

CONSERVATION POTENTIAL ESTIMATE DETAILS

1.0 ANNUAL TABLES

Annual values for the period 2008-2027 are presented in the tables below.

Section 2.0 provides information on the potential for Conservation identified at the provincial level for each Conservation category.

Section 3.0 provides information on the proposed Conservation savings at the provincial level for each Conservation category.

Section 4.0 provides results on a regional basis.

Section 5.0 provides the allocation of Conservation savings by classifying the provincial savings as base load, intermediate, or peaking.

Section 6.0 provides the proposed energy efficiency forecast by end use.

Section 7.0 provides delivery cost estimates by Conservation category.

2.0 IDENTIFIED CONSERVATION RESOURCES

Table 1: Identified Savings Potential on System Peak (2008-2027) (MW)

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Energy Efficiency	116	267	623	1520	1916	2316	2715	3112	3346	3582
Fuel Switching	0	0	70	125	151	178	207	237	254	273
Customer-based Generation	20	64	148	165	198	231	263	296	355	414
Conservation Behaviour	0	0	0	0	0	0	0	0	0	0
Demand Management	115	289	566	765	986	1109	1164	1218	1243	1337
Total Identified Savings	251	620	1407	2576	3250	3834	4350	4863	5198	5606

	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Energy Efficiency	3814	4043	4260	4416	4569	4722	4872	5011	5231	5456
Fuel Switching	292	310	327	344	360	376	390	407	427	448
Customer-based Generation	477	532	584	634	687	737	797	837	899	947
Conservation Behaviour	0	0	0	0	0	0	0	0	0	0
Demand Management	1440	1466	1493	1522	1552	1581	1612	1645	1704	1765
Total Identified Savings	6022	6351	6664	6917	7169	7416	7671	7900	8261	8616

Source: OPA

Note: At the generator, weather normal.

Table 2: Identified Energy Savings Potential (2008-2027) (TWh)

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Energy Efficiency	0.7	1.5	3.5	8.5	10.5	12.4	14.3	16.3	17.3	18.3
Fuel Switching	0.0	0.0	2.4	4.2	4.9	5.7	6.4	7.1	7.4	7.6
Summer	0.0	0.0	0.2	0.4	0.5	0.6	0.7	0.7	0.8	0.8
Off-Summer	0.0	0.0	2.2	3.8	4.4	5.1	5.7	6.3	6.6	6.8
Customer-based Generation	0.1	0.4	0.9	1.0	1.2	1.4	1.6	1.9	2.3	2.7
Conservation Behaviour	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Demand Management	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Total Identified Savings	0.8	2.0	6.9	13.8	16.7	19.6	22.5	25.4	27.1	28.7

	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Energy Efficiency	19.3	20.3	21.2	21.9	22.6	23.4	24.1	24.7	25.7	26.8
Fuel Switching	7.9	8.1	8.4	8.6	8.8	9.1	9.3	9.5	9.8	10.1
Summer	0.9	0.9	1.0	1.0	1.1	1.1	1.1	1.2	1.2	1.3
Off-Summer	7.0	7.2	7.4	7.6	7.8	8.0	8.2	8.3	8.6	8.8
Customer-based Generation	3.1	3.5	3.9	4.2	4.6	4.9	5.3	5.6	6.0	6.3
Conservation Behaviour	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Demand Management	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Total Identified Savings	30.4	32.0	33.6	34.9	36.2	37.5	38.9	39.9	41.7	43.5

Source: OPA

Note: At the generator, weather normal.

3.0 PROPOSED CONSERVATION RESOURCES

Table 3: Proposed Savings Potential on System Peak (2008-2027) (MW)

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Energy Efficiency	116	267	623	886	1149	1412	1675	1938	2092	2248
Fuel Switching	0	0	70	87	104	121	139	156	167	180
Customer-based Generation	20	64	148	156	164	172	180	188	227	265
Conservation Behaviour	0	0	0	0	0	0	0	0	0	0
Demand Management	115	289	566	606	647	687	728	769	780	836
Total Proposed Savings	251	620	1407	1735	2064	2393	2721	3050	3266	3529

	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Energy Efficiency	2400	2551	2694	2797	2898	2999	3097	3189	3334	3482
Fuel Switching	192	204	215	227	237	248	257	268	281	295
Customer-based Generation	307	343	377	410	445	478	518	544	584	616
Conservation Behaviour	0	0	0	0	0	0	0	0	0	0
Demand Management	899	912	925	940	955	970	986	1004	1036	1069
Total Proposed Savings	3798	4010	4211	4373	4535	4694	4858	5005	5235	5462

Source: OPA

Note: At the generator, weather normal.

