
2008 Long Term Acquisition Plan



APPENDIX F17

Demand Side Management Resource Options

This sub-appendix provides additional information on the differences between demand side management (**DSM**) option A and DSM option B analyzed in the 2008 LTAP portfolio analysis. This Appendix does not contain BC Hydro's complete risk assessment of Options A and B. The complete risk assessment is found in section 5.5 of the 2008 LTAP.

Codes and Standards

Table 1 summarizes the codes and standards included in both DSM Options A and B. Table 2 summarizes the additional codes and standards included in DSM Option B.

Table 1. Codes and Standards in DSM Options A and B

Technology	Government	Planned Energy Savings in F2020 (GWh/yr)	Action	Effective Date
Incandescent lighting	Federal	845	Ban inefficient incandescent lamps	2016
Standby power	Federal	559	Harmonize with California levels	2012
Set-top boxes	Federal	436	Harmonize with California levels	2010
Building code	B.C.	353	Mandate EnerGuide 80 for residential, ASHRAE 90.1-2004 for commercial	2010
External power supplies	Federal	274	Harmonize with California levels	2010
Large motors	B.C.	125	Raise minimum efficiency levels to NEMA Premium levels	2010
Ceiling fans	Federal	123	Mandate current Energy Star levels as minimum	2008
Clothes washers	B.C.	120	Mandate current Energy Star levels as minimum	2010
Furnace blower motors	B.C.	115	Mandate variable speed motors	2012
Streetlights	B.C.	59	Mandate 25 per cent efficiency improvement and then another 25 per cent via LED	2010/2015
Torchieres	Federal	58	Ban incandescent and halogen torchieres	2010
Hot tubs	Federal	55	Harmonize with California levels	2012
Battery chargers	Federal	42	Mandate emerging Energy Star level as minimum	2012
Refrigerators and freezers	B.C. or Federal	38	Mandate current Energy Star levels as minimum	2010
Refrigerators and freezers	B.C.	32	PST exemption for Energy Star-qualified models	2008
High intensity discharge lamps and ballasts	Federal	25	Mandate 320 W maximum lamp and 40 W maximum ballast	2012
Room air conditioners	B.C.	9	Mandate current Energy Star levels as minimum	2012
Packaged terminal air-conditioners	Federal	6	Mandate current Energy Star levels as minimum	2012
Clothes washers	B.C.	4	PST exemption for Energy Star-qualified models	2008
Ice cube makers	Federal	4	Harmonize with California levels	2008
Dishwashers	Federal	3	Strengthen minimum efficiency above pre-2007 Energy Star level	2010
Large air-conditioners	Federal	2	Harmonize with U.S. levels	2012
Commercial clothes washers	Federal	1	Harmonize with U.S. levels	2008
Total		3,289		

Table 2. Additional Codes and Standards in DSM Option B

Technology	Government	Planned Energy Savings in F2020 (GWh/yr)	Action	Effective Date
Dusk to dawn luminaires	B.C.	99	Require integrated photocell	2012
Small motors	B.C.	53	Minimum efficiency requirements for motors in unregulated products	2012
Building code	B.C.	28	Incremental requirements every 5 years	2015
Commercial building operators	B.C.	21	Mandatory energy management training for operators of larger commercial buildings	2010
Seasonal lights	Federal or B.C.	10	Ban incandescent seasonal lights	2013
Drinking water coolers	B.C.	1	PST exemption for Energy Star-qualified models	2010
Total		212		

Differences in the relative risks of the codes and standards portions of DSM Options A and B relate to differences in the status of their component items. Most of the codes and standards in Option A have either been enacted or announced or are planned by the Federal or B.C. Governments. In contrast, most of the codes and standards in Option B are not yet planned by either Government. BC Hydro is of the view that they are potentially feasible. To realize the additional 212 GWh per year of savings in DSM Option B, BC Hydro and other stakeholders would need to convince the Federal or B.C. Governments to introduce the codes and standards in Table 2.

