



THE BRETON LAW GROUP

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File No. 41736-53

April 6, 2018

Nova Scotia Utility & Review Board
PO Box 1692, Unit "M"
Halifax, Nova Scotia
B3J 3S3

Attention: Doreen Friis, Regulatory Affairs Officer / Clerk

Dear Ms. Friis:

Re: M08604 - EfficiencyOne – 2019 DSM Resource Plan

This letter is an accompaniment to EfficiencyOne's filing before the Nova Scotia Utility and Review Board ("Board"), seeking approval of a Supply Agreement for Electricity Efficiency and Conservation Activities between EfficiencyOne and Nova Scotia Power Inc. (the "Parties") and the establishment of a final agreement between the Parties, including approval of EfficiencyOne's proposed 2019 DSM Resource Plan.

EfficiencyOne is pleased to submit the following in support of its Application for Approval of the 2019 DSM Resource Plan:

1. Notice of Application
2. DSM Plan Evidence
 - a. 2019 DSM Resource Plan
 - b. 2019 DSM Resource Plan Development and Approach and Details
 - c. Forward-looking Rate & Bill Impact Analysis Report (Excel model to be filed electronically)
 - d. 2019 Planned Expenditures by Rate Class; and
3. Executed Supply Agreement between NS Power and EfficiencyOne.

EfficiencyOne previously filed its Annual Progress Report and Evaluation Reports on March 29, 2018, which form part of the record before the Board in this matter.

Pursuant to the *Electricity Plan Implementation (2015) Act*, SNS 2015, c 31, s. 20(1), for the calendar year 2019, Nova Scotia Power Inc. (“NS Power”) and EfficiencyOne are required to enter into an agreement for the supply of electricity efficiency and conservation services in an amount not greater than \$34,050,000. In the Board’s decision in NS Power’s Cost Allocation matter M07151, the Board noted “...during this time period, the Province enacted the *Electricity Plan Implementation (2015) Act* (“EPIA”) which extended the 3-year DSM contractual term by one year to include 2019, and limited the DSM expenditures for that year to \$34,050,000.”

In accordance with Section 79 of the *Public Utilities Act*, EfficiencyOne and NS Power entered into negotiations aimed at reaching an agreement (the “DSM Supply Agreement”) through which EfficiencyOne would provide NS Power with electricity efficiency and conservation activities (“EECA”) in accordance with the *Electricity Efficiency and Conservation Restructuring (2014) Act* (“Act”) for the 2019 year. The executed DSM Supply Agreement included with this filing represents the agreement reached between EfficiencyOne and NSPI. It is a commercial agreement, mirrored on the Board approved 2016-2018 DSM Supply Agreement, which governs the relationship between the parties and manner in which EECA will be provided by EfficiencyOne to NS Power. It incorporates the requirements of the Act, with the exception of the term of one year in accordance with the EPIA, which provide that the Agreement:

- (a) Not be terminable or terminated unless the franchise holder’s franchise is terminated or the termination is approved by the Board;
- (b) Describe the EECA that the franchise holder will provide to NSPI; and
- (c) Identify the amount that NS Power will pay to the franchise holder for the supply of EECA.

The proposed 2019 DSM investment, energy, and demand targets were developed based on the approved 2016-2018 DSM Resource Plan. Consistent with existing reporting requirements, EfficiencyOne confirms it will report quarterly (among other factors) on performance indicators **by program** with respect to the Performance Indicators set out in Schedule C to the Supply Agreement including:

- i. Incremental annual net energy savings at generator;
- ii. Incremental annual net peak demand savings at generator;
- iii. Lifetime net energy savings at generator; and
- iv. Total spending.

The energy and demand targets for 2019 are similar to the annual averages in the approved 2016-2018 Plan, and the 2019 Plan includes demand-focused pilots to be developed in collaboration with NS Power and other Stakeholders. The 2019 Plan was developed based upon:

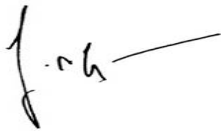
- ENS’s experience;
- ENS’s 2016-2018 suite of programs and services;
- Market conditions (e.g. program and measure saturation);
- Operational data; and

- Program impact and process evaluations, including evaluated savings results, Delivery Agent input and participant feedback.

EfficiencyOne recognizes it is desirable that all stakeholders, EfficiencyOne and NS Power attempt to reach agreement on the appropriate – and affordable – level of electricity efficiency to be delivered to Nova Scotia electricity users through NS Power. EfficiencyOne would like to acknowledge the high level of stakeholder engagement and support it received during the development of this 2019 DSM Resource Plan and wishes to thank those participants for their constructive input.

Yours very truly,

THE BRETON LAW GROUP

A handwritten signature in black ink, appearing to read 'J. R. Gogan', with a long horizontal line extending to the right.

James R. Gogan

cc. Bruce Outhouse, Q.C., Board Counsel
Brian Curry, NSPI Counsel
Stephen MacDonald, Efficiency One
John Aguinaga, EfficiencyOne
Emily Mason, EfficiencyOne

NOVA SCOTIA UTILITY AND REVIEW BOARD

IN THE MATTER OF: *The Public Utilities Act, R.S.N.S. 1989, c. 30* as amended

- and -

IN THE MATTER OF: An Application by EfficiencyOne for Approval of Supply Agreement for Electricity Efficiency and Conservation Activities between EfficiencyOne and Nova Scotia Power Inc., the establishment of a final agreement between the parties, and approval of a 2019 Demand Side Management (“DSM”) Resource Plan

NOTICE OF APPLICATION

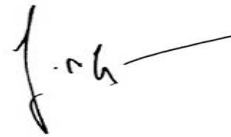
TO: The Nova Scotia Utility and Review Board (“UARB” or “the Board”)

1. EfficiencyOne is the holder of the Franchise issued by the Minister of Energy on November 28, 2014 effective January 1, 2015, to provide electricity efficiency and conservation activities to Nova Scotia Power Inc (“NS Power”).
2. Pursuant to section 79J of the *Public Utilities Act*, EfficiencyOne, as the franchise holder, is required to enter in an agreement for a term of three (3) years with NS Power for the supply of electricity efficiency and conservation activities (“Supply Agreement”), which agreement is subject to approval of the Board pursuant to section 79L of the *Public Utilities Act*.
3. There is currently in place a Supply Agreement between EfficiencyOne and NS Power for the term 2016 through 2018.
4. Pursuant to the *Electricity Plan Implementation (2015) Act*, SNS 2015, c 31, s. 20(1), notwithstanding the requirement that the term of the agreement for the supply of electricity efficiency and conservation services be for three years, NS Power and EfficiencyOne are required to enter into an agreement for the supply of electricity efficiency and conservation activities for the calendar year 2019.
5. EfficiencyOne makes this Application to the Board, pursuant to the *Public Utilities Act* for the approval of a final Supply Agreement between EfficiencyOne and NS Power for a one year term for the calendar year 2019, on such terms as the Board considers appropriate.

6. In support of this Application is filed the Evidence of EfficiencyOne, which includes Appendices A through D containing additional materials supporting the Application.
7. On the Evidence filed in support of this Application, EfficiencyOne asserts that the Order sought by the Application is in the Public Interest.
8. EfficiencyOne therefore seeks an Order finalizing and approving a Supply Agreement between EfficiencyOne and NSPI.

Dated this 6th day of April 2018.

EFFICIENCYONE

A handwritten signature in black ink, appearing to read "J. R. Gogan", with a long horizontal line extending to the right.

Per: James R. Gogan, EfficiencyOne Counsel

Name and Address for Service:

James R. Gogan

EfficiencyOne Counsel
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Stephen MacDonald

Chief Executive Officer
EfficiencyOne
230 Brownlow Ave.
Suite 300
Dartmouth, NS B3B 0G5



**Supply Agreement for
Electricity Efficiency and Conservation Activities**

Between

Nova Scotia Power Incorporated

and

EfficiencyOne

Effective Date – January 1, 2019

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THIS AGREEMENT made as of the 6th day of April, 2018 and effective as of the 1st day of January, 2019 (the "Effective Date").

BETWEEN:

NOVA SCOTIA POWER INCORPORATED,
a body corporate, organized under the laws
of the Province of Nova Scotia
(hereinafter called "NSPI")

- and -

EFFICIENCYONE,
a body corporate, organized under the laws of
Canada
(hereinafter called "EfficiencyOne")

WHEREAS:

- A. EfficiencyOne and NSPI are both public utilities pursuant to the Act; and
- B. Pursuant to the Act, EfficiencyOne has the exclusive right to supply NSPI with reasonably available, cost-effective Electricity Efficiency and Conservation Activities as the Franchise Holder; and
- C. Pursuant to the Act, NSPI is obligated to undertake cost-effective Electricity Efficiency and Conservation Activities that are reasonably available in an effort to reduce costs for its customers; and
- D. Pursuant to the Act, NSPI shall meet its obligations by entering into an agreement with the Franchise Holder for the supply of cost-effective Electricity Efficiency and Conservation Activities.

NOW THEREFORE witnesses that in consideration of the premises and the mutual covenants and obligations herein and other good and valuable consideration, the sufficiency and receipt of which are hereby acknowledged, the parties agree as follows:

1. INTERPRETATION

1.1 The following terms shall be interpreted as follows in this Agreement:

- (a) "Act" shall mean the *Public Utilities Act*, R.S.N.S. 1989, c.380, as amended from time to time.
- (b) "Agreement" means this agreement between NSPI and EfficiencyOne including all Schedules attached hereto.
- (c) "Business Day" means Monday to Friday, except federal, provincial, and civic holidays within the Province of Nova Scotia.

- (d) **"Consequential Losses"** means consequential, special, incidental, multiple, exemplary or punitive damages including lost profits, whether such claim of lost profits is categorized as indirect, direct or consequential damages or under any alternative theory of recovery.
- (e) **"Contract Documents"** means without limitation, the following documents, including any amendments thereto agreed in writing by the parties:
- (i) this Agreement; and
 - (ii) all Schedules to the Agreement.
- (f) **"Contract Price"** has the meaning ascribed to it in Section 4.1.
- (g) **"EECA Plan"** means the plan prepared by EfficiencyOne and approved by the UARB and attached hereto as Schedule "E".
- (h) **"Electricity Efficiency and Conservation Activities"** or **"EECA"** means the electricity efficiency and conservation activities as identified in Schedule "A" attached hereto.
- (i) **"Event of Default"** has the meaning ascribed to it in Section 20.4.
- (j) **"Environmental Laws"** means all applicable federal, provincial, regional, municipal or local laws with respect to environmental matters contained in the statutes, regulations, rules, standards, requirements, ordinances, policies, guidelines, orders, approvals, notices, permits or directives having the force of law, in effect as at the date hereof and as may be brought into effect at future date.
- (k) **"Force Majeure Event"** means any event or circumstance not reasonably within the control of the Party affected which wholly or partly prevents the performance by that Party of its obligations under this Agreement, provided that such Party is in good faith unable to perform such obligations by any commercially reasonable substitute. A Force Majeure Event includes acts of God, war, riot, fire, explosion, flood, hurricane, epidemics, acts of governmental authorities, acts of terrorism. Notwithstanding anything else contained herein, a Force Majeure Event excludes (a) any event or circumstance causing direct or indirect delay in, or failure to perform any of a Party's obligations under this Agreement, attributable to a lack of reasonable diligence on the part of a Party or on the part of any vendor or subcontractor of a Party, including any event or circumstance which a Party or any vendor or subcontractor, acting diligently, could reasonably have been expected to foresee, avoid or overcome in the performance of its obligations; and (b) any event or circumstance caused by the breach of a Party's obligations or the fault or negligence of a Party or the fault or negligence of any vendor or subcontractor, or by violation of applicable laws or regulations by a Party or any of a Party's vendors or subcontractors. For certainty, adverse weather of any kind other than events specified above shall not be considered a Force Majeure Event.
- (l) **"Franchise"** has the meaning ascribed to it in the Act.
- (m) **"Franchise Holder"** has the meaning ascribed to it in the Act.

- (n) **"Governmental Authority"** means any federal, provincial, regional, municipal or local government or authority or other political subdivision thereof and entity or person exercising executive, legislative, judicial, regulatory or administrative functions of, or pertaining to, government.
- (o) **"Hazardous Substances"** means any substance or material that is prohibited, controlled or regulated by any Governmental Authority pursuant to Environmental Laws, including any contaminants, pollutants, petroleum or other hydrocarbons and their derivatives and by-products, dangerous substances or goods, including asbestos, liquid wastes, special wastes, toxic substances, hazardous or toxic chemicals, hazardous wastes, hazardous materials or hazardous substances as defined in or pursuant to any Environmental Law, or any substance or material not inherently hazardous but which would, in sufficient quantities, be hazardous.
- (p) **"Indemnified Costs"** means all liabilities, claims, actions, causes of action, judgments, orders, damages, costs (including those incurred in connection with any investigation of site conditions or any clean-up, environmental remediation, removal or restoration work), expenses (including all reasonable consultant, expert and legal fees and expenses), fines, penalties, losses, or any resulting damages, harm or injuries to the person or property of any third parties or to any natural resources and for which the indemnified party is liable and has incurred losses. Without limiting the foregoing, Indemnified Costs shall include:
- (i) the costs of defending and/or counterclaiming or claiming over and against third parties in such manner as the indemnified party in its sole discretion may determine;
 - (ii) the costs relating to any governmental investigation, proceeding or claim; and
 - (iii) any costs, liabilities or damages arising out of a settlement of a claim by the indemnified party, with or without the consent of the indemnifying party.
- (q) **"Law"** means the common law, the law of equity and all federal or provincial statutes or municipal by-laws and all regulations, orders, directives, permits and licenses thereunder, which apply to or otherwise affect NSPI or EfficiencyOne with respect to the supply of the EECA, or the property of NSPI or EfficiencyOne, real or personal, or any part thereof, including the Act and all environmental, occupational, health and safety laws.
- (r) **"Liens Indemnities"** has the meaning ascribed to it in Section 18.1.
- (s) **"Liens and Claims"** has the meaning ascribed to it in Section 18.1.
- (t) **"Minister"** has the meaning ascribed to it in the Act.
- (u) **"Party"** means either EfficiencyOne or NSPI. **"Parties"** means EfficiencyOne and NSPI.
- (v) **"Personal Information"** shall mean the information provided by NSPI to EfficiencyOne pursuant to Section 79K of the Act.

