Relative Share**
9	**Rate Class**						
10	Residential	$4,209,743	52.7%	$12,381,194	51.7%	$16,590,938	52.0%
11	Small General	$217,776	2.7%	$802,880	3.4%	$1,020,656	3.2%
12	General Demand	$1,924,545	24.1%	$6,568,831	27.4%	$8,493,377	26.6%
13	Large General	$302,307	3.8%	$682,394	2.9%	$984,701	3.1%
14	Small Industrial	$187,983	2.4%	$756,629	3.2%	$944,613	3.0%
15	Medium Industrial	$346,060	4.3%	$816,186	3.4%	$1,162,246	3.6%
16	Large Industrial	$501,734	6.3%	$1,295,756	5.4%	$1,797,490	5.6%
17	Municipal	$163,677	2.1%	$636,973	2.7%	$800,650	2.5%
18	Unmetered	$97,493	1.2%	$1,843	0.0%	$99,336	0.3%
19–20	[redacted]						
21	**Total**	**$7,980,896**	**100.0%**	**$23,942,688**	**100.0%**	**$31,923,584**	**100.0%**
22	Numbers may not add due to rounding						
23							
24							

TABLE 3 Calculation Costs by class

Line #											
1											
2											
3	**COLUMN**	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**
4											
5	**FORMULA**	**Table 2 Column K**		**Table 1 Column H**		**Table 2 Column L**		**C + E**			**G - I**
6											
7		**Total Expenditure by Rate class**		**System Benefit Costs (25% of the total expenditure allocated to classes using COS methodology)**		**Participating Class benefit Costs (75% of the total expenditure directly assigned to participating classes)**		**Total**		**Actual**	
8		**$ Amount**	**Relative Share**	**$ Amount**	**Relative Share**	**$ Amount**	**Relative Share**	**$ Amount**	**Relative Share**	**2015 Collections**	**Var. bfr Interest**
9	**Rate Class**										
10	Residential5	$16,508,259	51.7%	$4,209,743	52.7%	$12,381,194	51.7%	$16,590,938	52.0%	$2,779,524	13,811,414
11	Small General	$1,070,507	3.4%	$217,776	2.7%	$802,880	3.4%	$1,020,656	3.2%	$170,993	849,663
12	General Demand	$8,758,442	27.4%	$1,924,545	24.1%	$6,568,831	27.4%	$8,493,377	26.6%	$1,422,918	7,070,459
13	Large General	$909,859	2.9%	$302,307	3.8%	$682,394	2.9%	$984,701	3.1%	$164,970	819,731
14	Small Industrial	$1,008,839	3.2%	$187,983	2.4%	$756,629	3.2%	$944,613	3.0%	$158,253	786,359
15	Medium Industrial	$1,088,248	3.4%	$346,060	4.3%	$816,186	3.4%	$1,162,246	3.6%	$194,714	967,532
16	Large Industrial	$1,727,675	5.4%	$501,734	6.3%	$1,295,756	5.4%	$1,797,490	5.6%	$301,138	1,496,352
17	Municipal	$849,297	2.7%	$163,677	2.1%	$636,973	2.7%	$800,650	2.5%	$134,135	666,515
18	Unmetered	$2,457	0.0%	$97,493	1.2%	$1,843	0.0%	$99,336	0.3%	$16,642	82,694
19–21	[redacted]										
22	**Total**	**$31,923,584**	**100.0%**	**$7,980,896**	**100.0%**	**$23,942,688**	**100.0%**	**$31,923,584**	**100.0%**	**$5,348,243**	**26,575,341**
23											
24											

25 1) Used WACC of 7.01 % from 2016 Compliance Filing gives an adjustment factor of $(1.0701)^{21}$= 1.0701

26 2)

WACC	7.01%
$(1 + \text{WACC})^2$	1.07010

Table 1: 2016 PCR - Allocation of 25% of 2016 program expenses associated with system benefits