Table 4: Proposed Energy Savings Potential (2008-2027) (TWh)

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Energy Efficiency	0.7	1.5	3.5	4.8	6.2	7.5	8.8	10.1	10.8	11.5
Fuel Switching	0.0	0.0	2.4	2.9	3.4	3.8	4.3	4.7	4.8	5.0
Summer	0.0	0.0	0.2	0.3	0.3	0.4	0.4	0.5	0.5	0.5
Off-Summer	0.0	0.0	2.2	2.6	3.1	3.5	3.8	4.2	4.3	4.5
Customer-based Generation	0.1	0.4	0.9	1.0	1.0	1.1	1.1	1.2	1.5	1.7
Conservation Behaviour	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Demand Management	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Total Proposed Savings	0.8	2.0	6.9	8.8	10.7	12.4	14.3	16.1	17.2	18.3

	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Energy Efficiency	12.1	12.8	13.4	13.8	14.3	14.8	15.3	15.7	16.4	17.1
Fuel Switching	5.2	5.4	5.5	5.7	5.8	6.0	6.1	6.2	6.5	6.7
Summer	0.6	0.6	0.6	0.7	0.7	0.7	0.7	0.8	0.8	0.8
Off-Summer	4.6	4.7	4.9	5.0	5.1	5.2	5.4	5.5	5.6	5.8
Customer-based Generation	2.0	2.2	2.5	2.7	3.0	3.2	3.4	3.6	3.9	4.1
Conservation Behaviour	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Demand Management	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Total Proposed Savings	19.4	20.4	21.5	22.3	23.2	24.1	25.0	25.7	26.8	28.0

Source: OPA

Note: At the generator, weather normal.

4.0 REGIONAL CONSERVATION ESTIMATES

**Table 5: Proposed Regional Conservation Savings on System Peak
(2008-2027) (MW)**

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Northwest	14	32	64	76	86	96	105	115	123	130
West	30	72	161	196	231	265	300	334	357	385
Northeast	17	42	91	106	120	134	148	162	171	182
Essa	17	43	96	115	134	154	173	193	206	223
Ottawa	15	39	97	123	150	177	204	230	246	266
East	15	37	83	100	117	134	151	168	179	193
GTA	80	201	478	606	737	868	1000	1133	1217	1322
Niagara	7	18	41	51	60	69	79	88	93	101
Southwest	55	135	296	363	429	495	561	628	674	729
Ontario	251	620	1407	1736	2064	2393	2721	3050	3266	3529

	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Northwest	138	144	149	156	159	164	167	169	174	179
West	413	435	456	476	494	511	529	545	570	595
Northeast	195	202	208	214	219	221	228	229	238	242
Essa	240	253	265	276	287	298	308	318	333	348
Ottawa	287	303	318	326	337	348	359	370	386	402
East	207	217	227	235	242	251	260	266	276	287
GTA	1427	1513	1597	1655	1720	1785	1850	1915	2007	2102
Niagara	108	114	119	123	127	131	135	139	145	151
Southwest	784	830	872	912	949	985	1022	1055	1106	1155
Ontario	3798	4010	4211	4374	4535	4694	4857	5005	5235	5463

Source: OPA

Note: Forecast is at the generator and is weather normal.

1 **Table 6: Proposed Regional Energy Conservation Savings (2008-2027) (TWh)**

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Northwest	0.0	0.1	0.2	0.3	0.4	0.5	0.5	0.6	0.7	0.7
West	0.1	0.2	0.7	0.9	1.0	1.2	1.4	1.6	1.7	1.8
Northeast	0.1	0.1	0.6	0.7	0.8	1.0	1.1	1.2	1.3	1.4
Essa	0.1	0.1	0.5	0.6	0.7	0.8	0.9	1.1	1.1	1.2
Ottawa	0.1	0.1	0.6	0.7	0.8	1.0	1.1	1.3	1.4	1.4
East	0.0	0.1	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.0
GTA	0.3	0.7	2.5	3.2	3.8	4.5	5.1	5.8	6.2	6.5
Niagara	0.0	0.1	0.2	0.3	0.3	0.4	0.4	0.5	0.5	0.5
Southwest	0.2	0.4	1.3	1.7	2.1	2.4	2.8	3.2	3.4	3.7
Ontario	0.8	2.0	6.9	8.8	10.6	12.4	14.3	16.1	17.2	18.3

