



**SOUTH DAKOTA**

**Demand Side Management Plan**

**Update**

**Results for July 1, 2015 – December 31, 2016**

**April 21, 2017**

## **Introduction**

NorthWestern Energy's ("NorthWestern") South Dakota Demand Side Management ("DSM") Program Plan was approved by the South Dakota Public Utility Commission ("Commission") with its order issued on June 16, 2014 in Docket No. GE12-001. The two-year Plan featured a program ramp-up period to allow the DSM program portfolio to become fully operational and the customer base to become better informed about program features and availability.

NorthWestern provided an update to the Commission, including a revised plan for Year 2 (July 1, 2015 – June 30, 2016), in July 2015 and committed to providing quarterly updates during Year 2. The Commission approved updated energy efficiency program tariffs and moving forward with the Year 2 Plan at its September 15, 2015 meeting (Docket No. GE15-002). NorthWestern requested an extension of the Year 2 Plan through December 31, 2016, which was approved by the Commission on June 23, 2016 (Docket No. GE16-002).

The overall portfolio of energy efficiency programs for the two and a half year program period saw successes and disappointments too. Customer and trade ally participation was increasing and employees were encouraging customer participation. Participation in rebates was growing with both small projects and a few large projects that resulted in significant savings. Customer satisfaction with the E+ Audit for the Home was high and participation levels met expectations. However, after NorthWestern, in consultation with staff, considered a number of factors, the difficult decision was made to discontinue our South Dakota DSM programs as of December 31, 2016. The following is a brief discussion of the factors that were considered leading to this decision.

Several individual programs were simply not cost effective. It is NorthWestern's belief that low avoided energy costs and/or the lack of a separate capacity avoided cost value were the primary barriers to achieving cost effectiveness for some programs. Also, despite our best efforts, customer participation did not develop to the level expected for other programs. Other programs exceeded budgets when large individual projects were completed requiring substantial rebates resulting in suspending the electric rebate

programs before the end of 2016. Since customer participation is voluntary and the timing of customer participation or scope of projects are unpredictable, it is difficult to forecast participation levels, and budgets. Suspending programs impacts the continuity of programs.

NorthWestern utilizes a third party implementation contractor as it does not have staff to provide turnkey programs. When applied across fewer rebate programs, the base costs of the implementation contractor infrastructure reduces the cost effectiveness of the remaining programs. The majority of the base costs are required to maintain the implementation contractor infrastructure even when a program may be suspended in order to be positioned for the program to resume. The combined effect of fewer program offerings, implementation contractor infrastructure costs, and the unpredictability of continuous program operation, results in a program implementation structure that is not sustainably cost effective at this time. NorthWestern will continue to evaluate the potential to offer cost effective energy efficiency programs in South Dakota.

This report includes the cumulative activities completed during the July 1, 2015 through December 31, 2016 period and shows the Year 2 electric and natural gas savings through December 31, 2016 and electric and natural gas expenses through February 28, 2017, separated by quarter.

Also included with this filing are the cost-effectiveness analysis workbooks of the program activities for July 2014 through December 2016, applying the Program Administrator Cost (“PAC”) test, the Total Resource Cost (“TRC”) test, and Ratepayer Impact Measurement (“RIM”) test.

The cumulative savings and program activity expenditures are also being included in this report as all invoices associated with work completed through December 2016 have been processed and paid. In late October 2016, following discussion with Commission staff, the electric rebate program offerings were suspended as the electric budget had been fully allocated and NorthWestern was working to maintain costs within the 30% overage

allowed by the Commission. Customer responses to the Commercial electric rebate offerings drove program expenditures above the approved budget.

Electric and natural gas program offerings were introduced under the NorthWestern sub-brand of Efficiency Plus (“E+”). As provided in the updated Year 2 Plan, program offerings included the E+ Audits for the Home, lighting, insulation, and equipment rebates for existing homes and businesses, limited rebates for electric new construction for homes and businesses, and custom incentives for existing and new construction commercial projects.

### **July 1, 2015 – December 31, 2016 Results**

Since July 1, 2015, customer participation in the Year 2 E+ programs resulted in 11,726,522 kilowatt hours (“kWh”) of electric savings and 21,314 dekatherms (“dKt”) of natural gas savings.

Customer satisfaction with the E+ Audit for the Home remained high as customers valued learning more about how their homes use energy and actions they could take to manage energy use and, in some cases, improve the natural gas safety of their homes. A total of 1,015 E+ Audits for the Home were completed since July 1, 2015 generating 287,184 kWh of electric and 3,872 dKt of natural gas savings.