Program Cost Recovery by Benefits

System Benefits	25%	$7,669,491
Combined Class and Participant Benefits	75%	$23,008,473
Total[1]	100%	$30,677,964

Functionalization of system Benefit DSM Costs

	Factors
Generation	100%
Transmission	0%
Distribution	0%
Retail	0%

Classification of System Benefit DSM Costs

	Factors[2]
Demand-related	35.81%
Energy-related	64.19%
Total	100.00%

COLUMN	A	B	C	D	E	F	G	H
	Demand-Related Costs			Energy-Related Costs			Total	
Rate Class	3 CP kW Demands[3]	Relative Share	($)	MWh Energy Requirement[4]	Relative Share	($)	Relative Share	Total Amount ($)
Residential[5]	3,644,446	61.5%	$1,690,063	4,732,129	48.4%	$2,382,828	53.1%	$4,072,891
Small General	142,921	2.4%	$66,278	295,841	3.0%	$148,968	2.8%	$215,246
General Demand	1,244,244	21.0%	$577,002	2,530,253	25.9%	$1,274,089	24.1%	$1,851,091
Large General	167,018	2.8%	$77,453	435,385	4.5%	$219,235	3.9%	$296,687
Small Industrial	110,359	1.9%	$51,178	263,014	2.7%	$132,439	2.4%	$183,616
Medium Industrial	188,083	3.2%	$87,221	487,030	5.0%	$245,240	4.3%	$332,461
Large Industrial	245,023	4.1%	$113,626	711,333	7.3%	$358,186	6.2%	$471,813
Municipal	112,340	1.9%	$52,096	173,183	1.8%	$87,205	1.8%	$139,301
Unmetered	68,809	1.2%	$31,909	95,353	1.0%	$48,014	1.0%	$79,924
[redacted]								
Total	**5,923,244**	**100.0%**	**$2,746,826**	**9,776,070**	**100.0%**	**$4,922,665**	**100.0%**	**$7,669,491**
Classification Breakdown		35.81%			64.19%			100.0%

Numbers may not add due to rounding

1 Source: EfficiencyOne 2017 DSM Annual Progress Report filed in March 31, 2017

2 Source: " NSUARB IR-02 attachment 2 page 2 "FAM AA Riders to come into effect in 2017" as provided in NSPI Responses to NSUARB Information Requests ; NSUARB M07703

3 Source: " NSUARB IR-02 attachment "FAM AA Riders to come into effect in 2017" as provided in NSPI Responses to NSUARB Information Requests ; NSUARB M07703

4 Source: " NSUARB IR-02 attachment "FAM AA Riders to come into effect in 2017" as provided in NSPI Responses to NSUARB Information Requests ; NSUARB M07703

5 All residential rate classes use the same unit fixed cost estimate

Table 2: 2016 PCR - Allocation of 75% of actual 2016 DSM Program expenditures associated with benefits realized by participating classes