- (w) **"Release"** or **"Released"** means a releasing, adding, spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, migrating, dispersing, dispensing, disposing or dumping.
- (x) **"Significant Changes"** means any proposed change to the EECA Plan for which the UARB orders or directs EfficiencyOne to obtain the approval of the UARB prior to the implementation of such proposed change.
- (y) **"Subcontractor"** means any contractor, supplier or consultant hired by EfficiencyOne in accordance with this Agreement to perform any portion of the EECA.
- (z) **"Term"** has the meaning ascribed to it in Section 2.1.
- (aa) **"UARB"** means the Nova Scotia Utility and Review Board.
- (bb) **"CASL"** means An Act to promote the efficiency and adaptability of the Canadian economy by regulating certain activities that discourage reliance on electronic means of carrying out commercial activities, and to amend the Canadian Radio-television and Telecommunications Commission Act, the Competition Act, the Personal Information Protection and Electronic Documents Act and the Telecommunications Act, S.C. 2010, c. 23, as amended from time to time.
- 1.2 Unless otherwise specified in this Agreement or unless the context otherwise requires:
- (a) words of any gender include each other gender;
- (b) using the singular or plural number also include the plural or singular number, respectively;
- (c) the insertion of headings in this Agreement is for convenience only and shall not be construed so as to affect the interpretation or construction of this Agreement;
- (d) the terms "hereof," "herein," "hereto," "hereunder" and words of similar or like import refer to this entire Agreement and not to any particular Section, Schedule or other subdivision of this Agreement;
- (e) references to a particular "Section" or "Schedule" are, unless otherwise noted, references to that Section of, or Schedule to this Agreement;
- (f) the words "include," "includes" and "including" shall be deemed to be followed by "without limitation" or "but not limited to";
- (g) references to any applicable law, legislation or regulation shall be construed as a reference to such law, legislation or regulation as each may be in effect from time to time;
- (h) references to any agreement or document (including this Agreement) shall (i) include all Schedules, appendices, and other attachments thereto, and (ii) be construed at the particular time as a reference to such agreement or document as amended, modified or supplemented and in effect from time to time and shall include a reference to any document which amends, modifies or supplements it, or is entered into, made or given pursuant to or in accordance with its terms;

(i) references to (i) days shall refer to calendar days unless Business Day is specified, (ii) weeks and months shall refer to calendar weeks and months, respectively, and (iii) years shall refer to calendar years;

(j) in computing any period of time prescribed or allowed under this Agreement, the day of the act, event or default from which the designated period of time begins to run shall be included. If the last day of the period so computed is not a Business Day, then the period shall run until the close of business on the next Business Day;

(k) the Contract Documents are complementary, and what is required by any one shall be as binding as if required by all;

(l) words and abbreviations which have well known technical or trade meanings are used in the Contract Documents in accordance with such recognized meanings; and

(m) as both Parties were actively involved in preparing the terms and conditions of this Agreement and as they both had access to and relied upon counsel in this process, there shall be no presumption that any one or the other Party prepared this Agreement and no provision of this Agreement shall be construed against either Party based upon the process of preparation of proposals and drafts of the Agreement.

1.3 If there is a conflict within the Agreement, the order of precedence of documents, from highest to lowest, shall be:

(a) Sections 1 to 27;

(b) Schedule "A" – Electricity Efficiency and Conservation Activities; and

(c) all other Schedules.

2. TERM & RESERVATION OF RIGHTS

2.1 The term of this Agreement shall be one (1) year from the Effective Date and shall automatically terminate on December 31, 2019 unless terminated earlier in accordance with the terms of this Agreement and the Act (the "**Term**").

2.2 During the Term, NSPI shall purchase from EfficiencyOne and EfficiencyOne shall supply to NSPI, the EECA in accordance with the terms and conditions of this Agreement and the Act.

2.3 Notwithstanding anything contained herein, and subject to any requirement for review or approval by the UARB, nothing contained in this Agreement shall in any way effect the rights of NSPI pursuant to Section 79I(3) of the Act.

3. ELECTRICITY EFFICIENCY and CONSERVATION ACTIVITIES

3.1 For the Term of this Agreement, EfficiencyOne will,

(a) provide the EECA in accordance with this Agreement;

- (b) provide sufficient resources to enable EfficiencyOne to perform its obligations on time and in accordance with this Agreement;
- (c) carry out the EECA in a professional, expeditious and economical manner, in accordance with the Act;
- (d) manage the EECA in an efficient manner; and
- (e) perform and supply the EECA in a safe and environmentally sound manner and in compliance with applicable Law.

3.2 The Parties acknowledge and agree that EfficiencyOne shall be solely responsible for the delivery of the EECA Plan. For greater certainty and notwithstanding the attachment of the EECA Plan as Schedule "E" – Approved EECA Plan, NSPI shall have no liability with respect to the EECA Plan saving and excepting any liability which may arise as a result of NSPI's failure to comply with the Act.

4. PRICE & PAYMENT

4.1 NSPI agrees to pay EfficiencyOne for EECA as set out in Schedule "B" – Compensation (the "**Contract Price**").

4.2 The Contract Price shall constitute full compensation for the EECA, and no additional compensation shall be payable to EfficiencyOne arising out or resulting from any productivity losses, overhead or indirect costs or other costs and expenses of any kind whatsoever.

4.3 NSPI shall make monthly payments on the first Business Day of each month in accordance with Schedule "B" to EfficiencyOne on account of the Contract Price when due, together with applicable HST. EfficiencyOne will submit an invoice to NSPI in advance of the payment date referenced in Schedule "B".

4.4 Unless otherwise indicated all dollar amounts referred to in this Agreement are in lawful money of Canada.

4.5 If applicable, payments shall be subject to harmonized sales tax (as defined in the *Excise Tax Act* (Canada)) ("**HST**"). No additional taxes (foreign or domestic), customs, duties or brokerage fees shall apply.

4.6 If applicable, NSPI will withhold from payments to EfficiencyOne any amounts required to be withheld under applicable Laws and treaties in respect of services rendered in Canada by a non-resident and may remit them to the relevant authority. Where available, statutory withholding may be waived if EfficiencyOne delivers to NSPI a formal waiver of the withholding requirement issued and signed by Canada Revenue Agency. The Parties shall cooperate at all times to ensure that all proper withholdings are deducted from payments and if any withholdings are overlooked then such withholdings may be deducted from later payments.

5. NOTIFICATION OF SIGNIFICANT CHANGES

5.1 EfficiencyOne shall provide notice of Significant Changes to NSPI at the same time as EfficiencyOne makes application to the UARB for the approval of the Significant Changes. Subject to the terms of the Act and the general discretion of the UARB under

the Act, NSPI shall, have the right to make written submissions to the UARB on any such Significant Changes to the EECA Plan.

6. SAFETY

6.1 EfficiencyOne shall at all times be responsible for safety and loss management in the supply or performance of the EECA.

6.2 EfficiencyOne shall ensure that all employees, Subcontractors, agents and representatives of EfficiencyOne comply with all federal, provincial and municipal health, safety and environmental statutes, regulations, policies and guidelines and all health, safety and environmental rules as prescribed by EfficiencyOne.

7. PROTECTION OF PROPERTY

7.1 EfficiencyOne shall take all commercially reasonable steps to protect the property of NSPI's customers and other third parties from damage which may occur as the result of the performance of the EECA.

7.2 Should EfficiencyOne damage the property of NSPI's customers or property of other third parties while performing the EECA, EfficiencyOne shall make good such damage at EfficiencyOne's expense and shall indemnify NSPI from and against all liabilities, claims, damages, settlements, awards, costs, expenses and proceedings incurred by NSPI or its servants, employees and/or agents in respect of such damage, except to the extent such damage occurs as a result of the negligent acts of NSPI or those for which NSPI is responsible at Law.

8. ENVIRONMENT

8.1 EfficiencyOne and its Subcontractors shall at all times comply with all Environmental Laws that apply in any way to the supply or performance of the EECA. EfficiencyOne and its Subcontractors shall not cause, permit or suffer the Release of a Hazardous Substance in contravention of any Environmental Laws.

8.2 Notwithstanding any other provision in this Agreement (and in addition to any other right to indemnity held by NSPI under the terms of the Agreement) EfficiencyOne shall indemnify NSPI, NSPI's parent, their respective subsidiaries, affiliates and related companies, and their respective officers, directors, employees, agents and shareholders, and agrees to hold each of them harmless from and against any and all Indemnified Costs resulting from any Release of any Hazardous Substance which is caused or contributed to by EfficiencyOne or its Subcontractors or any breach of any Environmental Law by EfficiencyOne or its Subcontractors.

9. EFFICIENCYONE'S COVENANTS

9.1 EfficiencyOne warrants, covenants and agrees with NSPI that:

(a) it has all requisite capacity and authority to execute, deliver and perform its obligations under this Agreement;

(b) this Agreement has been duly and validly executed and delivered by EfficiencyOne and constitutes a legal, valid and binding obligation of EfficiencyOne enforceable against EfficiencyOne in accordance with its terms;

- (c) to its knowledge, there is no matter, thing or event, including without limitation, any litigation, proceeding, breach, default or financial circumstance that would adversely affect EfficiencyOne's ability to perform its obligations under this Agreement;
- (d) it will furnish all labour, materials, products, tools, and other necessary components necessary to perform and provide the EECA, unless otherwise provided herein;
- (e) it shall diligently perform or cause to be performed the EECA in a proper and workmanlike manner;
- (f) it has the skills, expertise and resources to carry out the EECA and to comply, observe and perform the obligations to which it is subject in accordance with the terms of this Agreement;
- (g) prior to commencing any work hereunder, it shall obtain and maintain all permits, licenses and notices that a prudent supplier acting in accordance with industry standards would be required to obtain, maintain and provide in comparable circumstances and shall comply with all applicable Laws, ordinances, rules, regulations, codes and orders of any and all authorities having jurisdiction which are or become in force during the Term in respect of the EECA;
- (h) it will comply with applicable federal, provincial and municipal statutes, regulations and bylaws pertaining to the EECA performed by or on behalf of EfficiencyOne under this Agreement. EfficiencyOne shall be responsible for ensuring similar compliance by any suppliers and Subcontractors;
- (i) it is the Franchise Holder pursuant to the Act;
- (j) it is not a non-resident of Canada for the purposes of the *Income Tax Act*;
- (k) it will execute or cause to be made, done and executed all further acts, deeds, assurances, agreements, instruments or other documents as may be reasonably required to ensure fulfillment of the terms of this Agreement;
- (l) the EECA shall be delivered and performed by individuals duly licensed and authorized by Law, if applicable, to perform said undertakings;
- (m) the EECA shall be delivered and performed solely by EfficiencyOne or its Subcontractors and EfficiencyOne acknowledges that EfficiencyOne shall at all times remain responsible for the proper completion of this Agreement; and
- (n) upon becoming aware of a potential disruption having a material impact in the supply of the EECA, EfficiencyOne shall provide notification to the UARB and NSPI.

10. SUBCONTRACTORS

- 10.1 EfficiencyOne shall be permitted to subcontract the performance of any part of the EECA without the prior written approval of NSPI.

1 10.2 Where EfficiencyOne subcontracts any part of the EECA, EfficiencyOne shall preserve
2 and protect the rights of the Parties under this Agreement with respect to the EECA to
3 be supplied or performed under subcontract, and shall be as fully responsible to NSPI
4 for the acts and omissions of Subcontractors and of persons directly or indirectly
5 employed by them, as if they were acts and omissions of persons directly employed by
6 EfficiencyOne.

7 10.3 Nothing contained in the Contract Documents shall create a contractual relationship
8 between a Subcontractor and NSPI.

9 **11. CONFIDENTIAL AND PERSONAL INFORMATION**

10 11.1 The Parties have executed or agree to execute the confidentiality agreement attached
11 hereto as Schedule "D" - Confidentiality ("**Confidentiality Agreement**").

12 11.2 EfficiencyOne shall be responsible for all physical and electronic security required to
13 ensure the security of the Personal Information which has been provided by NSPI to
14 EfficiencyOne.

15 11.3 EfficiencyOne shall indemnify and hold harmless NSPI for any liabilities, claims,
16 damages, settlements, awards, costs, expenses and proceedings incurred by NSPI or its
17 servants, employees and/or agents in consequence of EfficiencyOne's misuse of the
18 Personal Information or any disclosure, whether intentional, inadvertent, negligent or
19 otherwise of any of the Personal Information by EfficiencyOne contrary to the terms of
20 this Agreement or the Act, or in consequence of EfficiencyOne's contravention of CASL.

21 **12. PERFORMANCE REQUIREMENTS AND EVALUATIONS**

22 12.1 EfficiencyOne's performance under the terms of this Agreement shall be measured in
23 accordance with the performance requirements established by the UARB pursuant to
24 Section 79M of the Act as set out in Schedule "C" – Performance Requirements.

25 **13. FORCE MAJEURE**

26 13.1 Neither Party shall be in breach of its obligations under this Agreement where failure to
27 perform or delay in performance of any obligation is due, wholly or in part, to a Force
28 Majeure Event.

29 13.2 Each Party shall notify the other Party promptly of any Force Majeure Event and shall
30 take reasonable steps to minimize the impact of the failure or the delay and to resolve
31 the event or occurrence that has given rise to the Force Majeure Event in order to
32 resume performance. The time for performing an obligation as a result of Force Majeure
33 Event shall be extended for the period lost, subject to the condition that the Term of this
34 Agreement shall not be extended as a result of any Force Majeure Event.

35 13.3 Each Party suffering a Force Majeure Event shall take, or cause to be taken, such action
36 as may be necessary to void, or nullify, or otherwise to mitigate, in all material respects,
37 the effects of such Force Majeure Event. The Parties shall take all reasonable steps to
38 ensure normal performance under this Agreement, including the resumption of any
39 disrupted obligations.

40 13.4 For certainty, in no case shall the failure or omission of EfficiencyOne to carry out or
41 observe any of the terms, provisions, or conditions of this Agreement or any negligent

act or omission of EfficiencyOne, or others for whom EfficiencyOne is responsible constitute an event of Force Majeure or result in an extension of the time to perform the EECA.

14. INDEMNITY

14.1 EfficiencyOne shall assume all risk of loss, damage or injury, including death, to person or property, caused by its directors, officers, employees, Subcontractors, agents or representatives, and agrees not to make or bring any claim, action or demand against NSPI or its directors, officers, servants, agents, or employees in respect of such loss, damage or injury excepting such loss, damage or injury caused by the negligence or wilful misconduct of NSPI or NSPI's directors, officers, servants, agents or employees.

14.2 EfficiencyOne agrees to indemnify and save harmless NSPI, its directors, officers, servants, agents, or employees, and their heirs, executors, administrators, successors and assigns, or any of them, from and against any liabilities, losses, expenses (including legal costs on a solicitor-client basis), claims, demands, actions, and causes of action, whatsoever suffered by NSPI by reason of, or in any way arising out of or in connection with a breach of this Agreement by EfficiencyOne excepting only to the extent caused by the negligence or wilful misconduct of NSPI or NSPI's directors, officers, servants, agents or employees.

14.3 NSPI agrees to indemnify and save harmless EfficiencyOne, its directors, officers, servants, agents, or employees, and their heirs, executors, administrators, successors and assigns, or any of them, from and against any liabilities, losses, expenses (including legal costs on a solicitor-client basis), claims, demands, actions, and causes of action, whatsoever suffered by EfficiencyOne by reason of, or in any way arising out of or in connection with a breach of this Agreement by NSPI excepting only to the extent caused by the negligence or wilful misconduct of EfficiencyOne or EfficiencyOne's directors, officers, servants, agents or employees.

14.4 The provisions set forth in this Section shall apply and be effective with respect to any claim, cause of action, or legal theory whatsoever including without limitation, claims based upon breach of contract, failure to meet performance guarantees, tort (including negligence) and strict liability.

14.5 EfficiencyOne shall defend, indemnify and hold harmless NSPI from any claim, suit, cause of action, judgment, cost or expense (including legal fees) based on a claim by a third party that any intellectual property which is part of the EECA or supply or performance of EfficiencyOne's obligations under this Agreement infringes any patent, copyright, trade secret or other intellectual property right, provided the EfficiencyOne is promptly notified of such claim and is given complete authority for defense of same. EfficiencyOne shall pay all damages, costs and expenses resulting from such a claim, including legal fees and settlement costs, but shall not be responsible for any cost, expense or compromise incurred by NSPI without EfficiencyOne's prior consent.

15. LIMIT OF LIABILITY

15.1 Neither Party shall be liable to the other Party for any Consequential Losses with respect to the performance or non-performance under this Agreement or for any actions undertaken in connection with or related to this Agreement.

1 15.2 EfficiencyOne's total liability to NSPI with respect to the performance or non-
2 performance under this Agreement or for any actions undertaken in connection with or
3 related to this Agreement shall be limited to the greater of the sum of two million dollars
4 (\$2,000,000) or the proceeds of the applicable insurance policies taken out by
5 EfficiencyOne under this Agreement ("**EfficiencyOne Limit of Liability**") provided that
6 the EfficiencyOne Limit of Liability shall not apply to:

7 (a) indemnification of NSPI by EfficiencyOne under the terms of this Agreement for
8 any third party claims (including but not limited to EfficiencyOne's obligations
9 pursuant to Sections 7.2, 8.2, 11.3, 14.5 and 18.1);

10 (b) any wilful misconduct or fraud of EfficiencyOne or its employees, agents or
11 representatives; and

12 (c) any obligation on the part of EfficiencyOne to refund in whole or in part the
13 Contract Price pursuant to this Agreement or the Act.