	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Northwest	0.8	0.8	0.9	0.9	1.0	1.0	1.0	1.0	1.1	1.1
West	1.9	2.0	2.1	2.2	2.3	2.4	2.5	2.5	2.7	2.8
Northeast	1.5	1.5	1.6	1.7	1.7	1.8	1.8	1.9	1.9	2.0
Essa	1.3	1.4	1.4	1.5	1.6	1.7	1.7	1.8	1.9	2.0
Ottawa	1.5	1.6	1.7	1.8	1.8	1.9	2.0	2.0	2.1	2.2
East	1.1	1.1	1.2	1.2	1.3	1.3	1.4	1.4	1.5	1.5
GTA	6.9	7.3	7.6	7.8	8.1	8.4	8.7	9.0	9.4	9.8
Niagara	0.5	0.6	0.6	0.6	0.6	0.7	0.7	0.7	0.7	0.8
Southwest	3.9	4.1	4.4	4.6	4.8	5.0	5.2	5.3	5.6	5.8
Ontario	19.4	20.4	21.5	22.3	23.2	24.1	24.9	25.6	26.8	28.0

Source: OPA

Note: Forecast is at the generator and is weather normal.

5.0 ALLOCATION OF CONSERVATION CATEGORIES BY RESOURCE TYPE

Table 7: Allocation of Conservation Categories – Proposed Peak Demand Reduction (2008-2027) (MW)

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Base Load	89	223	550	718	887	1055	1224	1392	1506	1622
Intermediate Load	54	145	334	356	379	402	425	448	455	506
Peaking Demand	108	252	524	661	798	935	1073	1210	1305	1401
Total on Peak Savings	251	620	1407	1736	2064	2393	2721	3050	3266	3529

	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Base Load	1736	1844	1942	2020	2097	2170	2245	2303	2403	2498
Intermediate Load	563	569	575	581	587	591	597	603	615	628
Peaking Demand	1498	1596	1695	1773	1852	1933	2015	2100	2216	2336
Total on Peak Savings	3798	4010	4211	4374	4535	4694	4857	5005	5235	5463

Source: OPA

Note: Forecast is at the generator and is weather normal.

Based on the assumption that the 2007 target of 1350 MW has been achieved.

Table 8: Allocation of Conservation Categories – Proposed Energy Reduction (2008-2027) (TWh)

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Base Load	0.7	1.8	4.5	5.9	7.3	8.6	9.9	11.3	12.1	12.9
Intermediate Load	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Peaking Demand	0.1	0.1	2.3	2.9	3.4	3.8	4.3	4.7	5.1	5.3
Total Energy Savings	0.8	2.0	6.9	8.8	10.7	12.4	14.3	16.1	17.2	18.3

	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Base Load	13.7	14.5	15.3	15.8	16.4	17.0	17.6	18.0	18.7	19.4
Intermediate Load	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2
Peaking Demand	5.6	5.8	6.1	6.4	6.6	6.9	7.2	7.4	7.9	8.4
Total Energy Savings	19.4	20.4	21.5	22.3	23.2	24.1	25.0	25.6	26.8	28.0

Source: OPA

Note: Forecast is at the generator and is weather normal.

6.0 ENERGY EFFICIENCY SAVINGS BY END USE

Table 9: Proposed Energy Efficiency Savings Allocations (2008-2027)