Line #												
1												
2	COLUMN	A	B	C	D	E	F	G	H	I	J	K
3	FORMULA										∑ col A to I	J * 75%
4												
5	Program	Efficient Product (Residential)	Existing Houses	New Houses	Efficient Product (BNI)	Custom Incentives	Direct Installation (BNI)	Education and Outreach	Development and Research	Other Enabling Strategies	All Program Costs Combined	Program Costs Directly Assigned to Participating rate classes (75% of the total)
6	**Rate Class**											
7	Residential	$5,518,667	$7,417,755	$1,311,785	$443,284	$18,408	$336,676	$939,001	$208,785	$518,064	$16,712,426	$12,534,320
8	Small General	$6,488	$18,740	$0	$446,259	$0	$406,014	$54,665	$12,155	$30,209	$974,530	$730,898
9	General Demand	$8,438	$31,452	$0	$3,393,411	$1,908,640	$1,980,691	$455,884	$101,365	$252,081	$8,131,963	$6,098,972
10	Large General	$407	$0	$0	$501,852	$352,276	$0	$53,205	$11,830	$29,417	$948,987	$711,740
11	Small Industrial	$407	$0	$0	$604,835	$282,894	$73,756	$59,907	$13,320	$33,114	$1,068,233	$801,175
12	Medium Industrial	$406	$0	$0	$297,844	$536,954	$0	$51,949	$11,551	$28,750	$927,455	$695,591
13	Large Industrial	$0	$0	$0	$379,890	$633,549	$0	$63,040	$14,017	$34,885	$1,125,380	$844,035
14	Municipal	$93,960	$101,591	$36,128	$127,310	$300,083	$51,392	$44,233	$9,835	$24,458	$788,990	$591,743
15	Unmetered	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
16	[redacted]											
17												
18	**Total**	**$5,628,773**	**$7,569,539**	**$1,347,913**	**$6,194,686**	**$4,032,804**	**$2,848,529**	**$1,721,884**	**$382,857**	**$950,978**	**$30,677,964**	**$23,008,473**
19												
20												
22	**Total Spending per Audite**	**$5,665,186**	**$7,613,413**	**$1,355,260**	**$6,228,007**	**$4,036,971**	**$2,856,126**	**$1,715,600**	**$383,302**	**$950,013**	**$30,803,878**	
23	Interest earned on DSM	-$40,555	-$52,351	-$9,122	-$41,734	-$19,645	-$15,874	-$4,927	-$1,886	-$3,796	-$189,891	
24	Amortization on Capital	$4,142	$8,478	$1,775	$8,412	$15,479	$8,277	$11,210	$1,442	$4,762	$63,977	
25	**Actual Spending Total**	**$5,628,773**	**$7,569,539**	**$1,347,913**	**$6,194,686**	**$4,032,804**	**$2,848,529**	**$1,721,884**	**$382,857**	**$950,978**	**$30,677,964**	
27	Numbers may not add due to rounding											**Table 1, 2016 Actual Spending**

REDACTED (CONFIDENTIAL INFORMATION REMOVED)

Table 3: 2016 PCR - 2016 DSM program participation by rate class (Relative Shares)

Line #	COLUMN	A	B	C	D	E	F	G	H	I
4	**Program**	**Efficient Product Rebates (Residential)**	**Existing Houses**	**New Houses**	**Efficient Product Rebates (BNI)**	**Custom Incentives**	**Direct Installation**	**Education and Outreach**	**Development and Research**	**Other Enabling Strategies**
5	**Rate Class**									
6	Residential	98.0%	98.0%	97.3%	7.2%	0.5%	11.8%	54.5%	54.5%	54.5%
7	Small General	0.1%	0.2%	0.0%	7.2%	0.0%	14.3%	3.2%	3.2%	3.2%
8	General Demand	0.1%	0.4%	0.0%	54.8%	47.3%	69.5%	26.5%	26.5%	26.5%
9	Large General	0.0%	0.0%	0.0%	8.1%	8.7%	0.0%	3.1%	3.1%	3.1%
10	Small Industrial	0.0%	0.0%	0.0%	9.8%	7.0%	2.6%	3.5%	3.5%	3.5%
11	Medium Industrial	0.0%	0.0%	0.0%	4.8%	13.3%	0.0%	3.0%	3.0%	3.0%
12	Large Industrial	0.0%	0.0%	0.0%	6.1%	15.7%	0.0%	3.7%	3.7%	3.7%
13	Municipal	1.7%	1.3%	2.7%	2.1%	7.4%	1.8%	2.6%	2.6%	2.6%
14	Unmetered	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
15–16	[redacted]									
17	**Total**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**