14 15.3 NSPI's total liability to EfficiencyOne with respect to the performance or non-
15 performance under this Agreement or for any actions undertaken in connection with or
16 related to this Agreement shall be limited to the sum of two million dollars (\$2,000,000)
17 ("**NSPI Limit of Liability**") provided that the NSPI Limit of Liability shall not apply to:

18 (a) any wilful misconduct or fraud of NSPI or its employees, agents or
19 representatives; and

20 (b) NSPI's liability for payment of the Contract Price pursuant to the Agreement or
21 the Act.

22 16. INSURANCE

23 16.1 EfficiencyOne shall obtain, maintain and pay for, during the entire Term of this
24 Agreement, the following minimum insurance coverage as follows, such insurance as it
25 relates to this Agreement shall be in a form and from an insurer acceptable to NSPI:

26 (a) General liability insurance shall be in the name of EfficiencyOne and shall name
27 NSPI as an additional insured and shall have limits of not less than five million
28 dollars (\$5,000,000) inclusive per occurrence for bodily injury, death, and
29 damage to property including loss of use thereof. Such insurance shall be
30 primary and non-contributing with, and not in excess of, any other insurance
31 available to NSPI. This policy shall also contain cross liability and severability of
32 interest and blanket contractual liability.

33 (b) Environmental impairment insurance with limits of not less than five million
34 dollars (\$5,000,000);

35 (c) Automobile liability insurance in respect of licensed vehicles shall have limits of
36 not less than two million dollars (\$2,000,000) inclusive per occurrence for bodily
37 injury, death, and damage to property. For automobiles not owned or operated
38 by or on behalf of EfficiencyOne the insurance shall be in the form of a standard
39 non-owned automobile policy and shall include standard contractual liability
40 endorsement. For automobiles owned or operated by or on behalf of
41 EfficiencyOne the insurance shall be in the form of a standard owner's form
42 automobile policy and shall provide third party liability and accident benefits

insurance covering licensed vehicles owned or operated by or on behalf of EfficiencyOne.

(d) Property Insurance covering all loss of or damage to EfficiencyOne's property and equipment of EfficiencyOne or for which EfficiencyOne is legally liable or responsible used in performance of the EECA for the full replacement value, which insurance shall not allow subrogation claims by the insurer against NSPI.

(e) To the extent that the EECA includes the provision of professional services, professional liability errors and omissions insurance covering all claims arising out of errors and omissions of EfficiencyOne in the performance of professional services as part of the EECA with a limit of two million dollars (\$2,000,000). In the event other claims erode EfficiencyOne's professional errors and omissions insurance below two million dollars (\$2,000,000), in the annual aggregate, EfficiencyOne agrees to reinstate the limit.

(f) Workers' compensation to the full extent required in Nova Scotia and wherever EfficiencyOne's personnel contracts of employment are made or are expressed to be made.

16.2 If EfficiencyOne fails to effect or keep in force any of the foregoing insurances, NSPI may, without prejudice to any other right or remedy, effect such insurance and pay the premiums due and recover the same as a deduction from any other monies due to EfficiencyOne under this Agreement.

16.3 EfficiencyOne shall be responsible to pay deductible amounts and for determining the deductible amount in respect of each policy. EfficiencyOne shall not violate, nor knowingly permit to be violated, any conditions of the policies maintained according to the provisions of this Section, and it shall be EfficiencyOne's duty and responsibility to impose upon each Subcontractor the same responsibilities and obligations imposed upon EfficiencyOne under such provisions.

16.4 EfficiencyOne agrees to provide proof of insurance to NSPI on an annual basis. Such proof shall be in the form of a certificate of insurance signed by EfficiencyOne's insurance broker.

17. INTELLECTUAL PROPERTY

17.1 NSPI acknowledges that all branding, trade and business marks of EfficiencyOne used in the course of provision of EECA pursuant to this Agreement, (the "**EfficiencyOne Brands**") are, and shall remain, the sole and exclusive property of EfficiencyOne and shall not be used by NSPI without EfficiencyOne's express consent. Upon termination of this Agreement, NSPI shall immediately upon instruction from EfficiencyOne return or destroy, as instructed by EfficiencyOne, the EfficiencyOne Brands.

17.2 Any trademarks, brands, logos or other branding or trade or business marks used in NSPI's business ("**NSPI Brands**") shall remain the sole and exclusive property of NSPI and shall not be used by EfficiencyOne for any purpose except in connection and as necessary for the provision of the EECA. Upon termination of this Agreement, EfficiencyOne shall immediately upon instruction from NSPI return or destroy, as instructed by NSPI, the NSPI Brands.

18. LIENS AND CLAIMS

18.1 EfficiencyOne shall indemnify and hold harmless NSPI, NSPI's parent and their subsidiaries and affiliates (collectively the "**Lien Indemnitees**" or singularly "**Lien Indemnitee**") and defend each of them from and against any and all losses and costs arising out of any and all claims for payment, liens, attachment or any other process, filed against any property of the Lien Indemnitees by or in respect of a Subcontractor of any tier or any other party providing work, materials in respect of the EECA or any part thereof (referred to in this Section as "**Liens or Claims**"), including solicitor and client fees and expenses incurred by NSPI in discharging any such Liens or Claims or similar encumbrances.

18.2 EfficiencyOne shall discharge promptly any Liens or Claims. If EfficiencyOne does not promptly satisfactorily discharge such Liens or Claims, NSPI at its sole option may (i) require EfficiencyOne to pay, within five (5) Business Days after request by NSPI, or (ii) subject to any requirements of the *Builders' Lien Act* of Nova Scotia, offset against any holdback or other amounts due or to become due to EfficiencyOne, all costs and expenses incurred by NSPI or other Lien Indemnitee in causing the release of, paying or settling such Liens or Claims. EfficiencyOne shall have the right to contest any such Liens or Claims, provided it first provides to NSPI a bond or other assurance of payment reasonably satisfactory to NSPI in the amount of such Liens or Claims and in form and substance reasonably satisfactory to NSPI. In no circumstance whatsoever shall NSPI be liable for a greater amount than the amount payable by NSPI to EfficiencyOne.

19. DISPUTE RESOLUTION

19.1 In the event of a dispute in connection with this Agreement, a senior representative of EfficiencyOne and a senior representative of NSPI shall promptly meet to discuss and resolve the dispute and the Parties shall have thirty (30) days to resolve the dispute (or ten (10) days if either Party notifies the other Party that the matter requires urgent resolution).

19.2 Unless the parties agree otherwise, in the event resolution cannot be achieved in accordance with Section 19.1 of this Agreement, then such dispute or difference shall be referred to the UARB in accordance with Section 79P of the Act.

19.3 Notwithstanding any dispute, EfficiencyOne shall diligently carry out the EECA, and shall not suspend, impair, interfere with, restrict or discourage the prompt completion of any portion of the EECA, unless specifically authorized to do so by the UARB.

20. DEFAULT AND TERMINATION

20.1 This Agreement may be terminated immediately by either Party, in whole or in part, upon the happening of one or more of the following events:

(a) EfficiencyOne's Franchise is terminated and the Agreement has not been assigned by the Minister; or

(b) The UARB approves the termination of the Agreement.

In the event of a termination pursuant to this Section 20.1, neither Party shall be entitled to any compensation or damages for any Consequential Losses as a result of such termination. Immediately upon receipt of such termination notice, EfficiencyOne will

discontinue all EECA under this Agreement and will only finish such portions of the EECA as may be necessary to preserve and protect the EECA already in progress. Such termination does not relieve either Party from any of their respective obligations under this Agreement for EECA provided up to the date of termination. Any claim for payment by EfficiencyOne must be asserted within thirty (30) days from the date of such termination.

20.2 Notwithstanding any other provision in this Agreement, in the event this Agreement is terminated in accordance with Section 20.1(a), EfficiencyOne shall:

(a) Immediately return all monies paid on account of the Contract Price which amounts have not been legitimately incurred or subject to contractual commitments for expenditure which cannot otherwise be mitigated to NSPI; and

(b) Provide to NSPI all reasonable required termination assistance to allow the EECA provided under this Agreement to continue and to facilitate the orderly transition of the EECA to NSPI or any third party as directed by NSPI, provided that EfficiencyOne shall be entitled to commercially reasonable payment for such transition services on a time and material basis.

20.3 The Parties acknowledge that this Agreement is subject to the general supervision of the UARB.

20.4 A Party shall be determined to be in default of its obligations under this Agreement if (each a "**Event of Default**"):

(a) it is in breach of any material term or condition of this Agreement, which breach is not cured by the Party within thirty (30) days after written notice from the other Party;

(b) it assigns this Agreement other than as permitted by the Act and/or the UARB;

(c) any representation or warranty made by either Party shall prove to be untrue when made in any material respect;

(d) there is a sale, transfer or relinquishment, voluntary or involuntary, by operation of law or otherwise, of legal control of the business of either Party except for a transfer to a related corporation or a transfer resulting from a merger, acquisition, amalgamation or reorganization, or, in the case of EfficiencyOne, a change in the Membership of the corporation;

(e) Either Party sells, transfers or assigns all or substantially all of its assets;

(f) a petition in bankruptcy is filed with respect to either Party; or

(g) any proceeding is commenced under any bankruptcy or insolvency legislation or under any other federal, state or provincial law relating to insolvency or bankruptcy, the adjudication of either Party as a bankrupt, the appointment by any competent court having jurisdiction of a temporary or permanent receiver, trustee or other officer having similar powers over either Party its business or assets, or the making of any assignment by either Party for the benefit of its creditors.

1 20.5 If a breach notified pursuant to Sections 20.4(a) cannot be corrected within the period
2 required therein, the defaulting Party shall not be in breach or violation if it:

3 (a) commences and diligently and continuously carries out the correction of the
4 breach or violation within the specified time;

5 (b) provides to the non-defaulting Party, and the UARB an acceptable plan for such
6 correction; and

7 (c) corrects the breach or violation in accordance with such plan.

8 20.6 Upon the occurrence of an Event of Default, the non-defaulting Party may apply to the
9 UARB to terminate this Agreement in whole or in part.

10 **21. NOTIFICATIONS**

11 21.1 All notices to be given to either Party under this Agreement shall be written and
12 addressed to the NSPI and to EfficiencyOne as follows:

13 To NSPI:

14
15 Nova Scotia Power Incorporated
16 1223 Lower Water Street
17 PO Box 910
18 Halifax, NS B3J 3S8
19 Attention: Corporate Secretary
20 Facsimile: (902) 428-6171

21
22 To EfficiencyOne:

23
24 EfficiencyOne
25 230 Brownlow Avenue
26 Suite 300
27 Dartmouth, NS B3B 0G5
28 Attention: CEO
29 Facsimile: (902) 470-3599
30

31 21.2 All notices may be sent by facsimile, a nationally recognized overnight courier service,
32 first class mail or hand delivered. Notice shall be given when received by the addressee
33 on a Business Day. In the absence of proof of the actual receipt date, the following
34 presumptions will apply:

35 (a) Notices sent by facsimile shall be presumed to have been received upon the
36 sending Party's receipt of its facsimile machine's confirmation of successful
37 transmission. If the day on which such facsimile is received is not a Business
38 Day or is after five p.m. (local time for the recipient) on a Business Day, then
39 such facsimile shall be deemed to have been received on the next following
40 Business Day.

(b) Notice by overnight courier shall be presumed to have been received on the next Business Day after it was sent.

(c) Notice by first class mail shall be presumed delivered five (5) Business Days after mailing.

21.3 Either Party may modify its address for notices by advance written notice to the other Party.

22. AUDIT AND INSPECTION

22.1 EfficiencyOne shall, during the Term and for a period of thirty-six (36) months thereafter, keep accurate records of all EECA supplied to NSPI, as necessary to determine that the EECA was provided in accordance with the terms and conditions of this Agreement.

22.2 NSPI shall have the right to apply to the UARB to request access to any of the records referred to in 22.1.

22.3 NSPI shall have the right to apply to the UARB to inspect or observe the EECA at all times, whether using its own forces or those of a designated third party. EfficiencyOne shall facilitate such inspections and provide sufficient, safe and proper facilities at all times for inspection of the EECA.

23. ASSIGNMENT

23.1 Neither Party shall assign all or any portion of this Agreement without the prior written approval of the UARB and/or the Minister as the situation requires.

24. SHARING OF DATA AND INFORMATION

24.1 EfficiencyOne shall work co-operatively with NSPI to provide NSPI with information and data from time to time in order to assist NSPI with planning and load forecasting as may be reasonably required by NSPI. For greater certainty, such information and data shall be consistent with the past practices of the Parties.

24.2 In the event of a dispute regarding any request for information by NSPI, NSPI shall have the right to apply to the UARB to request access to the information and data referred to in 24.1.

25. COORDINATION MEETINGS AND REPORTS

25.1 During the Term of this Agreement, EfficiencyOne shall prepare and deliver to the UARB and NSPI a quarterly report (the "**Quarterly Report**") in a form acceptable to the UARB.

25.2 EfficiencyOne shall prepare and deliver to the UARB and NSPI an annual report (the "**Report**") in a form acceptable to the UARB. For greater certainty, the Report shall summarize and provide details as to the EECA and milestones achieved in the prior year, contain a discussion and analysis of major discrepancies relative to the EECA Plan's intent and forecasts, EfficiencyOne's financial statement for the previous year with respect to the EECA, evaluation reports and a summary of planned versus actual savings and costs for each metric.

1 25.3 The Parties agree that ongoing coordination and regular communication between NSPI
2 and EfficiencyOne is important in order to ensure effective planning. To that end, the
3 Parties shall meet quarterly or as otherwise agreed upon to discuss the provision of the
4 EECA.

5 **26. GENERAL**

6 26.1 This Agreement shall only be renewed in accordance with the provisions of the Act.

7 26.2 This Agreement shall extend to, be binding upon and enure to the benefit of the
8 respective successors and permitted assigns of the Parties hereto.

9 26.3 EfficiencyOne will be an independent contractor. EfficiencyOne shall not act as an agent
10 for NSPI, bind NSPI to any obligation with a third party, nor hold itself out as having
11 authority to bind or obligate NSPI. None of the persons engaged by EfficiencyOne or
12 any of its Subcontractors in the performance of the EECA will be considered employees
13 of NSPI.

14 26.4 This Agreement shall be deemed to have been made in and shall be governed by,
15 construed and interpreted in accordance with the laws of the Province of Nova Scotia
16 and the laws of Canada, as applicable therein. Where the provisions of this Agreement
17 or the Act permit or require a matter to be referred to or proceeded with before a court,
18 or in any other case where the Parties bring a matter in respect of this Agreement before
19 a court, the Parties irrevocably attorn to the jurisdiction of the Supreme Court of Nova
20 Scotia.

21 26.5 No consent or waiver, express or implied, by any Party to this Agreement of any breach
22 or default by any other Party in the performance of its obligations under this Agreement
23 or of any of the terms, covenants or conditions of this Agreement shall be deemed or
24 construed to be a consent or waiver of any subsequent or continuing breach or default in
25 such Party's performance.

26 26.6 Time shall be of the essence for purposes of this Agreement.

27 26.7 This Agreement, upon approval by the UARB, shall represent the entire Agreement
28 between the Parties with respect to the subject matter hereto and shall not be modified,
29 varied or amended except by an instrument in writing signed by the Parties and
30 approved by the UARB or as ordered or directed, by the UARB at any time.