Commercial electric program savings between July 1, 2015 and December 31, 2016 resulted in 11,399,251 kWh of savings, with the majority of these savings primarily driven through commercial lighting and commercial variable frequency drive (“VFD”) rebates for existing and new construction. High efficiency lighting and VFDs represented substantial energy savings in the commercial electric sector.

Residential lighting and residential electric offerings for both existing and new construction resulted in 40,087 kWh of savings during this reporting period. Additional details are provided in Table 1-1 and Table 2-1 below.

Commercial natural gas rebates during the July 1, 2015 – December 31, 2016 period brought 12,372 dKt of savings, with one customer’s project contributing 12,001 dKt. In

the same timeframe, customer participation in the residential natural gas rebate program generated 5,070 dKt of savings, with a majority of rebates given for high efficiency furnaces and programmable thermostats. Additional details are provided in Table 1-2 and Table 2-2 below.

Custom incentives under the E+ Business Partners program for existing or new businesses often require months of planning and development. One project completed in the fourth quarter of 2016 resulted in energy savings of 1,473,364 kWh.

Between July 1, 2015 and December 31, 2016, the calculated annual savings associated with all E+ program offerings total 11,726,522 kWh of electricity and 21,314 dKt of natural gas.

Table 1-1 and Table 1-2 show the number of rebates paid in the electric and natural gas programs, respectively, for the period of July 1, 2015 – December 31, 2016. The tables also include the number of completed E+ Audits for the Home.

Table 1-1. Number of Electric Rebates by Program

South Dakota Electric DSM Programs	Rebates						
	Total	2015		2016			
		July thru Sept	Oct thru Dec	Jan thru Mar	Apr thru June	July thru Sept	Oct thru Dec
E+ Energy Audit <sup>1</sup>	<b>1,015</b>	85	195	175	166	160	234
E+ Business Partners Program	<b>1</b>	-	-	-	-	-	1
E+ Commercial Lighting Rebate Program	<b>79</b>	14	6	10	12	8	29
E+ Residential Lighting Program	<b>12</b>	5	4	-	-	3	-
E+ Residential NC Electric Rebate Program	<b>1</b>	-	-	-	1	-	-
E+ Residential EX Electric Rebate Program	<b>27</b>	2	-	4	14	7	-
E+ Commercial NC Electric Rebate Program	<b>33</b>	-	-	24	-	9	-
E+ Commercial EX Electric Rebate Program	<b>70</b>	10	22	5	2	27	4
<b>Total</b>	<b>1,238</b>	<b>116</b>	<b>227</b>	<b>218</b>	<b>195</b>	<b>214</b>	<b>268</b>

1. Total number of residential audits completed between July 1, 2015 and December 31, 2016. This total includes audits that save electricity only, natural gas only, and audits that save both electricity and natural gas.

Table 1-2. Number of Natural Gas Rebates by Program

South Dakota Natural Gas DSM Programs	Rebates						
	Total	2015		2016			
		July thru Sept	Oct thru Dec	Jan thru Mar	Apr thru June	July thru Sept	Oct thru Dec
E+ Energy Audit <sup>1</sup>	<b>1,015</b>	85	195	175	166	160	234
E+ Business Partners Program	-	-	-	-	-	-	-
E+ Residential EX Gas Rebate Program	<b>385</b>	38	40	109	78	38	82
E+ Commercial EX Gas Rebate Program	<b>10</b>	1	1	-	2	5	1
<b>Total</b>	<b>1,410</b>	<b>124</b>	<b>236</b>	<b>284</b>	<b>246</b>	<b>203</b>	<b>317</b>

1. Total number of residential audits completed between July 1, 2015 and through December 31, 2016. This total includes audits that save electricity only, natural gas only, and audits that save both electricity and natural gas.

Table 2-1 and Table 2-2 shows the electric savings and the natural gas savings by program, respectively, for the period of July 1, 2015 – December 31, 2016.