Table 4: 2016 PCR - allocation of 2016 program costs among rate classes

Line #							
1							
2	COLUMN	A	B	C	D	E	F
3							
4							
5		Table 1		Table 2			
6	FORMULA	Column H		Column K		A + C	
7		System Benefit Costs (25% of the total expenditure allocated to classes using COS methodology)		Participating Class Benefit Costs (75% of the total expenditure directly assigned to participating classes)		2016 PCR	
8		($)	Relative Share	($)	Relative Share	($)	Relative Share
9	**Rate Class**						
10	Residential	$4,072,891	53.1%	$12,534,320	54.5%	$16,607,210	54.1%
11	Small General	$215,246	2.8%	$730,898	3.2%	$946,144	3.1%
12	General Demand	$1,851,091	24.1%	$6,098,972	26.5%	$7,950,063	25.9%
13	Large General	$296,687	3.9%	$711,740	3.1%	$1,008,427	3.3%
14	Small Industrial	$183,616	2.4%	$801,175	3.5%	$984,791	3.2%
15	Medium Industrial	$332,461	4.3%	$695,591	3.0%	$1,028,052	3.4%
16	Large Industrial	$471,813	6.2%	$844,035	3.7%	$1,315,848	4.3%
17	Municipal	$139,301	1.8%	$591,743	2.6%	$731,044	2.4%
18	Unmetered	$79,924	1.0%	$0	0.0%	$79,924	0.3%
19	[redacted]						
20							
21	**Total**	**$7,669,491**	**100.0%**	**$23,008,473**	**100.0%**	**$30,677,964**	**100.0%**
22	Numbers may not add due to rounding						
23							
24							

TABLE 3 Calculation Costs by class

COLUMN	A	B	C	D	E	F	G	H	I	J
FORMULA	Table 2 Column K		Table 1 Column H		Table 2 Column L		C + E			G - I
	Total Expenditure by Rate class		System Benefit Costs (25% of the total expenditure allocated to classes using COS methodology)		Participating Class benefit Costs (75% of the total expenditure directly assigned to participating classes)		Total		Actual	
	$ Amount	Relative Share	$ Amount	Relative Share	$ Amount	Relative Share	$ Amount	Relative Share	2016 Collections	Var. bfr WACC
Rate Class										
Residential5	$16,712,426	54.5%	$4,072,891	53.1%	$12,534,320	54.5%	$16,607,210	54.1%	$16,607,210	0
Small General	$974,530	3.2%	$215,246	2.8%	$730,898	3.2%	$946,144	3.1%	$946,144	0
General Demand	$8,131,963	26.5%	$1,851,091	24.1%	$6,098,972	26.5%	$7,950,063	25.9%	$7,950,063	0
Large General	$948,987	3.1%	$296,687	3.9%	$711,740	3.1%	$1,008,427	3.3%	$1,008,427	0
Small Industrial	$1,068,233	3.5%	$183,616	2.4%	$801,175	3.5%	$984,791	3.2%	$984,791	0
Medium Industrial	$927,455	3.0%	$332,461	4.3%	$695,591	3.0%	$1,028,052	3.4%	$1,028,052	0
Large Industrial	$1,125,380	3.7%	$471,813	6.2%	$844,035	3.7%	$1,315,848	4.3%	$1,315,848	0
Municipal	$788,990	2.6%	$139,301	1.8%	$591,743	2.6%	$731,044	2.4%	$731,044	0
Unmetered	$0	0.0%	$79,924	1.0%	$0	0.0%	$79,924	0.3%	$79,924	0
[redacted]										
Total	**$30,677,964**	**100.0%**	**$7,669,491**	**100.0%**	**$23,008,473**	**100.0%**	**$30,677,964**	**100.0%**	**$30,677,964**	**0**

1) Used WACC of 7.01 % from 2016 Compliance Filing gives an adjustment factor of (1.0701)0= 1.00

WACC

$(1 + WACC)^2$

Table 1: 2017 PCR - Allocation of 25% of 2017 program expenses associated with system benefits