31 26.8 Should any provision of the Agreement be declared by a judicial or other competent
32 authority to be unenforceable, the remaining provisions of the Agreement shall remain in
33 full force and effect.

34 26.9 The Parties acknowledge that this Agreement and all related documents shall be in
35 English.

36 26.10 This Agreement may be executed by the Parties in counterparts, each of which when so
37 executed and delivered shall be deemed to be an original and when taken together shall
38 be deemed to be one and the same instrument. The electronic delivery, including,
39 without limitation, by email or facsimile transmission, of any signed original of this
40 Agreement shall be the same as the delivery of an original.

Supply Agreement

- 1 **IN WITNESS THEREOF**, the Parties have duly executed this Agreement, in duplicate, as of the
2 date set forth above.

Witness

Witness

Witness

Witness

NOVA SCOTIA POWER INCORPORATED

Per: _____

Name: _____

Title: _____

Karen Hutt
President & CEO

Per: _____

Name: _____

Title: _____

David Landrigan
VP, Commercial

EFFICIENCYONE

Per: _____

Name: _____

Title: _____

Per: _____

Name: _____

Title: _____

3

4

Supply Agreement

- 1 **IN WITNESS THEREOF**, the Parties have duly executed this Agreement, in duplicate, as of the
2 date set forth above.

Witness

Witness

Holly Brown.

Witness

Witness

Witness

NOVA SCOTIA POWER INCORPORATED

Per: _____

Name: _____

Title: _____

Per: _____

Name: _____

Title: _____

EFFICIENCYONE

Per: _____

Stephen MacDonald

Name: Stephen MacDonald

Title: Chief Executive Officer

Per: _____

Name: _____

Title: _____

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SCHEDULE A**ELECTRICITY EFFICIENCY AND CONSERVATION ACTIVITIES****Schedule A****Electricity Efficiency and Conservation Activities**

The figure below identifies the scope of savings associated with carrying out EECAs over the Term.

	Incremental** Annual Net Energy Savings at Generator(GWh)	Incremental** Annual Net Peak Demand Savings at Generator (MW)
Performance Targets*	127.2	20.2

The Performance Targets will be achieved in accordance with the EECA Plan as set out in Schedule E.

* For certainty, in accordance with the performance requirements set out in Schedule "C" attached hereto, EfficiencyOne shall be deemed to be in substantial compliance with the approved Performance Targets if 90 percent (90%) or greater achievement is reached on both Performance Targets. If less than 90 percent (90%) of either Performance Target is achieved, a regulatory process will be triggered.

**Incremental refers to new (or additional) annual savings

SCHEDULE B**COMPENSATION****Schedule B (Page 1 of 2)****Compensation****I. Net Contract Price**

The figure below identifies the net Contract Price to be paid by NSPI allocated for each year of the Term.

				2019
UARB Approved	34,050,000.00			\$34,050,000.00
Net Contract Price to be Paid by NSPI				\$34,050,000.00

The Parties acknowledge that any surplus realized by EfficiencyOne in delivering the Performance Targets at the end of the Term shall be reported to the UARB and, subject to any other direction that may be provided by the Board, credited¹ toward monthly payments required to be made by NSPI for EECA for 2021.

¹ Together with all accumulated interest earned by EfficiencyOne on such surplus.

Schedule B (Page 2 of 2)**Compensation****II. Payments**

In accordance with Section 4.3 of the Agreement, the monthly payments to be made by NSPI to EfficiencyOne over the Term shall be as set out below. The monthly payment amounts referred to following are exclusive of required HST. HST shall be remitted to EfficiencyOne in addition to these monthly amounts.

On the First Business Day of:	2019
January	\$2,902,994
February	\$2,643,668
March	\$2,835,843
April	\$3,012,732
May	\$2,546,339
June	\$2,365,872
July	\$2,428,360
August	\$2,448,936
September	\$3,105,656
October	\$4,053,223
November	\$2,867,637
December	\$2,838,740
Total	\$34,050,000

SCHEDULE C

Performance Requirements

I. UARB-APPROVED PERFORMANCE TARGETS, THRESHOLDS, AND INDICATORS

a) Performance Targets and Thresholds:

- i. EfficiencyOne is deemed to be in substantial compliance with the UARB-approved Plan Performance Targets if 90 percent or greater achievement is reached on the two Performance Targets as listed below. If less than 90 percent (90%) of either Performance Target is achieved, a regulatory process will be triggered.

b) Performance Targets consist of:

- i. Incremental annual net energy savings at generator
- ii. Incremental annual net peak demand savings at generator.

c) Performance Indicators (for UARB reporting) consist of:

- i. Incremental annual net energy savings at generator
- ii. Incremental annual net peak demand savings at generator.
- iii. Lifetime net energy savings at generator (reported by program and rate class)
- iv. Total ratepayer benefits
- v. Total spending (reported by program and rate class)
- vi. Customer satisfaction
- vii. An analysis of the impact on rates through the implementation of the 2019 programs will be included as part of EfficiencyOne's historical-looking rate and bill impact analysis, filed by October 31, 2020
- viii. Reporting on low income program participation, expenditures, and savings through a variety of methods, including estimation based on geographic census information.

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SCHEDULE D**CONFIDENTIALITY AND NONDISCLOSURE AGREEMENT**

THIS CONFIDENTIALITY AGREEMENT made effective this 1st day of January, 2019

Between:

EfficiencyOne, hereinafter "EfficiencyOne"

Party of the First Part

And

Nova Scotia Power Incorporated, hereinafter "NSPI"

Party of the Second Part

Whereas the Parties have entered into a Supply Agreement for Electricity Efficiency and Conservation Activities made effective as of January 1, 2019 ("Supply Agreement") whereby Efficiency One is to provide EECA (as that term is defined in the Supply Agreement) to NSPI;

And whereas in accordance with the Supply Agreement, and the Electricity Efficiency and Conservation Act (Nova Scotia) and the Public Utilities Act (Nova Scotia) (together hereinafter referred to as the "Legislation"), and as may be directed by the Nova Scotia Utility and Review Board, and as may be further agreed between the Parties, the Parties will be receiving, reviewing, and analyzing Confidential Information from each other;

And whereas the Parties wish to clarify the manner in which any Confidential Information disclosed by one Party ("Disclosing Party") to the other is to be treated by the recipient of the Confidential Information ("Recipient");

In consideration of the agreements of the Parties set forth below, and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the Parties agree as follows:

Confidential Information

1. The Parties agree that for the purpose of this Agreement "Confidential Information" means all information, regardless of the form in which it is communicated or maintained and prepared by the Disclosing Party, and is disclosed directly or indirectly to the Recipient, pursuant to the Supply Agreement, the Legislation, as directed by the Nova Scotia Utility and Review Board or as otherwise agreed between the Parties. Confidential Information includes, but is not limited to the following: all reports analyses, notes, memoranda, correspondence, spreadsheets, drawings, survey plans, maps, contracts, commercial arrangements, intellectual property, trade secrets, corporate strategies, business plans or other information that is based on, contain or reflect any Confidential Information, material, whether printed or electronic, which has been designated by the Disclosing Party as confidential information, including proprietary information and other commercially sensitive information. This includes but is not limited to information which has been or may be filed with the Nova Scotia Utility and Review Board ("the Board") in confidence in answer to Information Requests and any further material that may be filed with the Board in confidence whether in response to future Information Requests or otherwise, and whether printed or electronic. Confidential Information shall also include any explanation or other information provided by either Party to the Recipient concerning the foregoing and which has been identified by the Party providing the information as confidential at the time it is initially provided, whether printed or electronic. Confidential Information may also include any password or other information necessary to access electronic copies of Confidential Information.

Permitted Scope of Use

2. The Recipient may use the Confidential Information solely for the purposes of providing or receiving EECA, as the case may be, in accordance with the Legislation and the Supply Agreement and for no other reason or purpose.

No Obligation to Disclose

3. This Agreement does not obligate either Party to disclose any Confidential Information to the other.

Protection of Confidential Information

4. The Recipient shall hold the Confidential Information in strict confidence and shall strictly protect the Confidential Information from all harm, loss, theft, reproduction and unauthorized access, employing at least the same degree of care that the Recipient employs to protect its own confidential information of a similar nature, but in any event, not less than reasonable care. The Recipient shall ensure that such Confidential Information is not disclosed, published,

released, transferred or otherwise made available in any form to, for the use or benefit of, any person except as provided in this Agreement.

Acknowledgements

5. The Recipient acknowledges that the Confidential Information is confidential and a trade secret and is owned by the Disclosing Party and is highly valuable and material to the interests, business and affairs of the Disclosing Party and that any unauthorized disclosure thereof by the Recipient would be detrimental to the Disclosing Party.

Permitted Disclosures

6. The Recipient shall be permitted to disclose relevant aspects of the Confidential Information to its employees and professional advisors to the extent that such disclosure is reasonably necessary for the performance of its duties and obligations; provided, however, that prior to such disclosure the Recipient shall inform such persons and parties of the confidential nature of the Confidential Information and each such person or party signs the undertaking attached to this Confidentiality Agreement. The Recipient shall inform the Disclosing Party of the name of each person to whom it has disclosed the Confidential Information in accordance with this provision and shall provide to the Disclosing Party the signed undertaking. The Recipient shall be fully responsible for ensuring that any such persons to whom it discloses the Confidential Information complies with the confidentiality obligations contained in this Agreement and shall be liable for any breach of this Agreement by such persons.

7. The non-disclosure obligations in this Agreement shall not restrict any disclosure by the Recipient pursuant to any applicable law or an order of any court of competent jurisdiction or regulatory body with regulatory responsibilities over the Recipient, provided that the Recipient shall provide the Disclosing Party with prompt prior written notice of its obligation to disclose so that the Disclosing Party may seek a protective order or other appropriate remedy concerning the disclosure of its Confidential Information and/or waive compliance with the confidentiality provisions of this Agreement. In addition, the Recipient shall take reasonable steps, to the extent permitted by law, to remove from the Confidential Information that is required to be disclosed, any information that is commercially sensitive to the Disclosing Party. In the event of an order for disclosure by a court of competent jurisdiction or regulatory body with regulatory responsibilities over the Recipient, the Recipient shall first notify the Disclosing Party of such order and allow the Disclosing Party not less than ten (10) days to remove any such information that is commercially sensitive.

Term

8. The term of this Agreement shall commence on the effective date of the Supply Agreement unless superceded by another form of writing, and notwithstanding the return of any Confidential Information or any other event, shall continue in full

force and effect for a period of FIVE (5) years from the effective date of this Agreement.

Equitable Remedy

9. The Recipient acknowledges that any unauthorized use of the Confidential Information or any breach of its obligations under this Agreement will result in irreparable harm to the Disclosing Party which cannot be adequately compensated for by damages. Neither the Recipient, nor any term in this Agreement, shall interfere with, delay, or prevent the Disclosing Party from seeking an interim and interlocutory equitable remedy to enforce any provision of this Agreement. The Recipient agrees not to oppose an application for equitable relief by the Disclosing Party in such circumstances. Any such relief or remedy shall not be exclusive, but shall be in addition to all other available legal or equitable remedies. The Recipient agrees that the provisions of this Section are fair and reasonable in the commercial circumstances of this Agreement. This Article shall survive the termination of this Agreement.

Return of Information

10. On the earlier of either thirty (30) days following the termination of the Supply Agreement or at the written request of the Disclosing Party (and unless superceded by another form of writing), the Recipient shall return or destroy (at the Disclosing Party's direction) and delete from all electronic devices all Confidential Information provided to it, including all copies (and all notes and documents prepared by the Recipient that may incorporate same) and still in the Recipient's possession (and otherwise under its control or in the possession of other persons to whom it has been provided as permitted hereunder) and, if requested by the Disclosing Party, shall provide written confirmation to the Disclosing Party to that effect. Notwithstanding the forgoing, the Recipient shall be entitled to retain the Confidential Information in one legal file copy that may be retained solely for the determination of its legal obligations under this Agreement.

Residual Information

11. The Recipient or its designate or any other person having access to the Confidential Information pursuant to this Agreement shall not, during and after the termination of this Agreement, use in its business any Residual Information. "Residual Information" means the ideas, know-how and techniques that would be retained in the unaided memory of an ordinary person skilled in the art, not intent on appropriating the proprietary information of the disclosing party, as a result of such person's access to, use, review, evaluation, or testing of the Confidential Information of the disclosing party for the purposes described herein. An employee's memory is unaided if the employee has not intentionally memorized the Confidential Information for the purpose of retaining and subsequently using or disclosing it.

Limited Rights

12. The Recipient agrees that no rights are granted to Recipient other than the limited rights to use the Confidential Information on the terms of this Agreement. For certainty, no license is granted under this Agreement (directly or indirectly) under any patent, discovery, copyright, or other intellectual or industrial property right now or in the future.

Indemnity

13. The Recipient shall indemnify and hold the Disclosing Party harmless from any and all loss, liability, cost or expense (including, without limitation, solicitor's costs on a solicitor and client basis and all other costs of defence) caused in whole or in part by the Recipient's breach of any provision of this Agreement. This Article shall survive the termination of this Agreement.

Governing Law

14. This Agreement is governed and shall be construed in accordance with the laws of the Province of Nova Scotia.

General Provisions

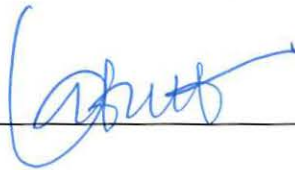
15. This Agreement is binding on the Parties, their administrators, successors, executors and assigns.

Executed and delivered this 6th day of April, 2018.

EfficiencyOne

Nova Scotia Power Incorporated

By: _____

By:  _____

Name:

Name:

Title:

Title:

Karen Hutt
President & CEO

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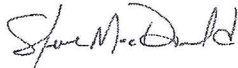
15. This Agreement is binding on the Parties, their administrators, successors, executors and assigns.

Executed and delivered this 6th day of April, 2018.

EfficiencyOne

Nova Scotia Power Incorporated

By:



By: _____

Name:

Name: Stephen MacDonald

Title:

Title: Chief Executive Officer

1 SCHEDULE "A" to CONFIDENTIALITY AGREEMENT

2
3 UNDERTAKING

4
5 I _____, HAVE READ AND
6 AGREE TO ABIDE AND AM BOUND BY THE TERMS AND CONDITIONS SET
7 OUT IN THE CONFIDENTIALITY AGREEMENT DATED THE ____ DAY OF
8 _____ BETWEEN EFFICIENCYONE AND NOVA SCOTIA
9 POWER INCORPORATED.

10
11 Dated the ____ day of _____ 201__.

12
13 _____
14 Witness

Name:

15 Recipient Designate

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SCHEDULE E

EECA PLAN

[Subject to approval by the UARB]



Appendix A

2019 DSM Resource Plan

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1. INTRODUCTION

EfficiencyOne developed the 2019 DSM Resource Plan for the supply of electricity efficiency and conservation activities to Nova Scotia Power Inc. (NS Power), in accordance with the *Electricity Plan Implementation (2015) Act*, SNS 2015, c 31, s. 20(1) and the *Public Utilities Act*, RSNS 1989, c 380, s. 79. EfficiencyOne is the current holder of the Efficiency Nova Scotia (ENS) franchise, making it the exclusive supplier of electricity efficiency and conservation activities to NS Power. This document will reference EfficiencyOne with regard to development of the Plan and ENS with regard to DSM activities in Nova Scotia within the 2019 continuation year and all previous years.