Table 2-1. Electric Savings by Program

South Dakota Electric DSM Programs	kWh						
	Total	2015		2016			
		July thru Sept	Oct thru Dec	Jan thru Mar	Apr thru June	July thru Sept	Oct thru Dec
E+ Energy Audit	<b>287,184</b>	21,521	46,351	55,935	56,285	45,629	61,463
E+ Business Partners Program	<b>1,473,364</b>	-	-	-	-	-	1,473,364
E+ Commercial Lighting Rebate Program	<b>6,291,140</b>	975,479	276,306	415,923	281,218	1,031,349	3,310,864
E+ Residential Lighting Programs	<b>20,956</b>	19,993	248	-	-	715	-
E+ Residential NC Electric Rebate Program	<b>2,795</b>	-	-	-	2,795	-	-
E+ Residential EX Electric Rebate Program	<b>16,336</b>	263	-	4,927	2,403	8,743	-
E+ Commercial NC Electric Rebate Program	<b>175,179</b>	-	-	138,665	-	36,514	-
E+ Commercial EX Electric Rebate Program	<b>3,459,568</b>	546,873	516,957	196,308	89,620	1,816,945	292,865
<b>Total</b>	<b>11,726,522</b>	<b>1,564,129</b>	<b>839,862</b>	<b>811,758</b>	<b>432,321</b>	<b>2,939,895</b>	<b>5,138,556</b>

Table 2-2. Natural Gas Savings by Program

South Dakota Natural Gas DSM Programs	dKt						
	Total	2015		2016			
		July thru Sept	Oct thru Dec	Jan thru Mar	Apr thru June	July thru Sept	Oct thru Dec
E+ Energy Audit	<b>3,872</b>	301	864	665	583	592	867
E+ Business Partners Program	-	-	-	-	-	-	-
E+ Residential EX Gas Rebate Program	<b>5,070</b>	415	632	1,381	968	503	1,171
E+ Commercial EX Gas Rebate Program	<b>12,372</b>	4	42	-	131	12,113	82
<b>Total</b>	<b>21,314</b>	<b>720</b>	<b>1,538</b>	<b>2,046</b>	<b>1,682</b>	<b>13,208</b>	<b>2,120</b>

### **July 1, 2015 – February 28, 2017 Cost Summary**

The Total Year 2 budget with the approved extension was \$1,986,832. Expenditures between July 1, 2015 and February 28, 2017 total \$2,162,371 for home energy audits, rebates, rebate implementation, travel, program start-up for the new offerings in Year 2, and advertising. Of the Year 2 budget, \$633,300 was assigned to rebates and \$653,140 for program contractor expenses related to home energy audits. For this reporting period, expenditures on rebates totaled \$1,067,980 and program contractor expenses related to home energy audits totaled \$652,248. Other expenditures included: program contractor labor related to rebate programs in the amount of \$422,415, administrative expenses of \$2,700 and advertising costs of \$17,029. Tables 3-1 through 3-3 show a comparison of the Year 2 Budget to the expenditures for July 1, 2015 – February 28, 2017 cumulatively and broken out by electric and natural gas programs.

Table 3-1. Budget Compared to Expenditures Electric and Natural Gas

NorthWestern South Dakota DSM Program Budget (extension approved June 23, 2016) vs. Spending July 1, 2015 – February 28, 2017									
Electric and Natural Gas									
	Electric and Natural Gas Year 2 Budget (w/ Extension)	Electric and Natural Gas Year 2 Spend (07/01/15 - 02/28/17)	2015		2016				2017
			July thru Sept	Oct thru Dec	Jan thru Mar	Apr thru June	July thru Sept	Oct thru Dec	Jan thru Feb
<b>Contractor Expenses (DNV GL)</b>									
Residential Audit Program									
Program Startup (contractor cost):									
Two vehicles (approximate, at cost)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
RECAP & Database Development (T&M, not to exceed)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
In-home audits	\$ 653,140	\$ 652,248	\$ 54,240	\$ 124,433	\$ 111,671	\$ 105,928	\$ 103,228	\$ 102,049	\$ 50,699
Program Subtotal	\$ 653,140	\$ 652,248	\$ 54,240	\$ 124,433	\$ 111,671	\$ 105,928	\$ 103,228	\$ 102,049	\$ 50,699
Residential/Commercial Electric & Natural Gas Rebate Programs									
Program Startup (contractor cost)	\$ 11,692	\$ 11,026	\$ 1,232	\$ 729	\$ 1,172	\$ 7,821	\$ 72	\$ -	\$ -
Outside Services:	\$ 413,150	\$ 411,389	\$ 32,469	\$ 61,000	\$ 70,342	\$ 74,635	\$ 70,051		
Program Subtotal	\$ 424,842	\$ 422,415	\$ 33,701	\$ 61,729	\$ 71,513	\$ 82,456	\$ 70,124	\$ 75,787	\$ 27,105
<b>Contractor Expenses (DNV GL) Total</b>	<b>\$ 1,077,982</b>	<b>\$ 1,074,663</b>	<b>\$ 87,941</b>	<b>\$ 186,162</b>	<b>\$ 183,184</b>	<b>\$ 188,384</b>	<b>\$ 173,351</b>	<b>\$ 177,835</b>	<b>\$ 77,804</b>
<b>NorthWestern Energy Expenses</b>									
Rebates	\$ 633,300	\$ 1,067,980	\$ 100,588	\$ 64,345	\$ 86,223	\$ 63,380	\$ 164,712	\$ 346,563	\$ 242,168
Admin/non-labor (Travel, office supplies, etc.)	\$ 8,000	\$ 2,700	\$ 520	\$ 3	\$ -	\$ 7	\$ 1,289	\$ 881	\$ -
Advertising	\$ 267,550	\$ 17,029	\$ 5,945	\$ 2,598	\$ -	\$ 2,778	\$ 2,655	\$ 3,053	\$ -
<b>NorthWestern Energy Expenses Total</b>	<b>\$ 908,850</b>	<b>\$ 1,087,708</b>	<b>\$ 107,053</b>	<b>\$ 66,945</b>	<b>\$ 86,223</b>	<b>\$ 66,166</b>	<b>\$ 168,656</b>	<b>\$ 350,497</b>	<b>\$ 242,168</b>
<b>Totals</b>	<b>\$ 1,986,832</b>	<b>\$ 2,162,371</b>	<b>\$ 194,995</b>	<b>\$ 253,108</b>	<b>\$ 269,407</b>	<b>\$ 254,550</b>	<b>\$ 342,007</b>	<b>\$ 528,332</b>	<b>\$ 319,972</b>