COLUMN	A	B	C	D	E	F	G	H

Program Cost Recovery by Benefits

System Benefits	25%	$7,534,119
Combined Class and Participant Benefits	75%	$22,602,358
Total[1]	100%	$30,136,478

Functionalization of system Benefit DSM Costs

	Factors
Generation	100%
Transmission	0%
Distribution	0%
Retail	0%

Classification of System Benefit DSM Costs

	Factors[2]
Demand-related	36.20%
Energy-related	63.80%
Total	100.00%

	Demand-Related Costs			Energy-Related Costs			Total	
Rate Class	3 CP kW Demands[3]	Relative Share	($)	MWh Energy Requirement[4]	Relative Share	($)	Relative Share	Total Amount ($)
Residential[5]	3,535,616	62.2%	$1,696,320	4,785,636	48.7%	$2,341,631	53.6%	$4,037,951
Small General	151,256	2.7%	$72,569	304,723	3.1%	$149,102	2.9%	$221,672
General Demand	1,142,508	20.1%	$548,153	2,532,595	25.8%	$1,239,209	23.7%	$1,787,362
Large General	161,919	2.8%	$77,686	425,288	4.3%	$208,095	3.8%	$285,781
Small Industrial	120,558	2.1%	$57,842	260,869	2.7%	$127,644	2.5%	$185,486
Medium Industrial	185,237	3.3%	$88,873	492,979	5.0%	$241,217	4.4%	$330,090
Large Industrial	233,693	4.1%	$112,121	743,201	7.6%	$363,651	6.3%	$475,773
Municipal	97,927	1.7%	$46,983	150,147	1.5%	$73,467	1.6%	$120,451
Unmetered	56,161	1.0%	$26,945	89,946	0.9%	$44,011	0.9%	$70,955
[redacted]								
Total	**5,684,874**	**100.0%**	**$2,727,492**	**9,823,397**	**100.0%**	**$4,806,628**	**100.0%**	**$7,534,119**
Classification Breakdown		36.20%			63.80%			100.0%

Numbers may not add due to rounding

1 Source: EfficiencyOne 2017 DSM Annual Progress Report filed in March 31, 2018

2 Source: Appendix B-1 - Part 1 FAM AA COS (Partially Confidential) as provided in NSPI Responses to NSUARB Information Requests ; NSUARB M8570

3 Source:Appendix B-1 - Part 1 FAM AA COS (Partially Confidential) as provided in NSPI Responses to NSUARB Information Requests ; NSUARB M8570

4 Source: Appendix B-1 - Part 1 FAM AA COS (Partially Confidential) as provided in NSPI Responses to NSUARB Information Requests ; NSUARB M8570

5 All residential rate classes use the same unit fixed cost estimate

Table 2: 2017 PCR - Allocation of 75% of actual 2017 DSM Program expenditures associated with benefits realized by participating classes