The overall 2019 DSM investment, energy, and demand targets were developed based on the approved 2016-2018 DSM Resource Plan, following the approach established in the *Electricity Plan Implementation (2015) Act*. This Act extended the 2016-2018 contractual term to include 2019 and set a corresponding 2019 DSM investment amount of not greater than \$34,050,000.¹ This investment amount is a continuation of the average planned 2016-2018 DSM Resource Plan investment amounts. The energy and demand targets for 2019 are similar to the annual averages in the approved 2016-2018 Plan, and the 2019 Plan includes demand-focused pilots to be developed in collaboration with NS Power. The *Electricity Plan Implementation (2015) Act* also extended the current ENS Grant of Franchise by one year to December 2025.²

Among other things, the 2019 Plan is based on:

- ENS's experience;
- ENS's 2016-2018 suite of programs and services;

¹ The legislation states: "(1) Notwithstanding clause 79I(2)(a) of the *Public Utilities Act*, for the calendar year 2019, Nova Scotia Power shall enter into an agreement with the electricity efficiency and conservation franchise holder for the provision of electricity efficiency and conservation activities in an amount not greater than \$34,050,000. (2) Sections 79J, 79L and 79M of the *Public Utilities Act* apply mutatis mutandis to the agreement referred to in subsection (1)." *Electricity Plan Implementation (2015) Act*, SNS 2015, c 30, s 2.

² *Ibid*, at s 33.

- Market conditions (e.g. program and measure saturation);
- Operational data; and
- Program impact and process evaluations, including evaluated savings results, Delivery Agent input and participant feedback.

The 2019 DSM Resource Plan has been created in a manner similar to the 2015 DSM Resource Plan, which also used a continuation plan approach to prepare a legislated one-year DSM Resource Plan. At that time, the *Electricity Efficiency and Conservation Restructuring (2014) Act* also prescribed a budget limitation for the 2015 year. Similar to the 2015 Plan, EfficiencyOne used its experience to develop a plan that will continue the trend of evolving programs to provide cost-effective energy and demand savings. EfficiencyOne will continue to consider market conditions, including market transformation, while maintaining high levels of customer satisfaction.

Beginning in 2018 and continuing into 2019, EfficiencyOne will work with NS Power to negotiate a contract for 2020-2022, which will become the second three-year DSM Resource Plan, in accordance with s. 79J(2)(a) of the *Public Utilities Act*.

The 2019 DSM Resource Plan establishes the programs and components for delivery of the 2019 portfolio. Section 1 identifies the planned savings and investment targets. Sections 2 and 3 provide an overview of programs and services for Residential and Business, Non-Profit and Institutional (BNI) customers. Section 4 outlines Enabling Strategies, including Education and Outreach, Development and Research, and Other Enabling Strategies.

1.1 2019 DSM Resource Plan Savings and Investment

In 2019, EfficiencyOne will invest \$34.05 million (in 2019 dollars) to achieve 127.2 GWh and 20.2 MW of incremental annual net energy and peak demand savings at the generator.

on

Table 1 presents program investment budgets and targets for the planned 2019 portfolio.

Table 1 - 2019 DSM Resource Plan Savings and Investment

2019	Investment (\$ million)	Incremental Annual Net Energy Savings at the Generator (GWh)	Lifetime Net Energy Savings at the Generator (GWh) ^a	Incremental Annual Net Demand Savings at the Generator (MW)	First Year Unit Cost (\$/kWh)	Lifetime Unit Cost (\$/kWh) ^a
Residential DSM Programs						
Efficient Product Rebates	3.5	14.9	132.9	1.5	0.235	0.026
Existing Residential ^b	8.6	31.0	422.2	7.0	0.276	0.020
New Residential	2.2	5.3	157.5	1.6	0.410	0.014
Residential Total	14.2	51.2	712.6	10.0	0.278	0.020
Business, Nonprofit and Institutional Programs						
Efficient Product Rebates	5.2	32.5	380.3	5.1	0.160	0.014
Custom Incentives	6.1	34.3	427.2	3.6	0.176	0.014
Direct Installation	4.1	9.3	118.4	1.5	0.443	0.035
BNI Total	15.4	76.1	925.8	10.2	0.202	0.017
Enabling Strategies						
Education & Outreach	1.6	n/a	n/a	n/a	n/a	n/a
Development & Research	2.2	n/a	n/a	n/a	n/a	n/a
Other Enabling Strategies	0.7	n/a	n/a	n/a	n/a	n/a
Enabling Strategies Total	4.5	n/a	n/a	n/a	n/a	n/a
Total	34.1	127.2	1638.4	20.2	0.268	0.021

Currency is expressed in 2019 dollars.

Columns may not add correctly, due to rounding.

^a Based on values of program Weighted Average Measure Lives, which have been derived from the 2017 Evaluation process.

^b Includes participation by low income households.

Program targets for 2019 are based on a variety of considerations, including the approved 2016-2018 Plan, ENS program results from recent years, evaluation results, and program and measure saturation and transformation considerations.

The total budget, energy and demand savings targets for 2019 are similar to the average annual targets in the approved 2016-2018 Plan. These energy and demand savings targets reflect the trends in both 2016 and 2017. The slight variance from the 2016-2018 annual average targets is due to the allocation of \$1.0 million to Enabling Strategies for research and pilots that focus specifically on demand reduction.

The overall unit cost of the 2019 Plan is increased from the unit cost of recent years. This is largely to enable ENS to diversify its measure mix, which will reduce the level of savings obtained from lighting in the coming years, as discussed at recent DSM Advisory Group meetings. The approved 2016-2018 Plan included the same trend, via an increased focus on

1 programs with lower savings from lighting measures, when compared with previous years.
2 As such, the 2019 Plan continues that desired trend.

3 The energy savings unit cost for the 2019 Plan is \$0.268/kWh, compared to the average for
4 the approved 2016-2018 Plan of \$0.252/kWh. There are a few notable reasons for the
5 change in unit cost in 2019 compared to earlier years:

- 6 • **Enabling Strategies Budget.** The 2019 Enabling Strategies budget is \$1.7M
7 higher than the level spent in 2017 and \$1.5M higher than spending in 2016.
8 This 2019 Enabling Strategies budget is required to account for the additional
9 costs that will be incurred in 2019 as a result of the 2020-2022 DSM Resource
10 Plan Application process. This means a reduction in funding for programs,
11 without the same magnitude of reduction in energy and demand targets. In
12 addition, the investment in two demand reduction pilots increases the unit cost
13 of the 2019 Plan. Overall, Enabling Strategies represent 13.2 percent of the
14 2019 Plan budget, which is above the average of 9.0 percent in the approved
15 2016-2018 Plan.
- 16 • **2017 Results.** In 2017 the program unit cost (not including Enabling Strategies)
17 was \$0.211/kWh, compared to \$0.232/kWh in 2019. The increased unit cost for
18 2019 incorporates the continued desire to further diversify ENS's energy
19 savings portfolio, with less savings coming from lighting projects.
- 20 • **2016 Energy Savings from Lighting Upgrades.** 2016 had the lowest unit cost
21 in recent years, at \$0.224/kWh. One of the primary reasons for a lower unit cost
22 in that year was the significant over-performance of the Instant Savings
23 program component. In 2016, Instant Savings had the second lowest unit cost
24 of any program component (after Strategic Energy Management) at
25 \$0.121/kWh (not including Enabling Strategies). Instant Savings' verified 2016
26 energy savings (34.6 GWh) were significantly higher than the amount targeted
27 in the Plan (8.1 GWh), which led to an overall reduction in unit cost for 2016
28 activities. The majority of these savings came from A-series LEDs; this trend is
29 not expected to continue in 2019 as ENS seeks to diversify its portfolio.

- 1 • **2015 Energy Savings from the Home Energy Report (HER) Program.** A
2 similar situation as the one described above for Instant Savings also occurred in
3 2015, where the HER program achieved significant energy savings (27.2
4 GWh), at a relatively low cost. This was a large contributing factor to ENS's
5 low unit cost of \$0.231/kWh for 2015. ENS's 2019 unit cost reflects, among
6 other things, the fact that the HER program is no longer offered. For
7 comparison, if savings and spending for both HER and the Low Income
8 Program are removed from 2015 (as neither are currently available), the unit
9 cost for 2015 would rise to \$0.270/kWh.

11 **2. RESIDENTIAL PROGRAMS AND SERVICES**

12
13 The programs included in the 2019 offerings to the Residential sector are the same as in the
14 approved 2016-2018 DSM Resource Plan, with changes to marketing names resulting from
15 the merger of certain components:

- 16 • Efficient Product Rebates (comprised of the Instant Savings and Appliance
17 Retirement program components);
18 • Existing Residential (comprised of the Efficient Product Installation,³ Home
19 Energy Assessment and Green Heat program components); and
20 • New Residential (marketed as New Home Construction).

21
22 ENS will continue to incent a variety of energy efficient products and to encourage
23 residents and landlords to pursue more energy efficiency projects by providing increased
24 support for more complex and/or more substantial upgrades. This will involve providing
25 further assistance for heating systems and building envelope improvements (as examples),
26 for both existing and new buildings. These efforts are intended to diversify the portfolio by
27 decreasing reliance on savings from lighting measures and shifting resources to non-
28 lighting measures. This is reflected in an increase to savings targets, relative to actual

³ In 2017, the Residential Direct Install (RDI) and Rental Properties and Condos (RPC) program components merged to form Efficient Product Installation.

1 results from recent years, for program components such as Home Energy Assessment,
2 which does not offer incentives for lighting.

3 **2.1 Efficient Product Rebates (Residential)**

4
5 Efficient Product Rebates is made up of two program components which are available to all
6 homeowners and renters across the province:

- 7 • Appliance Retirement; and
 - 8 • Instant Savings.
- 9

10 Appliance Retirement seeks to responsibly decommission and recycle functioning, but less-
11 efficient, home appliances such as refrigerators, freezers and room air conditioners. This
12 component has proven to be an effective offering in ENS's portfolio. In 2019, ENS intends
13 to continue retiring old inefficient appliances in Nova Scotia. ENS also recognizes that at
14 some point in the future this market will become saturated (as more and more appliances
15 are retired) to the point of no longer being cost effective in its current state.

16

17 In an effort to sustain cost-effectiveness in 2019, marketing will play a key role in
18 encouraging Nova Scotians to take advantage of this service, in addition to ENS seeking
19 other sources for appliance retirements. ENS anticipates Appliance Retirement will achieve
20 fewer savings in 2019 compared to the approved 2016-2018 DSM Resource Plan. This is
21 based on the historical trend of a reduced number of appliances being replaced each year.

22

23 Instant Savings provides in-store rebates on a variety of energy efficient products such as
24 lighting and appliances. This program component is delivered by partnering with a large
25 number of retailers across the province, and focuses on promoting ENERGY STAR®
26 certified products where possible.

27

28 A key consideration for 2019 will be the market evolution of LED lighting technologies.
29 One of Instant Savings' intents is to help transform the LED lighting market to the point

1 where rebates are no longer needed (i.e., where a customer purchases the efficient product,
2 even in the absence of rebates). ENS will consider a variety of information when deciding
3 what rebates are appropriate. Incentive setting research completed in 2017 and 2018 will
4 help inform decisions on rebate levels, and may result in some rebates being removed from
5 products.

6
7 ENS anticipates an increase in 2019 net incremental energy and peak demand savings when
8 compared to the approved 2016-2018 DSM Resource Plan. This outlook is influenced, in
9 part, by the energy savings achieved in 2016 and 2017. In 2019, ENS anticipates Instant
10 Savings will realize significantly lower energy savings than the levels achieved in 2016 and
11 2017. The majority of savings in recent years came from A-series LEDs; this trend is not
12 expected to continue in 2019 as ENS seeks to diversify its portfolio. To counter a reduction
13 in savings by potentially removing rebates on some lighting products, ENS will continue to
14 investigate other energy efficient technologies to add to the program, helping homeowners
15 and renters save on their electricity bills.

16 17 **2.2 Existing Residential**

18
19 Existing Residential is made up of the following three program components:

- 20 • Home Energy Assessment;
- 21 • Green Heat; and
- 22 • Efficient Product Installation.

23
24 Existing Residential encourages participants to make cost-effective energy efficiency
25 changes to their homes. This program serves all types of residential dwellings in Nova
26 Scotia, including single detached houses, duplexes, townhouses, mobile/mini homes, rental
27 housing, and other multi-family dwellings including apartments and condominiums.

28
29 The Existing Residential program includes a variety of energy efficient upgrade options for
30 customers. For example, homeowners are encouraged to complete upgrades to their

1 building envelope or Heating, Ventilation and Air Conditioning (HVAC) systems. Given
2 the potential significance of these energy savings in relation to electricity bills, ENS has
3 placed more of a focus on these upgrades in recent years by adding new measures and
4 reducing barriers to participation. This trend will continue in 2019, with two program
5 components (Home Energy Assessment and Green Heat) having energy saving targets that
6 are higher than recent years. In addition to building envelope and HVAC improvements,
7 ENS offers the direct installation of lower-cost energy saving technologies (e.g., lighting,
8 domestic hot water system upgrades, and smart power strips) for homeowners and renters.

9
10 In 2019, ENS will continue to use DSM funds to support a First Nations pilot program that
11 is being launched in 2018 and primarily funded by the Province of Nova Scotia. The DSM-
12 funded portion of the pilot will seek to deliver significant electrical energy savings to on-
13 reserve, Band-owned homes, where the household is income-qualified. DSM funds will be
14 used to conduct energy assessments and complete significant energy efficiency upgrades
15 for electrically heated homes, focusing on building envelope and/or heating system
16 upgrades. The pilot will be offered in all 13 First Nations communities across the Province,
17 with priority being given to the upgrades that result in the most significant energy savings.

18
19 Home Energy Assessment has been a staple energy efficiency program in Nova Scotia for
20 over ten years. Homeowners begin with a home energy assessment conducted by a
21 qualified service organization, with the majority of that cost subsidized by ENS. A tailored
22 report is provided and incentives are available for qualifying upgrades to the building
23 envelope (e.g., insulation, air sealing, and windows/doors), space heating/cooling, domestic
24 water heating, and ventilation systems.

25
26 Home Energy Assessment is delivered through a partnership with Natural Resources
27 Canada (NRCan)-approved Service Organizations. Homeowners interested in gaining an
28 understanding of the various energy-saving options for their home, along with a desire to
29 make significant changes to their electricity bills, are encouraged to participate.

1 The energy saving target for Home Energy Assessment is higher than results in recent
2 years: it is almost double the energy savings achieved in 2016 and roughly one-third higher
3 than the result in 2017. Increasing the focus on this program component is one way that
4 ENS plans to diversify energy savings, with less focus on lighting measures.

5
6 Green Heat offers incentives for space and water heating systems similar to those of Home
7 Energy Assessment. However, Green Heat does not require a home visit and offers more
8 simplified access to rebates for the purchase of efficient space and water heating systems
9 which offset electricity use in the home. As with 2016-2018, ENS will continue to review
10 additional technologies to help encourage electricity efficiency and conservation activities,
11 including other existing or emerging technologies. Efforts will also be investigated and
12 tested to encourage greater participation.

13
14 Similar to Home Energy Assessment, the 2019 energy saving target for Green Heat is
15 increased compared to recent years: more than 20 percent higher than the level achieved in
16 2016, and 60 percent higher than the level achieved in 2017. Also similar to Home Energy
17 Assessment, Green Heat does not offer incentives for lighting upgrades.

18
19 In 2019, ENS will continue to offer either rebates and/or financing as incentives for Home
20 Energy Assessment and to offer rebates for Green Heat participants. ENS plans to continue
21 to grow both components over time, as they are two of the main Residential components
22 that can help customers to achieve significant savings on their electricity bills.

23
24 Finally, Efficient Product Installation offers low-cost energy efficient upgrades to
25 participants at no cost. Efficient Product Installation is comprised of the former Rental
26 Properties and Condos program component, which focused on larger buildings with more
27 rental units, and the Residential Direct Install component, which focused on homes and
28 residential buildings with a smaller number of units. These two components merged to
29 form Efficient Product Installation on January 1, 2017, to simplify administration and
30 facilitate the offering of a more consistent line of products in households across Nova

Scotia. Both components were effective in past years, helping tens of thousands of Nova Scotians to-date.