Table 3-2. Budget Compared to Expenditures – Electric

NorthWestern South Dakota DSM Program Budget (extension approved June 23, 2016) vs. Spending July 1, 2015 – February 28, 2017									
<b>Electric</b>									
	Electric Year 2 Budget (w/ Extension)	Electric Year 2 Spend (07/01/15 - 02/28/17)	2015		2016				2017
			July thru Sept	Oct thru Dec	Jan thru Mar	Apr thru June	July thru Sept	Oct thru Dec	Jan thru Feb
<b>Contractor Expenses (DNV GL)</b>									
Residential Audit Program									
Program Startup (contractor cost):									
Two vehicles (approximate, at cost)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
RECAP & Database Development (T&M, not to exceed)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
In-home audits	\$ 326,570	\$ 326,124	\$ 27,120	\$ 62,217	\$ 55,836	\$ 52,964	\$ 51,614	\$ 51,024	\$ 25,350
Program Subtotal	\$ 326,570	\$ 326,124	\$ 27,120	\$ 62,217	\$ 55,836	\$ 52,964	\$ 51,614	\$ 51,024	\$ 25,350
Residential/Commercial Electric & Natural Gas Rebate Programs									
Program Startup (contractor cost)	\$ 8,184	\$ 7,718	\$ 863	\$ 510	\$ 820	\$ 5,475	\$ 51	\$ -	\$ -
Outside Services:	\$ 289,205	\$ 287,861	\$ 24,175	\$ 48,140	\$ 56,650	\$ 58,575	\$ 53,913	\$ 37,694	\$ 8,713
Program Subtotal	\$ 297,389	\$ 295,579	\$ 25,038	\$ 48,650	\$ 57,470	\$ 64,050	\$ 53,964	\$ 37,694	\$ 8,713
<b>Contractor Expenses (DNV GL) Total</b>	<b>\$ 623,959</b>	<b>\$ 621,703</b>	<b>\$ 52,158</b>	<b>\$ 110,867</b>	<b>\$ 113,306</b>	<b>\$ 117,014</b>	<b>\$ 105,578</b>	<b>\$ 88,719</b>	<b>\$ 34,062</b>
<b>NorthWestern Energy Expenses</b>									
Rebates	\$ 537,970	\$ 967,410	\$ 96,743	\$ 61,429	\$ 73,702	\$ 52,215	\$ 107,125	\$ 344,203	\$ 231,993
Admin/non-labor (Travel, office supplies, etc.)	\$ 4,000	\$ 1,372	\$ 279	\$ 2	\$ -	\$ 4	\$ 644	\$ 443	\$ -
Advertising	\$ 167,110	\$ 8,691	\$ 3,124	\$ 1,299	\$ -	\$ 1,389	\$ 1,327	\$ 1,552	\$ -
<b>NorthWestern Energy Expenses Total</b>	<b>\$ 709,080</b>	<b>\$ 977,472</b>	<b>\$ 100,146</b>	<b>\$ 62,730</b>	<b>\$ 73,702</b>	<b>\$ 53,607</b>	<b>\$ 109,097</b>	<b>\$ 346,198</b>	<b>\$ 231,993</b>
<b>Totals</b>	<b>\$ 1,333,039</b>	<b>\$ 1,599,176</b>	<b>\$ 152,304</b>	<b>\$ 173,597</b>	<b>\$ 187,008</b>	<b>\$ 170,621</b>	<b>\$ 214,675</b>	<b>\$ 434,917</b>	<b>\$ 266,055</b>