Line #												
1												
2	COLUMN	A	B	C	D	E	F	G	H	I	J	K
3	FORMULA										∑ col A to I	J * 75%
4												
5	Program	Efficient Product (Residential)	Existing Houses	New Houses	Efficient Product (BNI)	Custom Incentives	Direct Installation (BNI)	Education and Outreach	Development and Research	Other Enabling Strategies	All Program Costs Combined	Program Costs Directly Assigned to Participating rate classes (75% of the total)
6	**Rate Class**											
7	Residential	$4,116,518	$6,993,314	$1,250,043	$441,859	$35,813	$510,340	$779,071	$119,509	$440,782	$14,687,250	$11,015,437
8	Small General	$8,595	$1,657	$0	$444,421	$0	$386,726	$49,110	$7,533	$27,785	$925,828	$694,371
9	General Demand	$11,504	$0	$0	$4,045,652	$1,491,412	$2,615,690	$476,526	$73,099	$269,605	$8,983,488	$6,737,616
10	Large General	$398	$0	$0	$418,182	$760,295	$0	$68,809	$10,555	$38,930	$1,297,169	$972,877
11	Small Industrial	$1,193	$0	$0	$434,368	$436,562	$133,551	$58,699	$9,004	$33,210	$1,106,588	$829,941
12	Medium Industrial	$887	$0	$0	$280,612	$502,352	$0	$45,752	$7,018	$25,885	$862,505	$646,879
13	Large Industrial	$795	$0	$0	$379,932	$761,170	$0	$66,650	$10,224	$37,708	$1,256,480	$942,360
14	Municipal	$68,210	$119,180	$124,917	$339,157	$188,702	$84,245	$53,955	$8,277	$30,526	$1,017,170	$762,878
15	Unmetered	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
16	[redacted]											
17												
18	**Total**	**$4,208,101**	**$7,114,151**	**$1,374,960**	**$6,784,184**	**$4,176,305**	**$3,730,553**	**$1,598,572**	**$245,219**	**$904,431**	**$30,136,478**	**$22,602,358**
19												
20												
22	**Total Spending per Audite**	**$4,234,023**	**$7,157,975**	**$1,383,430**	**$6,825,976**	**$4,202,032**	**$3,753,534**	**$1,608,420**	**$246,730**	**$910,003**	**$30,322,122**	
23	Interest earned on DSM	-$28,093	-$47,494	-$9,179	-$45,291	-$27,881	-$24,905	-$10,672	-$1,637	-$6,038	-$201,190	
24	Amortization on Capital	$2,171	$3,670	$709	$3,500	$2,154	$1,924	$825	$126	$467	$15,546	
25	**Actual Spending Total**	**$4,208,101**	**$7,114,151**	**$1,374,960**	**$6,784,184**	**$4,176,305**	**$3,730,553**	**$1,598,572**	**$245,219**	**$904,431**	**$30,136,478**	
26												
27	Numbers may not add due to rounding											**Table 1, 2017 Actual Spending**

Table 2: 2017 DSM program participation by rate class (Relative Shares)

Line #	COLUMN	A	B	C	D	E	F	G	H	I
4	Program	Efficient Product Rebates (Residential)	Existing Houses	New Houses	Efficient Product Rebates (BNI)	Custom Incentives	Direct Installation	Education and Outreach	Development and Research	Other Enabling Strategies
5	**Rate Class**									
6	Residential	97.8%	98.3%	90.9%	6.5%	0.9%	13.7%	48.7%	48.7%	48.7%
7	Small General	0.2%	0.0%	0.0%	6.6%	0.0%	10.4%	3.1%	3.1%	3.1%
8	General Demand	0.3%	0.0%	0.0%	59.6%	35.7%	70.1%	29.8%	29.8%	29.8%
9	Large General	0.0%	0.0%	0.0%	6.2%	18.2%	0.0%	4.3%	4.3%	4.3%
10	Small Industrial	0.0%	0.0%	0.0%	6.4%	10.5%	3.6%	3.7%	3.7%	3.7%
11	Medium Industrial	0.0%	0.0%	0.0%	4.1%	12.0%	0.0%	2.9%	2.9%	2.9%
12	Large Industrial	0.0%	0.0%	0.0%	5.6%	18.2%	0.0%	4.2%	4.2%	4.2%
13	Municipal	1.6%	1.7%	9.1%	5.0%	4.5%	2.3%	3.4%	3.4%	3.4%
14	Unmetered	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
15–16	[redacted]									
17	**Total**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**