Any homeowner or renter (via their landlord) in Nova Scotia is eligible for free installation of energy-efficient products such as lighting, upgrades to their electric domestic hot water system, and other electricity-saving devices. Based on housing levels in Nova Scotia and past participation, ENS estimates the Efficient Product Installation saturation level to be approximately 33 percent by the end of 2017.

ENS plans to use Efficient Product Installation to continue to generate a high level of energy savings in 2019, albeit less than the 2016-2018 average. This reduction is based on ENS's experience, as it is becoming more challenging over time to gain new participants. Similarly, future participants may also adopt a certain level of efficient lighting on their own, or through program components such as Instant Savings. ENS will continue to seek out new energy efficient measures and other methods to help participants cost-effectively save more electricity in their homes.

2.3 New Residential

The New Residential program aims to increase the number of homes built in Nova Scotia that exceed the energy efficiency levels of homes built to minimum building code energy performance requirements. In addition, the program aims to increase the number of homes installing ENERGY STAR® certified products. The ideal time to incorporate energy efficiency into any building is during the design and early construction phases. In fact, some upgrade options (e.g., adding more insulation to walls) can be very challenging if not completed at the onset, resulting in lost opportunities for energy savings. This makes it even more important to build as efficient a home as possible from the start. The measure life of upgrades and the overall level of energy savings is significant in New Residential. For these reasons, ENS will continue its efforts to grow its energy savings from the New Residential program.

For most participants, detailed design advice is provided by ENS staff and NRCan registered Energy Advisors before construction of a home. This advice is based on an energy analysis conducted by the registered Energy Advisor using home energy modeling software, which uses construction plans to project the energy consumption of the home. The registered Energy Advisor then provides tailored recommendations and projected energy savings for a variety of upgrade options. Upon completion of the new home, a final evaluation is conducted by the registered Energy Advisor, giving the home its energy rating.

ENS anticipates that the New Residential program will continue to gradually evolve. While many participants are expected to take part in the historical program structure above (with an EnerGuide rating or ENERGY STAR[®] performance level), ENS anticipates offering incentives for even higher-performing homes, potentially based on Passive House or other near net-zero energy rating systems. Incentives provided will evolve as the market transforms and if further changes are made to the Building Code.

New Residential energy and demand targets for 2019 are more than 30 percent higher than the savings achieved in 2016, and more than 50 percent higher than those of 2017. To grow the program in 2019, ENS will use a variety of strategies, which may include incentives, outreach to builder and permit offices, and contractor education and training, among other options. This is another strategy to help diversify energy savings.

3. BUSINESS, NON-PROFIT AND INSTITUTIONAL (BNI) PROGRAMS AND SERVICES

The BNI programs provide a combination of technical, educational, and financial support to help customers incorporate energy efficiency into their businesses. This can include influencing short-term decisions as well as incorporating energy efficiency into ongoing business practices.

The BNI initiatives include a variety of services to encourage customers to make energy efficient decisions ranging from standard purchases (e.g., choosing one technology over another when making a purchase) to more in-depth and complex decisions (e.g., constructing a new building or completing significant retrofits to an existing facility).

In 2019, ENS will continue to leverage and grow the support of qualified industry professionals to promote and deliver BNI initiatives. These professionals have existing relationships and the required experience and expertise in their respective fields, and are essential to helping customers understand and make cost-effective decisions on energy efficiency initiatives. This includes working with members of the Efficiency Trade Network (ETN). Members of this network receive training and updates on ENS initiatives, and are a valuable source of promotion for both efficient measures and ENS services. For more information on the ETN and associated initiatives, please refer to section 4.3.1, below.

The programs included in the 2019 offerings to the BNI sector are the same as in the approved 2016-2018 DSM Resource Plan, and will continue to evolve with market conditions and participant needs:

- Efficient Product Rebates (marketed as Business Energy Rebates);
- Custom Incentives (comprised of the Custom, Energy Management Information Systems (EMIS), and Strategic Energy Management (SEM) program components); and
- Direct Installation (marketed as Small Business Energy Solutions).

3.1 Efficient Product Rebates (BNI)

The BNI Efficient Product Rebates program provides customers with financial incentives (rebates or financing) to purchase approved energy efficient products. The rebates provided for each product are in most cases prescriptive, set in advance, and based on the energy

performance and standard application of the product. Rebates are offered through point-of-purchase discounts through a province-wide network of distribution partners, or through mail-in applications. In some cases, rebates will be adjusted to reflect the electricity-use impacts corresponding to actual installed conditions, based on information provided via the mail-in process.

A variety of measures are supported in this program. The list of measures will continue to evolve over time, and is expected to include measures such as: lighting; HVAC systems and controls; agricultural equipment; variable speed drives for motors; compressed air; refrigeration; kitchen / food service and IT technologies. The energy savings target for 2019 is very close to the average annual target in the approved 2016-2018 DSM Resource Plan.

The Efficient Product Rebates program works with businesses, non-profits, institutions, multi-unit residential landlords and others, in an effort to encourage customers to adopt the more energy efficient option when making purchasing decisions. ENS supports products in both retrofit and new construction projects. Similar to the Instant Savings component in Residential, as a specific efficient technology becomes more of a standard practice, ENS will regularly update its level and type of support for a given product. The 2017 and 2018 incentive setting research is expected to help inform incentive decisions for products included in this program in 2019. In recent years the majority of the savings from this program has been from lighting upgrades, and ENS plans to review additional measure options, as well as consider market trends when establishing lighting incentives.

3.2 Custom Incentives

The Custom Incentives program consists of the following three program components:

- Custom;
- Energy Management Information Systems (EMIS); and
- Strategic Energy Management (SEM).

1 The Custom Incentives program works directly with customers to identify and implement
2 unique and cost-effective electrical energy and demand saving measures on a case-by-case
3 basis, where incentives from other programs do not apply. Custom Incentives offer a
4 simplified customer experience for projects that are often more complex than upgrades
5 under other ENS programs.

6
7 Custom Incentives involves a one-on-one working relationship between ENS and the
8 customer. This allows for customized technical and financial support, with energy and
9 demand savings being considered on a case-by-case basis. Supported measures achieve
10 savings in a variety of end uses such as processes, compressed air, building envelope,
11 HVAC equipment, controls, refrigeration, motors, and more.

12
13 The Custom Incentives program offers a variety of services to customers, including:

- 14 • Helping customers identify and secure qualified third-party sources of technical
15 expertise;
- 16 • Providing rebates on the cost of initial scoping studies and/or detailed feasibility
17 studies;
- 18 • Providing incentives for technical assistance to achieve more efficient designs in
19 new facilities;
- 20 • Providing financial incentives (rebates or financing) for implementing cost-effective
21 electrical energy efficiency projects;
- 22 • Providing incentives for the use of best practices in systems commissioning;
- 23 • Providing technical and/or financial incentives for improvements to compressed air
24 systems; and
- 25 • Supporting customers through technical and financial assistance to better
26 understand and manage the energy used in their facilities, and to make a variety of
27 changes to reduce energy use.

28
29 Custom Incentives participants are generally recruited via networking, referrals and direct
30 contact. On-Site Energy Managers (OEMs) also play an important role in identifying



potential Custom Incentives projects; the OEM service places a trained energy manager at a customer's workplace, to develop energy management plans and facilitate participation in ENS programs. In many instances, due to the complexity and size of the upgrades, there can be long lead times for these projects.

In some cases, customers can benefit from multiple offerings within the Custom Incentives program, and are encouraged to take advantage of this opportunity to further reduce energy use. All three of the Custom Incentives program components will continue in 2019, with the overall program targets growing in relation to energy savings of recent years and remaining similar to the 2016-2018 Plan. This is another method by which ENS intends to further diversify its energy savings, as the level of lighting savings from Custom will continue to be relatively low.

3.3 Direct Installation

The Direct Installation program (marketed as Small Business Energy Solutions or "SBES") has undergone a variety of changes in recent years.

Typical participants include small offices, retail shops, convenience and grocery stores, service stations, restaurants, lodgings, landlords (common spaces in multi-unit residential buildings), non-profit organizations, cafeterias, pharmacies, bakeries, and farms.

Under SBES, participants are eligible for incentives (both rebates and financing) for installing energy efficient measures. Some participants are eligible to receive an energy audit as part of their involvement in the program, providing them with a list of upgrade opportunities. Other participants complete the do-it-yourself (DIY) option, with projects identified by contractors or the participant. Rebates are paid after project completion and verification. SBES offers rebates of up to 60 percent of participant costs, in addition to financing repaid on NS Power bills for a term of up to two years.

A variety of measures are included in SBES, such as: lighting, building envelope, HVAC upgrades, and upgrades to kitchen and laundry facilities. SBES will continue to consider support for new non-lighting measures that will further diversify sources of energy savings. Furthermore, the program will continue to evolve based on participant feedback and results from the most recent changes to the program.

4. ENABLING STRATEGIES

Enabling Strategies are an essential component of this DSM Plan, and are required for ENS to meet energy and demand savings targets. In this and other plans, EfficiencyOne has and will continue to use Enabling Strategies where it can invest in, among other things, research and programs that help inform energy and cost savings to Nova Scotians. ENS's 2019 Enabling Strategies will include:

- Education and Outreach;
- Development and Research; and
- Other Enabling Strategies (Capacity Building, Working with Governments and Regulatory Affairs).

Enabling Strategies make possible future savings within programs and services by meeting the following objectives:

- increase awareness of, and education about, DSM programs and services, driving participation;
- evolve DSM programs and services by innovating and improving delivery of these services to Nova Scotians; and
- drive market transformation.

4.1 Education and Outreach

Since 2008, Education and Outreach has been an important part of electricity DSM Plans in Nova Scotia. These strategies will continue through 2019 to help increase program

1 participation, foster a culture of efficiency throughout the province, and educate students,
2 families, and businesses on the benefits of energy efficiency. Energy savings are not
3 attributed directly to Education and Outreach activities. Rather, energy savings are captured
4 through participation in the individual DSM programs that benefit from these broader
5 activities.

6
7 By creating a culture of efficiency throughout the province, Nova Scotians learn how and
8 why it is important to adopt energy efficient behaviours that will benefit themselves and
9 their communities. This behaviour change will encourage participation in DSM programs
10 and encourage Nova Scotians to live a more efficient and sustainable lifestyle. A targeted
11 approach to businesses educates small businesses across the province on the potential for
12 energy savings and reduced operation costs from energy efficiency.

13
14 Education and Outreach strategies for 2019 will include building on past and current
15 activities, research and feedback from Nova Scotians, as well as participating in public
16 speaking engagements, trade shows, and social media. Areas of focus will include:

- 17 • Educating customers on the value provided by electricity efficiency and
18 conservation and ways to achieve cost-effective net incremental energy and
19 peak demand savings that lower their electric utility bills;
- 20 • Educating students on energy efficiency, focusing on its economic and
21 environmental benefits;
- 22 • Increasing public awareness of the benefits of participating in electricity
23 efficiency and conservation programs;
- 24 • Enabling and encouraging a culture of efficiency and the adoption of energy
25 efficiency as a social norm through a focus on individual and community-
26 based commitments to energy efficiency;
- 27 • Connecting potential customers to relevant programs and services; and
- 28 • Learning from customers, to ensure their experiences and advice are
29 incorporated to continuously improve programs and services.

The following initiatives support the strategies identified above:

- Continual enhancement of ENS's website to expand the availability of technical information, program materials, assistance, and links to other resources;
- Complementary social media (Facebook, Twitter, Instagram, LinkedIn) strategies to drive awareness of energy efficiency and ENS's programs and services;
- Sharing Nova Scotians' energy efficiency success stories to encourage others to participate;
- Continual development of the Efficiency Trade Network (trade partners) to build capacity and increase program participation through training, workshops, information sharing, professional development, etc.;
- Nurturing and developing key partnerships with community groups, associations and aligned organizations;
- Attending community events, speaking engagements, presentations, and information sessions to encourage individuals, businesses, and organizations to participate in energy efficiency programs;
- Attending Home Shows and Trade Shows across Nova Scotia to encourage program participation;
- Supporting the Green Schools Nova Scotia program, to supplement learning and build awareness among youth about energy efficiency and to create a culture of efficiency in Nova Scotia;
- Monitoring media stories relating to energy efficiency;
- Supporting the development of energy efficiency courses at post-secondary institutions such as Dalhousie University and Saint Mary's University;
- Supporting educational workshops for non-profits and community groups across the province; and
- Pursuing and supporting additional activities as opportunities arise.

4.2 Development and Research

ENS is committed to achieving cost-effective incremental net energy and peak demand savings for its customers. This requires continued research and development activities in 2019. These activities will:

- support the evolution of DSM programs and future DSM Resource Plans via research and development initiatives; and
- improve customer service and engagement through Customer Relationship Management via development activities.

4.2.1 Research

Throughout 2019, ENS will conduct research to gain further market insights and stay current with emerging technologies and initiatives from other jurisdictions. Findings will help guide program decisions by providing a greater understanding of new technologies and potential offerings, which can then be used for new pilots, program updates, or other innovative initiatives. This is especially useful for informing business decisions, considering the need to evolve programs response to potential market transformation and saturation of some technologies. Insights from participants and the general public can help ENS shape program offerings, by removing barriers to adopting energy efficiency initiatives, while maintaining high levels of participant satisfaction.

One relatively new area of market research pertains to incentive levels. ENS plans to continue its incentive setting research in 2018, which will add rigour to assessing 2019 incentive levels. The results of this research may also help further inform additional research plans to ensure ENS continues to set appropriate incentive levels. Findings from this research will help ENS maintain a high standard of service delivery and support the effectiveness of its portfolio.

1 Additional research efforts will include an ongoing examination of the trends of ENS
2 activities. Understanding the successes and challenges of ENS efforts is critical to
3 identifying areas for improvements. For example, findings may identify opportunities to
4 help customers achieve deeper savings (higher energy savings per participant), or enable
5 ENS to realize cost savings in the promotion and delivery of its programs.
6

7 **4.2.2 Development**

8

9 ENS will continue working with First Nations communities in Nova Scotia. Through both
10 DSM and Provincially-funded activities, ENS has worked with First Nations communities
11 on a variety of energy efficiency projects and programs. In 2019, ENS will continue to
12 work closely with First Nations communities to gather feedback on the development and
13 design of energy efficiency and conservation programs. This may lead to ENS exploring
14 opportunities for potential future programs and services.
15

16 ENS will develop pilots targeting demand reductions in 2019. The importance of including
17 peak demand reductions as part of the 2019 DSM Plan is due to continued firm demand
18 growth in Nova Scotia over the past number of years. ENS has included a budget for
19 demand reduction pilots as part of this Application and looks forward to collaborating with
20 NS Power on these initiatives.⁴
21

22 Demand reduction activities have the primary goal of reducing demand, whereas energy
23 efficiency activities have the primary goal of reducing energy consumption. Demand
24 reduction initiatives help customers reduce their demand, which can in turn reduce NS
25 Power's peak demand. This can also help demand-billed customers lower their electricity
26 bills. As such, demand reduction initiatives have the potential to reduce facility peak billing

⁴ The *Public Utilities Act* (s. 79A(b)(iii)) defines electricity efficiency and conservation activities as including activities that reduce demand during NS Power's periods of highest demand.