Rate Structures

The parameters of the inclining block rate structures included in DSM Options A and B are summarized in Table 3.

Table 3. Inclining Block Rate Structures in DSM Options A and B

	Option A		Option B	
Residential				
Consumption Threshold	1,350 kWh/month		800 kWh/month	
(real cents/kWh)	Step 1 Price	Step 2 Price	Step 1 Price	Step 2 Price
F2010	6.15	9.63	6.15	8.03
F2015	6.48	12.00	6.15	10.03
F2020	7.09	12.00	6.15	11.35
F2025	7.15	12.00	6.15	11.48
Planned Energy Savings in F2020 (GWh/yr)	710		978	
Small Commercial¹				
Consumption Threshold	1,250 kWh/month		2,300 kWh/month	
F2010	6.91	8.17	6.91	8.80
F2015	6.91	9.51	6.91	10.80
F2020	6.91	10.38	6.99	12.00
F2025	6.91	10.47	7.07	12.00
Planned Energy Savings in F2020 (GWh/yr)	141		182	
Large Commercial²				
Consumption Threshold	14,700 kWh/month		26,000 kWh/month	
F2010	5.51	6.49	5.51	6.98
F2015	5.51	7.53	5.51	8.54
F2020	5.51	8.21	5.51	9.56
F2025	5.51	8.28	5.51	9.66
Planned Energy Savings in F2020 (GWh/yr)	246		303	
Small Industrial³				
Consumption Threshold	119,000 kWh/month		300,000 kWh/month	
F2010	4.86	5.72	4.86	6.15
F2015	4.86	6.64	4.86	7.53
F2020	4.86	7.24	4.86	8.42
F2025	4.86	7.30	4.86	8.52
Planned Energy Savings in F2020 (GWh/yr)	272		309	
Large Industrial⁴				
Consumption Threshold	90% of CBL		90% of CBL	
F2010	2.59	7.36	2.59	7.36
F2015	2.93	7.36	2.93	7.36
F2020	3.16	7.36	3.16	7.36
F2025	3.19	7.36	3.19	7.36
Planned Energy Savings in F2020 (GWh/yr)	455		455	
Total Energy Savings in F2020 (GWh/yr)	1,970		2,370	

¹ General service under 35 kW rate class.

² General service over 35 kW rate class, secondary service.

³ General service over 35 kW rate class, primary service.

⁴ Transmission rate class.

Rate structures included in Option B were designed to generate more electricity savings than those included in Option A. With the exception of residential, this meant the Option B rate structure had a higher consumption threshold than Option A. In turn, and due to the design objective of class revenue neutrality, this meant Option B had higher step 2 prices than Option A. Using the price elasticity assumption as discussed in Appendix E of the 2008 Long-Term Acquisition Plan, the analysis forecast more electricity savings from higher step 2 prices, even though less customer load was exposed to these higher prices.

This situation is reversed in the case of residential, where the Option B rate structure has a lower consumption threshold than Option A. The reason for this relates to the 12 cent per kWh cap that was applied to step 2 prices to provide an upper bound estimate of the potential long-term cost of new supply over the DSM Plan timeframe. The price cap was an assumption only and does not represent BC Hydro's forecast or expectation regarding the long-term cost of new supply. A 1,350 kWh per month consumption threshold results in the step 2 price reaching the 12 cent cap in F2012, after which price increases are applied to the step 1 price. This rate structure generated energy savings of 710 GWh per year in F2020. Lowering the consumption threshold to 800 kWh per month defers the date when the step 2 price reaches the 12 cent cap to F2020. In the meantime, more customer load is exposed to the step 2 price. Even though the step 2 price under Option B is lower than under Option A, the analysis suggests that more customer load being exposed to a lower step 2 price generates more energy savings: 978 GWh per year in F2020.