Table 3-3. Budget Compared to Expenditures – Natural Gas

NorthWestern South Dakota DSM Program Budget (extension approved June 23, 2016) vs. Spending July 1, 2015 – February 28, 2017									
Natural Gas									
	Natural Gas Year 2 Budget (w/ Extension)	Natural Gas Year 2 Spend (07/01/15 - 02/28/17)	2015		2016				2017
			July thru Sept	Oct thru Dec	Jan thru Mar	Apr thru June	July thru Sept	Oct thru Dec	Jan thru Feb
<b>Contractor Expenses (DNV GL)</b>									
Residential Audit Program									
Program Startup (contractor cost):									
Two vehicles (approximate, at cost)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
RECAP & Database Development (T&M, not to exceed)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
In-home audits	\$ 326,570	\$ 326,124	\$ 27,120	\$ 62,217	\$ 55,836	\$ 52,964	\$ 51,614	\$ 51,024	\$ 25,350
Program Subtotal	\$ 326,570	\$ 326,124	\$ 27,120	\$ 62,217	\$ 55,836	\$ 52,964	\$ 51,614	\$ 51,024	\$ 25,350
Residential/Commercial Electric & Natural Gas Rebate Programs									
Program Startup (contractor cost)	\$ 3,508	\$ 3,308	\$ 370	\$ 219	\$ 352	\$ 2,346	\$ 22	\$ -	\$ -
Outside Services:	\$ 123,945	\$ 123,527	\$ 8,293	\$ 12,860	\$ 13,692	\$ 16,060	\$ 16,138	\$ 38,092	\$ 18,392
Program Subtotal	\$ 127,453	\$ 126,835	\$ 8,663	\$ 13,079	\$ 14,043	\$ 18,406	\$ 16,160	\$ 38,092	\$ 18,392
<b>Contractor Expenses (DNV GL) Total</b>	<b>\$ 454,023</b>	<b>\$ 452,959</b>	<b>\$ 35,783</b>	<b>\$ 75,295</b>	<b>\$ 69,879</b>	<b>\$ 71,370</b>	<b>\$ 67,774</b>	<b>\$ 89,117</b>	<b>\$ 43,742</b>
<b>NorthWestern Energy Expenses</b>									
Rebates	\$ 95,330	\$ 100,570	\$ 3,846	\$ 2,915	\$ 12,521	\$ 11,166	\$ 57,587	\$ 2,360	\$ 10,175
Admin/non-labor (Travel, office supplies, etc.)	\$ 4,000	\$ 1,328	\$ 241	\$ 2	\$ -	\$ 4	\$ 644	\$ 438	\$ -
Advertising	\$ 100,441	\$ 8,338	\$ 2,821	\$ 1,299	\$ -	\$ 1,389	\$ 1,327	\$ 1,501	\$ -
<b>NorthWestern Energy Expenses Total</b>	<b>\$ 199,771</b>	<b>\$ 110,236</b>	<b>\$ 6,908</b>	<b>\$ 4,216</b>	<b>\$ 12,521</b>	<b>\$ 12,558</b>	<b>\$ 59,559</b>	<b>\$ 4,299</b>	<b>\$ 10,175</b>
<b>Totals</b>	<b>\$ 653,793</b>	<b>\$ 563,195</b>	<b>\$ 42,691</b>	<b>\$ 79,511</b>	<b>\$ 82,400</b>	<b>\$ 83,929</b>	<b>\$ 127,333</b>	<b>\$ 93,416</b>	<b>\$ 53,917</b>

## **Conclusion**

Over the past two and a half years, NorthWestern Energy raised overall customer awareness and participation in ways to save energy using rebates and home energy audits. After carefully reviewing DSM program costs and results, it was determined that NorthWestern is not able to successfully sustain cost effective energy efficiency offerings to our South Dakota customers at this time.

NorthWestern respectfully submits this report of the final energy saving results and expenditures of the DSM program for the work completed through December 31, 2016.