1 and/or customer demand in periods within and outside of the NS Power system coincident
2 peak period.
3

4 In addition to the 2019 demand reduction pilots, which will explore options to reduce both
5 facility peak demand (where applicable) and NS Power system peak demand, ENS
6 anticipates exploring demand-focused activities and best practices undertaken in leading
7 jurisdictions, in collaboration with NS Power for potential future DSM programs. The 2019
8 budget includes \$1.0 million for exploring demand reduction and developing and
9 implementing pilot activities.
10

11 Although planning is in the early stages, ENS is considering the development of two
12 demand reduction pilots. One pilot would be focused on residential customers, while the
13 other would focus on BNI customers. These pilot activities will serve to demonstrate the
14 benefits of demand reduction activities, including decreased capacity-related costs for all
15 customer groups, access to time-of-use rates (for certain customer classes), and the direct
16 benefits of reductions in billed demand (for those customer groups billed for facility peak
17 demand).
18

19 Potential measures currently being considered include, but are not limited to:

- 20 • Incentives for residential and BNI electric thermal storage systems;
- 21 • Incentives for demand-limiting hot-water systems;
- 22 • The addition of demand-focused measures gaining eligibility under the Custom
23 program; and
- 24 • The addition of demand-focused measures within prescriptive BNI programs.
25

26 ENS anticipates the selection of pilot activities will be further informed by initial planning
27 and consultation with interested stakeholders, including the DSM Advisory Group.

4.2.3 Customer Relationship Management (CRM)

An improved information tracking system is expected to be complete and in full operation before the start of 2019. In addition to reducing information management costs (through easier access to information, improved quality data, and automation), the system will provide the technical foundation for evolving ENS's customer-centric approach to service delivery and marketing and communications. CRM practices and principles are widely used to maintain and improve relationships with customers, with the goal to drive loyalty and engagement with an organization. Analysis of customer and other information captured in the new system will guide how ENS approaches existing and potential participants, and facilitate program design and delivery decisions, leading to improved services and participant interactions.

4.3 Other Enabling Strategies

The Other Enabling Strategies category includes the following sub-categories:

- Capacity Building;
- Working with Governments; and
- Regulatory Affairs.

4.3.1 Capacity Building

In 2019, ENS will focus efforts on capacity building in Nova Scotia by enhancing existing training and quality assurance for Delivery Agents and building industry capacity through its ETN.

ENS will continue to train Delivery Agents to directly answer participant inquiries and provide energy efficiency information related to the relevant services for each participant.

1 In 2019, ENS will continue to build industry capacity through training and educating the
2 ETN through events such as the Bright Business Conference and Awards and hosting other
3 specific energy efficiency focused training. ENS will also continue to collaborate with
4 industry partners by offering ETN members discounted rates for related training
5 opportunities.

6
7 ENS will also focus on providing the details of its offerings through pre-recorded modules
8 as well as in-person events across the province for large program updates to ensure
9 questions or concerns are addressed in a timely matter.

10
11 The Network News will continue to provide ETN members with advanced notice of ENS
12 initiatives and to solicit their feedback. Newsletter topics include program updates,
13 procurement opportunities, pilot outcomes, and industry trends.

14 15 **4.3.2 Working with Governments**

16
17 In 2019, ENS will continue to support the development and implementation of energy
18 efficiency codes and standards, in collaboration with both the Provincial and Federal
19 governments, as well as other stakeholders. This includes supporting the Provincial
20 government in introducing new codes and regulations, and providing expertise and market
21 data to both levels of government where appropriate. In addition, ENS expects to continue to
22 support the Canadian Standards Association's (CSA's) efforts to develop and update relevant
23 energy efficiency-related standards through active participation in their Steering Committee
24 on Performance and Energy Efficiency Standards (SCOPEER). ENS anticipates it will also
25 assist the CSA at the committee (a standing committee for a particular end-use [e.g., HVAC])
26 or Technical Subcommittee (struck for the development of a particular standard) levels, as
27 opportunities arise.

4.3.3 Regulatory Affairs

Regulatory Affairs activities include UARB processes, DSM Advisory Group initiatives and stakeholder consultation work, industry research, and legal work relating to ENS initiatives.

In 2019, Regulatory Affairs initiatives will include:

- Negotiating the 2020-2022 DSM Resource Plan with NS Power and gaining stakeholder and UARB-approval of the same;
- Developing and/or filing regular report updates with the UARB on topics including:
 - 2019 Quarterly Reports;
 - 2018 Evaluation Reports;
 - 2018 Annual Progress Report;
 - 2018 Audited Financial Statements;
 - 2019 Historical-looking Rate and Bill Impact Analysis;
 - evaluation and verification recommendation updates; and
 - other studies, reports, and updates, as appropriate.

Throughout 2019, ENS will continue to host DSM Advisory Group meetings and to work closely with stakeholders to discuss ongoing initiatives, as appropriate. Other engagements will include working with the Evaluation and Verification Consultants to facilitate their efforts and pursuing commitments arising from the 2019 DSM Resource Plan regulatory process.

EfficiencyOne

IN THE MATTER OF *The Public Utilities Act*

- and -

IN THE MATTER OF *An application by EfficiencyOne for Approval of a Supply Agreement for Electricity Efficiency and Conservation Activities between EfficiencyOne and Nova Scotia Power Inc., the establishment of a final agreement between the parties, and approval of a 2019 Demand Side Management (“DSM”) Resource Plan*

Evidence of EfficiencyOne as Holder of the Efficiency Nova Scotia Franchise

M08604

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1. INTRODUCTION

This Evidence is in support of an electricity Demand Side Management (DSM) Resource Plan (2019 DSM Resource Plan) to supply Nova Scotia Power Inc. (NS Power) with electricity efficiency and conservation activities in 2019. It is being filed with the Nova Scotia Utility and Review Board (UARB) by EfficiencyOne as holder of the Efficiency Nova Scotia (ENS) franchise, in accordance with the *Public Utilities Act*.¹

The 2019 DSM Resource Plan Application consists of:

- A Notice of Application
- This Evidence
 - the 2019 DSM Resource Plan (Appendix A)
 - the 2019 DSM Resource Plan Development Approach and Details (Appendix B)
 - a forward-looking Rate and Bill Impact Analysis Report (Appendix C; Excel model filed electronically)
 - 2019 Planned Expenditures by Rate Class (Appendix D)
- An executed Supply Agreement for Electricity Efficiency and Conservation Activities (“Supply Agreement”), between NS Power and EfficiencyOne

In accordance with the *Electricity Plan Implementation (2015) Act*, which was drafted to support NS Power’s Rate Stability Period of 2017-2019, the 2019 DSM Resource Plan is based on a continuation approach. As such, this Application is an exception from the typical three-year DSM Plan required under the *Public Utilities Act*. The *Electricity Plan Implementation (2015) Act* and resulting continuation approach are discussed in section 1.1.6 of this Evidence.

¹ *Public Utilities Act*, RSNS 1989, c 380, s. 79.

1.1 Background

The responsibility and accountability for DSM administration transferred from NS Power to Efficiency Nova Scotia Corporation (ENSC) effective October 1, 2010. ENSC submitted its first DSM Plan filing, the 2012 DSM Plan, on February 28, 2011, which was approved by the UARB on June 30, 2011.

1.1.1 2013-2015 DSM Plan

ENSC submitted its 2013-2015 DSM Plan on February 27, 2012, along with subsequent revisions filed on March 30, 2012 and April 18, 2012. A DSM Settlement Agreement with respect to the first two years (2013 and 2014) of the 2013-2015 DSM Plan was approved by the UARB on June 4, 2012.

1.1.2 Public Utilities Act Revisions

Revisions to the *Public Utilities Act*, introduced through the *Electricity Efficiency and Conservation Restructuring (2014) Act*,² pronounced a structural change for energy efficiency and conservation activities in Nova Scotia in 2015. As a result of this legislation, ENSC ceased to exist as Nova Scotia's DSM provider on January 1, 2015. In its place, an ENS franchise was created and awarded to EfficiencyOne by the Minister of Energy. Highlights include:

- As of January 1, 2015, NS Power is required to undertake cost-effective electricity efficiency and conservation activities that are reasonably available in an effort to reduce costs for its customers (s. 79I(1));
- The franchise "gives the franchise holder the exclusive right to supply Nova Scotia Power Incorporated with reasonably available, cost-effective electricity efficiency and conservation activities" (s. 79C(2)(a));

² *Electricity Efficiency and Conservation Restructuring (2014) Act*, SNS 2014, c 5.

- The “franchise holder is deemed to be a public utility in relation to its franchise activities” (s. 79G(2));
- The supply of electricity efficiency and conservation activities is administered by the holder of the ENS franchise on a contractual basis with NS Power, with the Supply Agreement being approved by the UARB; and
- As outlined in legislation, the UARB may “determine the manner in which any costs recoverable by Nova Scotia Power Incorporated from its customers must be allocated amongst Nova Scotia Power Incorporated’s customers, and in doing so may, in addition to any other factors considered appropriate by the Board, take into account the Rate Smoothing Adjustment” (section 79S).

1.1.3 ENS Franchise

On November 28, 2014, the Minister of Energy granted the ENS franchise to EfficiencyOne, making it a public utility in relation to these regulated activities. The franchise was awarded to EfficiencyOne for a nine-year term, from January 1, 2016 to December 31, 2024,³ with a one-year transition period for 2015.⁴ This term was subsequently extended by one year to 2025, in accordance with the *Electricity Plan Implementation (2015) Act* (see below).⁵

1.1.4 2015 DSM Resource Plan

For the 2015 transition year, NS Power and EfficiencyOne were deemed to have entered into an initial agreement.⁶ In 2015 only, the legislation limited the dollar amount to be spent on electricity efficiency and conservation activities to not more than \$35 million, plus any

³ *Public Utilities Act*, supra note 1 at s 79Q(1).

⁴ *Ibid* at s 79Q(2).

⁵ *Electricity Plan Implementation (2015) Act*, SNS 2015, c 30, s 33.

⁶ *Public Utilities Act*, supra note 1 at s 79Q(2).

1 over-recovery of funds by ENSC from 2013.⁷

2
3 EfficiencyOne filed its 2015 DSM Resource Plan with the UARB on May 14, 2014 and the
4 UARB approved a Settlement Agreement on September 8, 2014. The one-year Plan was
5 designed as a continuation plan, based on historical experience, market research and
6 evaluated savings results rather than the modelling approach used in past DSM Plans.

7
8 **1.1.5 2016-2018 DSM Resource Plan**

9
10 EfficiencyOne filed its 2016-2018 DSM Resource Plan with the UARB on February 27,
11 2015. This DSM Resource Plan was based on the full resource modelling approach.
12 Following a public hearing, EfficiencyOne filed a Compliance Filing with the UARB on
13 September 15, 2015. The UARB approved a Consensus Agreement and the Compliance
14 Filing on October 7, 2015.⁸

15
16 In accordance with the UARB-approved Consensus Agreement and a separate Settlement
17 Agreement (termed the ‘Quantum Agreement’),⁹ certain issues from the 2016-2018 DSM
18 Resource Plan proceedings were deferred for resolution outside the regulatory hearing
19 process. In addition, the Consensus Agreement specified a collaborative approach to
20 determining cost allocation and recovery.

⁷ *Ibid* at s. 79R(1).

⁸ The Consensus Agreement was signed by EfficiencyOne, NS Power, the Consumer Advocate, the Small Business Advocate, the Industrial Group, the Affordable Energy Coalition, and the Ecology Action Centre. M06733, NSUARB Decision, *The Public Utilities Act and An Application for Approval of a Supply Agreement for electricity efficiency and conservation activities between EfficiencyOne and Nova Scotia Power Incorporated, the establishment of a final agreement between the parties, and approval of a 2016-2018 Demand Side Management Resource Plan* (12 Aug 2015), 2015 NSUARB 204 at para 24 and Appendix D (available on CanLII).

⁹ The Quantum Agreement was signed by EfficiencyOne, the Consumer Advocate, the Small Business Advocate, the Affordable Energy Coalition, and the Ecology Action Centre. Although the Quantum Agreement was not approved by the UARB, the UARB Decision indicated its understanding that “the non-financial provisions of the Quantum Agreement will be pursued by E1, NS Power and other stakeholders through the DSM Advisory Group.” M06733, NSUARB Decision, *The Public Utilities Act and An Application for Approval of a Supply Agreement for electricity efficiency and conservation activities between EfficiencyOne and Nova Scotia Power Incorporated, the establishment of a final agreement between the parties, and approval of a 2016-2018 Demand Side Management Resource Plan* (12 Aug 2015), 2015 NSUARB 204 at para 27 and Appendix C (available on CanLII).

1 Following the UARB's approval of this Consensus Agreement, NS Power initiated a
2 regulatory process (M07151) to determine the appropriate cost allocation and recovery
3 mechanisms for the 2016-2018 DSM Resource Plan. Changes to the *Public Utilities Act*, as
4 a result of the *Electricity Efficiency and Conservation Restructuring (2014) Act*, had
5 removed the ability for NS Power to collect the Demand Side Management Cost Recovery
6 Rider, and made ENS a fuel-supplier to NS Power. As such, NS Power proposed, and
7 ultimately received approval for the treatment of the allocation and recovery of the 2016-
8 2018 DSM investment.

9
10 **1.1.6 *Electricity Plan Implementation (2015) Act***

11
12 The *Electricity Plan Implementation (2015) Act* was drafted to support rate stability for NS
13 Power's Rate Stability Period of 2017-2019 by, *inter alia*, requiring NS Power to develop
14 a Fuel Stability Plan and providing predictability for the 2019 DSM investment. The
15 legislation achieved this predictability for the 2019 DSM investment by introducing a
16 continuation approach, which essentially extended the 2016-2018 DSM Resource Plan, and
17 set a corresponding 2019 DSM investment amount of not greater than \$34,050,000.¹⁰ This
18 amount is the annual average of the UARB-approved investment for the 2016-2018 DSM
19 Resource Plan. The *Electricity Plan Implementation (2015) Act* also extended the current
20 ENS Grant of Franchise by one year to December 2025.¹¹

21
22 In accordance with this legislation, the proposed 2019 DSM Resource Plan is a one-year
23 continuation plan, similar in concept to the approved DSM Plan for the 2015 transition year.
24 This is an exception to the typical three-year plan required under the *Public Utilities Act*.
25 To align with the continuation year approach, this DSM Resource Plan was not developed

¹⁰ The legislation states: "(1) Notwithstanding clause 79I(2)(a) of the *Public Utilities Act*, for the calendar year 2019, Nova Scotia Power shall enter into an agreement with the electricity efficiency and conservation franchise holder for the provision of electricity efficiency and conservation activities in an amount not greater than \$34,050,000. (2) Sections 79J, 79L and 79M of the *Public Utilities Act* apply mutatis mutandis to the agreement referred to in subsection (1)." *Electricity Plan Implementation (2015) Act*, *supra* note 5 at s 20.

¹¹ *Ibid* at s 33.

1 based on the Standardized Filing Framework.¹²

2

3 The franchise extension to 2025 means the subsequent two DSM Resource Plans will be

4 three-year agreements, in compliance with the *Public Utilities Act*. EfficiencyOne will

5 utilize the Standardized Filing Framework for these agreements.

¹² In accordance with the Consensus Agreement to the 2016-2018 DSM Resource Plan, Parties agreed to establish a Standardized Filing Framework for future applications to approve a DSM Supply Agreement. The Standardized Filing Framework was filed with the UARB as part of the executed June 30, 2016 Settlement Agreement. See *The Order of the Nova Scotia Utility and Review Board in Matter M06733 Directing the Parties to Pursue Resolution of Certain Matters set out in Settlement Agreements Therein Within the DSM Advisory Group* [Settlement Agreement], [2016].

2. TRANSITION YEAR PLANNING

EfficiencyOne had originally planned to file an Application in 2018 seeking approval for a three-year 2019-2021 DSM Resource Plan, in accordance with section 79J(2)(a) of the *Public Utilities Act*. However, in compliance with the recent requirements introduced through the *Electricity Plan Implementation (2015) Act*, EfficiencyOne has developed a one-year 2019 DSM Resource Plan based on a continuation of the 2016-2018 DSM Resource Plan.