Table 4: 2017 PCR - allocation of 2017 program costs among rate classes

Line #	COLUMN	A	B	C	D	E	F
1							
2	COLUMN	A	B	C	D	E	F
3							
4							
5		Table 1		Table 2			
6	FORMULA	Column H		Column K		A + C	
7		System Benefit Costs (25% of the total expenditure allocated to classes using COS methodology)		Participating Class Benefit Costs (75% of the total expenditure directly assigned to participating classes)		2016 PCR	
8		($)	Relative Share	($)	Relative Share	($)	Relative Share
9	**Rate Class**						
10	Residential	$4,037,951	53.6%	$11,015,437	48.7%	$15,053,388	50.0%
11	Small General	$221,672	2.9%	$694,371	3.1%	$916,043	3.0%
12	General Demand	$1,787,362	23.7%	$6,737,616	29.8%	$8,524,978	28.3%
13	Large General	$285,781	3.8%	$972,877	4.3%	$1,258,657	4.2%
14	Small Industrial	$185,486	2.5%	$829,941	3.7%	$1,015,427	3.4%
15	Medium Industrial	$330,090	4.4%	$646,879	2.9%	$976,969	3.2%
16	Large Industrial	$475,773	6.3%	$942,360	4.2%	$1,418,132	4.7%
17	Municipal	$120,451	1.6%	$762,878	3.4%	$883,328	2.9%
18	Unmetered	$70,955	0.9%	$0	0.0%	$70,955	0.2%
19–20	[redacted]						
21	**Total**	**$7,534,119**	**100.0%**	**$22,602,358**	**100.0%**	**$30,136,478**	**100.0%**
22	Numbers may not add due to rounding						
23							
24							

TABLE 3 Calculation Costs by class

Line #											
1											
2											
3	**COLUMN**	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**
4											
5	**FORMULA**	**Table 2 Column K**		**Table 1 Column H**		**Table 2 Column L**		**C + E**			**G - I**
6											
7		**Total Expenditure by Rate class**		**System Benefit Costs (25% of the total expenditure allocated to classes using COS methodology)**		**Participating Class benefit Costs (75% of the total expenditure directly assigned to participating classes)**		**Total**		**Actual**	
8		**$ Amount**	**Relative Share**	**$ Amount**	**Relative Share**	**$ Amount**	**Relative Share**	**$ Amount**	**Relative Share**	**2016 Collections**	**Var. bfr WACC**
9	**Rate Class**										
10	Residential5	$14,687,250	48.7%	$4,037,951	53.6%	$11,015,437	48.7%	$15,053,388	50.0%	$15,053,388	0
11	Small General	$925,828	3.1%	$221,672	2.9%	$694,371	3.1%	$916,043	3.0%	$916,043	0
12	General Demand	$8,983,488	29.8%	$1,787,362	23.7%	$6,737,616	29.8%	$8,524,978	28.3%	$8,524,978	0
13	Large General	$1,297,169	4.3%	$285,781	3.8%	$972,877	4.3%	$1,258,657	4.2%	$1,258,657	0
14	Small Industrial	$1,106,588	3.7%	$185,486	2.5%	$829,941	3.7%	$1,015,427	3.4%	$1,015,427	0
15	Medium Industrial	$862,505	2.9%	$330,090	4.4%	$646,879	2.9%	$976,969	3.2%	$976,969	0
16	Large Industrial	$1,256,480	4.2%	$475,773	6.3%	$942,360	4.2%	$1,418,132	4.7%	$1,418,132	0
17	Municipal	$1,017,170	3.4%	$120,451	1.6%	$762,878	3.4%	$883,328	2.9%	$883,328	0
18	Unmetered	$0	0.0%	$70,955	0.9%	$0	0.0%	$70,955	0.2%	$70,955	0
19–21	[redacted]										
22	**Total**	**$30,136,478**	**100.0%**	**$7,534,119**	**100.0%**	**$22,602,358**	**100.0%**	**$30,136,478**	**100.0%**	**$30,136,478**	**0**
23											
24											

25 1) Used WACC of 7.01 % from 2016 Compliance Filing gives an adjustment factor of (1.0701)0= 1.00

26

WACC

$(1 + WACC)^2$

Request IR-3:

What is the overhead cost to NSP to administer the contract of the proposed 2019 DSM plan including the cost to participate in the DSMAG Working Group?