	Peak (MW)					Energy (TWh)				
	2010	2015	2020	2025	2027	2010	2015	2020	2025	2027
Residential	213	485	601	663	718	1.4	3.0	3.2	3.7	4.0
Space Heating SFD	0	0	0	0	0	0.1	0.1	0.3	0.4	0.0
Space Heating AP/AT *	0	0	0	0	0	-0.2	-0.2	-0.3	-0.3	0.1
Room AC	8	19	20	20	21	0.0	0.0	0.0	0.0	0.0
Central AC	90	183	232	235	250	0.1	0.1	0.1	0.1	0.1
Furnace Fan	47	86	125	154	170	0.1	0.1	0.2	0.2	0.2
Lighting	35	58	46	50	55	1.0	1.6	1.3	1.4	1.5
Refrigeration	4	9	13	14	15	0.0	0.1	0.1	0.1	0.1
Freezer	3	8	11	14	16	0.0	0.1	0.1	0.1	0.1
Water Heating	5	59	61	61	64	0.1	0.6	0.6	0.6	0.6
Dish Washer	1	3	4	4	5	0.0	0.0	0.0	0.1	0.1
Clothes Washer / Dryer	4	14	22	28	31	0.0	0.1	0.2	0.2	0.2
Miscellaneous	16	46	67	83	91	0.2	0.4	0.6	0.8	0.9
Commercial/Institutional	302	1044	1522	1851	2035	1.3	4.2	5.9	7.1	7.9
Space Heating	0	0	0	0	0	0.1	0.4	0.9	1.4	1.6
Space Cooling	118	531	833	1095	1217	0.1	0.5	0.7	0.9	1.0
Ventilation	30	71	132	185	208	0.2	0.6	1.0	1.4	1.6
Lighting	146	421	523	556	596	0.9	2.5	3.1	3.3	3.6
Electric Auxiliary	5	13	23	13	12	0.0	0.1	0.1	0.1	0.1
Water Heating	3	8	11	2	2	0.0	0.1	0.1	0.0	0.0
Industrial	107	409	573	675	732	0.8	3.1	4.3	4.9	5.3
Process Machine Drive	45	211	294	341	368	0.4	1.9	2.6	2.9	3.1
Electrochemical Processes	1	6	10	18	21	0.0	0.1	0.1	0.2	0.2
Steam Production	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
Heat Production	38	106	135	164	179	0.3	0.8	1.0	1.2	1.3
HVAC	20	74	114	127	136	0.1	0.2	0.4	0.4	0.4
Lighting	3	12	20	25	28	0.0	0.1	0.2	0.2	0.2

Source: OPA, M. K. Jaccard and Associates

Note: At generator, weather normal

* Negative results stem from the increased share of future households in multi-unit dwellings and the result pick up of electricity in space heating.

7.0 ESTIMATED CONSERVATION DELIVERY COSTS

Table 10: Conservation Delivery Cost Estimates (2008 to 2017) (\$2007 Millions)

<i>Conservation Resource Category</i>	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Energy Efficiency										
Program Costs	77	86	84	93	95	93	95	95	49	45
Incentive Costs	155	176	172	190	193	189	192	192	99	92
Energy Efficiency Delivery Costs	232	262	256	283	289	282	286	287	148	138
Demand Management/Conservation Behaviour										
Program Costs	17	17	18	21	21	21	22	22	22	23
Incentive Costs	97	101	105	132	135	137	140	142	144	155
DR/Conservation Behaviour Delivery Costs	114	119	122	153	156	159	162	164	167	178
Fuel Switching										
Program Costs	0	0	62	55	49	42	36	29	13	13
Incentive Costs	0	0	30	41	49	42	36	82	36	38
Fuel Switching Delivery Costs	0	0	92	96	97	84	72	111	49	51
Customer-based Generation										
Program Costs	1	1	1	0	0	0	0	0	2	2
Incentive Costs	10	15	24	8	8	7	8	7	32	31
Customer-based Generation Delivery Costs	11	16	25	8	9	7	8	8	34	33
Total Conservation Resources										
Total Program Costs	94	105	165	170	165	157	152	146	86	84
Total Incentive Costs	262	292	330	370	385	376	375	424	312	316
Total Conservation Delivery Costs (including Market Transformation)	356	396	495	540	550	533	528	570	397	400

Source: OPA

Table 11: Conservation Delivery Cost Estimates (2018 to 2027) (\$2007 Millions)

<i>Conservation Resource Category</i>	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Energy Efficiency										
Program Costs	46	46	44	33	34	34	36	26	49	50
Incentive Costs	94	92	89	67	69	69	72	53	100	102
Energy Efficiency Delivery Costs	140	138	132	99	104	103	108	79	149	152
Demand Management/Conservation Behaviour										
Program Costs	25	25	25	25	26	26	26	27	27	28
Incentive Costs	166	168	171	173	176	178	181	184	189	194
DR/Conservation Behaviour Delivery Costs	191	193	196	199	201	204	207	211	216	221
Fuel Switching										
Program Costs	13	12	11	12	11	11	10	11	16	16
Incentive Costs	35	34	32	34	32	31	28	30	44	44
Fuel Switching Delivery Costs	48	46	43	46	43	41	38	41	60	60
Customer-based Generation										
Program Costs	2	1	1	1	1	1	1	1	1	1
Incentive Costs	31	29	28	26	27	26	26	22	29	26
Customer-based Generation Delivery Costs	32	31	30	28	28	27	27	23	30	27
Total Conservation Resources										
Total Program Costs	85	84	82	72	73	72	73	65	93	95
Total Incentive Costs	326	325	320	300	304	304	307	289	361	365
Total Conservation Delivery Costs (including Market Transformation)	411	409	401	372	376	376	380	354	455	460

Source: OPA