The relative risks of the rate structure portions of DSM Options A and B relate to the customer response to different rate designs and the volume of electricity savings. With the exception of residential, incremental energy savings under Option B result from a smaller number of customers each conserving more energy on average in response to higher step 2 prices. In the case of residential, incremental energy savings under Option B result from a larger number of customers each conserving less energy on average in response to lower step 2 prices. Since electricity savings under both options were estimated using the same price elasticity value, to the extent actual customer response deviates from this price elasticity value the difference would be greater for Option B than Option A due to the greater absolute volume of electricity savings. Consequently, the electricity savings from rate structures under Option B involve more risk than those under Option A.

Programs

Table 4 summarizes the energy savings and All Ratepayer costs of the programs included in DSM Options A and B.

Table 4. Programs in DSM Options A and B

Program	Planned Energy Savings in F2020 (GWh/yr)		All Ratepayer Costs: F2009-F2028 (\$ million)	
	A	B	A	B
Residential				
Behaviour	309	232	166	166
Voltage Optimization	241	241	104	104
Lighting	148	273	56	115
Sustainable Community	114	139	305	380
Refrigerator Buy-Back	91	156	40	60
Renovation Rebate	221	279	18	60
New Home	35	35	16	16
Low Income	34	34	79	79
Appliances and Electronics	26	26	16	16
Load Displacement	11	20	223	306
Sector Enabling Activities	0	0	35	35
Sub-total⁵	1,230	1,435	1,080	1,358
Commercial				
Power Smart Partner	799	945	738	800
Product Incentive	286	342	204	196
High Performance Building	238	307	477	583
Voltage Optimization	80	80	35	35
Sustainable Community	28	34	53	71
Load Displacement	57	57	77	75
Sector Enabling Activities	0	0	66	66
Sub-total	1,489	1,767	1,649	1,824
Industrial				
Mechanical Pulping	941	1186	248	330
Power Smart Partner – Transmission	<u>662947</u>	<u>41841,520</u>	<u>8501,007</u>	<u>43921,574</u>
Power Smart Partner – Distribution	<u>844697</u>	<u>939822</u>	<u>426365</u>	<u>482424</u>
New Plant Design	137	315	158	355
Load Displacement	<u>284117</u>	<u>336117</u>	<u>45661</u>	<u>48359</u>
Sector Enabling Activities	0	0	44	44
Sub-total	2,839	3,960	1,883	2,786
Total	5,558	7,161	4,612	5,968

⁵ Costs include \$23 million for a capacity-focused DSM initiative that was not included in the DSM Plan.

Differences in the relative risks of the program portion of DSM Options A and B relate to differences in barriers to energy conservation and customer response to different program offers. Incremental energy savings from Option B are a result of more customers participating and participating customers doing more to conserve energy. Achieving the incremental savings from Option B requires the program to overcome increasingly significant barriers among customers and trade allies. Incremental participants in Option B relative to Option A face more substantial barriers and need more information, support and financial incentives, as well as trade ally support, to participate. Similarly, incremental energy conservation measures undertaken in Option B by Option A participants face more substantial barriers and require additional support and incentives. In both cases, the programs in Option B need to overcome the additional barriers affecting customers and trade allies and additional reluctance by customers and trade allies to act. In turn, relative to Option A, Option B involves more risk due to uncertainty regarding the ability of programs to overcome these barriers.

Supporting Initiatives

DSM Options A and B included the same supporting initiatives and associated costs. BC Hydro was of the view that the scale of Options A and B warranted the same level of supporting initiative activity. Table 5 summarizes supporting initiative costs in both options.

Table 5. Supporting Initiatives in DSM Options A and B

Supporting Initiative	All Ratepayer Costs: F2009-F2028 (\$ million)
Public Awareness and Communication	204
Codes and Standards Support	49
Community Engagement	172
Technology Innovation	29
Information Technology	53
Indirect and Portfolio Enabling	223
Total	730