Response IR-3:

The administration of DSM programming is part of NS Power's overall OM&G budget. Oversight of this function involves a number of groups within NS Power, including Generation Planning, Load Forecasting, Regulatory Affairs, and Legal Services. NS Power has not calculated the overhead costs to administer the DSM contract.

Request IR-4:

Please provide annual electricity consumption of each NSP rate classes by end use categories for 2017.

Response IR-4:

End use consumption is estimated based on data from Natural Resources Canada calibrated to actual sales, internal surveys, and Energy Information Administration (EIA) data for the New England region. End use consumption is only estimated for the Residential, Small General and General Demand classes. Please refer to Attachment 1 for consumption by end use for these classes based on the end use intensity estimates (scaled to 2017 class sales) which is also provided in the 2018 10 Year Load Forecast (M08670). These estimates are based on the energy consumed by an "average" consumer; actual consumption will vary considerably between individual customers. While the totals for each "appliance" are estimated, the sum of all of the data matches total consumption (GWh) for the respective classes. This is actual consumption in 2017 and estimated consumption for 2019. DSM programs are taken into account in overall class level sales but impacts on particular end uses are not calculated.

REDACTED (CONFIDENTIAL INFORMATION REMOVED)

Residential end use consumption, 2017 estimate

	Electric Baseboard/Forced Air Heat	Heat Pump Heat	Secondary Electric Heat	Central AC	Heat Pump Cooling	Room AC	Electric Hot Water	Stove	Main Refrigerator	Secondary Refrigerator	Freezer	Dishwasher	Clothes Washer	Electric Dryer	TV	Furnace Fan	Light	Misc	Electric Vehicles	Solar Generation
Residential GWh/year	1,219	446	72	13	28	20	711	240	182	26	90	68	21	278	328	66	348	223	0	-2

Commercial end use consumption, 2017 estimate

	Heating	Cooling	Ventilation	Water Heat	Cooking	Refrigeration	Light	Office	Misc
Small General GWh/year	45	39	22	2	3	38	58	17	57
General Demand GWh/year	384	330	183	18	26	326	489	141	483

Request IR-5:

Please provide the estimated annual electricity consumption for each NSP rate classes by end use categories for 2019.

Response IR-5:

End use consumption is estimated based on data from Natural Resources Canada calibrated to actual sales, internal surveys, and EIA data for the New England region. End use consumption is only estimated for the Residential, Small General and General Demand classes. Please refer to Attachment 1 for consumption by end use for these classes based on the end use intensity estimates (scaled to 2019 forecasted class sales) which is also provided in the 2018 10 Year Load Forecast (M08670). These estimates are based on the energy consumed by an “average” consumer; actual consumption will vary considerably between individual customers. While the totals for each “appliance” are estimated, the sum of all of the data matches total consumption (GWh) for the respective classes. This is actual consumption in 2017 and estimated consumption for 2019. DSM programs are taken into account in overall class level sales but impacts on particular end uses are not calculated.

REDACTED (CONFIDENTIAL INFORMATION REMOVED)

Residential end use consumption, 2019 estimate

	Electric Baseboard/Forced Air Heat	Heat Pump Heat	Secondary Electric Heat	Central AC	Heat Pump Cooling	Room AC	Electric Hot Water	Stove	Main Refrigerator	Secondary Refrigerator	Freezer	Dishwasher	Clothes Washer	Electric Dryer	TV	Furnace Fan	Light	Misc	Electric Vehicles	Solar Generation
Residential GWh/year	1,115	551	76	13	35	20	736	246	179	25	89	67	19	284	326	64	339	229	1	-6

Commercial end use consumption, 2019 estimate

	Heating	Cooling	Ventilation	Water Heat	Cooking	Refrigeration	Light	Office	Misc
Small General GWh/year	44	38	21	2	3	38	56	15	57
General Demand GWh/year	379	327	184	18	25	329	483	134	496
	45	39	22	2	3	38	58	17	57
	384	330	183	18	26	326	489	141	483