The following considerations influenced EfficiencyOne's approach in developing its 2019 DSM Resource Plan:

- To align DSM planning with NS Power's Rate Stability Period, the *Electricity Plan Implementation (2015) Act* set the requirement that, "for the calendar year 2019, Nova Scotia Power shall enter into an agreement with the electricity efficiency and conservation franchise holder for the provision of electricity efficiency and conservation activities in an amount not greater than \$34,050,000".¹³ This amount corresponds to the annual average UARB-approved 2016-2018 DSM Resource Plan investment; and
- The most recent Integrated Resource Plan (IRP) is from 2014, which was used to inform the 2016-2018 DSM Resource Plan. This means that, in addition to the 2019 DSM Resource Plan being developed as a continuation of the 2016-2018 approved DSM Plan and program mix, it is also based on the same 2014 IRP considerations.

EfficiencyOne recognizes that the 2019 DSM Resource Plan must meet the requirements of the new legislation, provide sound and reasonable evidence for regulatory approval, ensure that programs and services are not interrupted, and be put forward without the direction of an updated IRP. This is a similar approach to the one taken in 2015, when

¹³ *Electricity Plan Implementation (2015) Act*, *supra* note 5 at s 20(1).

legislative changes also led to the filing of a one-year continuation Plan.

2.1 Development of 2019 DSM Program Targets and Investment

In accordance with the considerations identified under section 3 of this Evidence, the 2019 DSM Resource Plan was developed as a continuation of the UARB-approved 2016-2018 DSM Resource Plan and is informed by, *inter alia*, the following:

- ENS's experience;
- ENS's planned 2016-2018 suite of programs and services;
- Market conditions (e.g. program and measure saturation);
- Operational data; and
- Program impact and process evaluations, which include:
 - Evaluated savings results;
 - Delivery Agent input; and
 - Participant feedback.

To develop savings targets for the 2019 Plan, EfficiencyOne assessed actual historical data for 2014-2017 and forecasts for 2018. Historical data includes evaluated program impacts and audited financial results, which were analyzed to set savings targets, define investments and assess cost effectiveness. Please refer to Appendix B for a full overview of the 2019 DSM Resource Plan Development Approach and Details.

2.2 Treatment of Rate and Bill Impact Analysis

ENS has conducted a forward-looking Rate and Bill Impact Analysis (RBIA) for the 2019 DSM Resource Plan as it normally would with a new multi-year Plan filing. The analysis shows that expected rate and bill effects attributable to the proposed 2019 DSM activities are in line with previously approved DSM from 2011-2018. Additionally, the proposed 2019 DSM investment is less than the amount of DSM cost recovery present in 2019 rates. While the RBIA shows the total rate effects attributable to DSM, the fact that planned DSM spending is less than DSM collections means that no incremental DSM costs will need to be recovered for the 2019 DSM Resource Plan after the Rate Stabilization Period ends.

A historical RBIA will also be filed in October 2019, including impacts from all completed (2011-2018) and approved (2019) DSM activities. ENS will continue to work with Synapse and the DSM Advisory Group to improve the rate and bill impact model where possible. ENS will continue to engage the DSM Advisory Group and update the UARB on the evolution of the model.

2.3 2019 Evaluation Activities

ENS plans to take a similar approach to evaluation in 2019 as in 2017 and 2018, where evaluation activities are conducted to ensure accurate determination of energy and demand savings, but are condensed where appropriate in recognition of the maturity level some ENS program components have reached. This means that for stable, mature program components, the Evaluator may use the previous year's unitary savings values, realization rates, and/or installation rates. For newer program components and those with recent changes or more variable savings parameters, the Evaluator will design and conduct a full scope of evaluation activities. In all cases, evaluation activities will be undertaken to ensure the accurate determination of energy and demand savings, maximize the value of the evaluation process, and provide opportunities for continuous improvement.

2.4 2019 Planned Investment by Rate Class / 2019 Cost Allocation Approach

Appendix D provides ENS's preliminary expected investment by rate class, associated with implementation of the 2019 DSM Resource Plan. This information is presented both at the program and portfolio levels. As with the 2015 and 2016-2018 DSM Resource Plans, NS Power is responsible for the allocation and recovery of the 2019 DSM investment. Tables 1 and 2 of Appendix D are intended to provide all the requisite information not already in NS Power's possession to perform initial cost allocation associated with the 2019 DSM Resource Plan, pending its approval.

2.5 Reporting and Mid-Course Adjustments

EfficiencyOne proposes to report on the implementation of the 2019 DSM Resource Plan through quarterly reports and a 2019 Annual Progress Report. The 2019 Annual Progress Report will be filed following the completion of 2019 activities, prior to the end of the first quarter of 2020. ENS also proposes to maintain existing requirements relating to mid-course adjustments for the 2019 DSM Resource Plan.

2.5.1 Quarterly Reporting

In accordance with the UARB's Revised Filing Dates letter, issued January 9, 2018, ENS will file its 2019 DSM Quarterly Reports no later than:

- Q1 – May 25th
- Q2 – August 25th
- Q3 – November 25th

ENS proposes to continue reporting quarterly to the UARB and stakeholders on the same metrics reported on for the 2016-2018 Quarterly Reports, including:

- Quarterly and year-to-date (YTD) highlights (comparison of targets, mid-course adjustments, and results by program);

-
- YTD investment by rate class (compared to approved forecast);
 - Sector highlights (results, participation, and items of interest by program, as well as low-income results);
 - Other activities (organized by Enabling Strategies categories); and
 - Advance notice of Significant Changes if relevant.¹⁴

2.5.2 Annual Reporting

Inclusions in ENS's 2016-2018 Annual Progress Reports were agreed to within the 2016-2018 DSM Resource Plan Consensus Agreement.¹⁵ EfficiencyOne proposes a similar list of inclusions for the 2019 Annual Progress Report, with some modifications arising from the nature of a single-year DSM Resource Plan.

Table 1 below provides a summary of the proposed ENS Annual Progress Report inclusions, relative to the original inclusions from the 2016-2018 DSM Resource Plan Consensus Agreement.

¹⁴ Substantial or Significant Changes are defined as a variance in energy savings or investment of 25 percent or more at a program level.

¹⁵ M06733, *supra*, note 8, at Schedule 1, Appendix D.

1 **Table 1 - Proposed Inclusions for the 2019 Annual Progress Report**

Item	Included (Y/N)	Modified (modified item or N)
Summary of [previous year's] context, activities, and milestones achieved	Y	N
[Previous year's] investment by rate class (compared to approved forecast)	Y	N
Status of Performance Targets and Indicators	Y	N
Energy savings and investment for each program component	Y	N
Management discussion and analysis of any major discrepancies relative to the original Plan's intent and forecasts	Y	N
Summary of investment and savings for each program or target market area	Y	N
Update to [current year's] planned activities (mid-course adjustments by program plus updated program descriptions/highlights) • Corrective Action Plan (if required) • If mid-course adjustments result in substantial changes by program, explanation and justification will be provided • Notice of significant changes (if required)	Y	Update to [current year's] planned activities (updated program descriptions/highlights) • Corrective Action Plan (if required) • Notice of significant changes (if required)
Updates on items arising from the 2016-2018 DSM Plan process	Y	Updates on items arising from the 2019 DSM Resource Plan Process, as applicable
Preliminary cost allocation (if relevant)	Y	Unaudited 2019 expenditures by rate class

2

3

ENS will file its 2019 Annual Progress Report by March 31, 2020.

2.5.3 Mid-Course Adjustments and Flexibility

ENS often makes limited adjustments to an approved DSM Resource Plan to reflect changes in market conditions and updated insights from program and organizational evaluations (unknown at the time of DSM Resource Plan development). When setting 2019 Mid-Course Adjustments (MCAs), EfficiencyOne will follow the same approach as was taken for the 2016-2018 DSM Resource Plan MCAs:

- EfficiencyOne will provide explanations of substantial changes, defined as variance in energy savings or investment of 25 percent or more at a program level;
- EfficiencyOne will undertake reasonable efforts to avoid program changes that will result in substantial changes to any customer rate class on an annual basis; and
- EfficiencyOne will provide written advance notice of its intent to implement mid-course adjustments by program and their customer rate class impacts. EfficiencyOne is not able to provide advance notice of mid-course adjustments resulting from third-party evaluation reports, as these adjustments are made immediately after receipt of these reports.

2.6 Performance Targets, Indicators and Thresholds

As part of the 2016-2018 DSM Resource Plan development process, ENS engaged Dunskey Energy Consulting to provide guidance on selecting performance targets and indicators, taking into account industry best-practices and Nova Scotia's specific context.

For the 2019 DSM Resource Plan, EfficiencyOne will retain the same definitions used in the 2016-2018 DSM Resource Plan. For clarity, these include:

- Performance Metric: A quantifiable measure that is used to track and assess the status of a specific achievement.
- Performance Indicators: A set of particular performance metrics used to indicate or monitor progress toward performance targets. Performance Indicators are management tools that provide information to allow an organization to take action to

1 help it deliver on performance targets.

- 2 • Performance Target: A performance metric expressed as a specific quantified goal
3 that identifies the desired outcome of an activity at a specific point in time. In this
4 Application, Performance Targets refer to UARB-approved targets.
- 5 • Performance Threshold: A predefined quantity, percentage, or range, which identifies
6 the allowable deviation from a Performance Target within which the actual outcome
7 is considered to have achieved success. In this Application, Performance Thresholds
8 refer to UARB-approved thresholds.

9
10 In the context of the development of the 2019 DSM Resource Plan as a continuation plan,
11 EfficiencyOne is proposing largely the same performance targets and indicators for the
12 2019 DSM Resource Plan as were present and ultimately approved as part of the 2016-2018
13 DSM Resource Plan.

14
15 The justification provided in the 2016-2018 DSM Resource Plan, summarized below, still
16 holds true for the 2019 DSM Resource Plan:

- 17 • The Total Ratepayer Benefits, Total Spending by ENS and Customer Satisfaction
18 performance indicators use data that is readily available to ENS, and provide
19 valuable context and insight into ENS's performance;
- 20 • A Total Spending performance target is not required, as ENS does not have
21 resources to invest more than is approved by the UARB, notwithstanding
22 exceptional circumstances in which an application to the UARB must be made; and
- 23 • Additional indicators such as Total Resource Benefits and Pipeline of Projects
24 (present in the initial recommendations from Dunskey Energy Consulting) are not
25 included, due to the ongoing discussions relating to customer non-energy benefits
26 and their role in the TRC Test, and the lack of value provided, respectively.

27
28 ENS's ability to track lifetime energy savings and increased sophistication in doing so has
29 improved over the course of the 2016-2018 DSM Resource Plan. ENS has also begun to
30 report ex-post lifetime energy savings on an annual basis. ENS will keep lifetime energy

savings as a performance indicator for the 2019 DSM Resource Plan.

In the context of a one-year DSM Resource Plan, incremental and cumulative values for energy and peak demand savings are equivalent. As a result, one key change in the proposed performance indicators and targets is the removal of cumulative annual energy savings and cumulative annual peak demand savings performance indicators and targets, and the addition of annual incremental energy savings and annual incremental peak demand savings as performance targets. Table 2 below displays the performance targets and indicators requested for approval.

Table 2 - Proposed Performance Indicators and Targets

Performance Metrics (Portfolio Level)	Units	Annual Reporting Performance Indicators	Proposed 2019 Performance Targets
<i>Energy Savings:</i>			
- Annual Incremental	GWh/Yr	✓	✓
- Lifetime Savings	GWh	✓	
<i>Demand Savings:</i>			
- Annual Incremental	MW	✓	✓
<i>Other Indicators:</i>			
- Total Ratepayer Benefits	\$M	✓	
- Total Spending	\$M	✓	
- Customer Satisfaction	%	✓	

As in the 2016-2018 DSM Resource Plan, ENS is proposing a 90 percent Performance Threshold for both Performance Targets. Success is achieved if 90 percent or greater is reached on both Performance Targets specified in Table 2. If less than 90 percent of either Performance Target is achieved, a regulatory process will be triggered.

3. 2019 DSM RESOURCE PLAN

3.1 Summary

The proposed 2019 DSM budget is based on the average annual budget in the UARB-approved 2016-2018 DSM Plan, following the approach established in the *Electricity Plan Implementation (2015) Act*. Energy and demand savings targets proposed for 2019 are similar to the average annual targets in the UARB-approved 2016-2018 Plan. These targets and budget correspond to a lifetime cost for saved energy of approximately 2.1 cents per kWh.¹⁶

The 2019 DSM Resource Plan also includes increased demand reduction through pilots developed by EfficiencyOne in collaboration with NS Power. The importance of including peak demand reductions as part of the 2019 DSM Resource Plan is due to the continued firm demand growth in Nova Scotia over the past number of years. ENS has included a budget for demand reduction pilots as part of this Application and looks forward to collaborating with NS Power on these initiatives.¹⁷ Although these initiatives are not expected to produce evaluated energy or demand savings in 2019, they are foundational to the implementation of future demand reduction activities. For a full discussion of factors affecting proposed 2019 unit costs (cents per kWh of incremental annual net energy savings), please refer to Appendices A and B.

EfficiencyOne developed the 2019 DSM Resource Plan by analyzing, *inter alia*:

- The historical performance of programs and services;
- ENS's planned 2016-2018 suite of programs and services;
- Market conditions (e.g. program and measure saturation);
- Operational data; and

¹⁶ Based on portfolio Weighted-Average Measure Life of 12.9 years, which has been derived from the 2017 Evaluation process.

¹⁷ The *Public Utilities Act* (s. 79A(b)(iii)) defines electricity efficiency and conservation activities as including activities that reduce demand during NS Power's periods of highest demand.

- Program impact and process evaluations;
 - Evaluated savings results;
 - Delivery Agent input; and
 - Participant feedback.

EfficiencyOne's objective in using this approach is to achieve cost-effective and affordable energy and demand savings in a manner that complies with legislative requirements and aligns with ratepayers' best interests by, *inter alia*:

- Providing a stable level of program activity and funding for the period of NS Power's Rate Stability Plan;
- Achieving cost effective savings by establishing energy and demand targets that correspond with the continuation approach taken in the *Electricity Plan Implementation (2015) Act*;
- Realizing the efficiencies of continuing the 2016-2018 Plan approach, such as enabling programs to continue their momentum, rather than changing course from a successful approach for a one-year term; and
- Minimizing costs associated with the 2019 DSM Resource Plan proceeding, recognizing that it is a one-year plan based on a previously approved, rigorously modelled, and successful Plan. In turn, this allows ENS to continue focusing its time, efforts, and expenditures on delivering energy efficiency programs to Nova Scotians. These costs are lowered by:
 - relying on the 2016-2018 resource modelling process rather than investing to repeat this work when the inputs have not materially changed;
 - investing a reasonable amount of time to develop the 2019 DSM Resource Plan; and
 - seeking to avoid a lengthy and expensive regulatory proceeding by continuing an existing and successful UARB-approved DSM Plan for the 2019 continuation year.

3.2 2019 Energy Savings and Investment

Table 3 summarizes the savings and investment levels for the 2019 DSM Resource Plan, which can be found in Appendix A. Lifetime benefits, TRC test results, and PAC test results are not provided as they were included in the 2016-2018 Plan.

Table 3 - 2019 DSM Resource Plan Savings and Investment

2019	Investment (\$ million)	Incremental Annual Net Energy Savings at the Generator (GWh)	Lifetime Net Energy Savings at the Generator (GWh) ^a	Incremental Annual Net Demand Savings at the Generator (MW)	First Year Unit Cost (\$/kWh)	Lifetime Unit Cost (\$/kWh) ^a
Residential DSM Programs						
Efficient Product Rebates	3.5	14.9	132.9	1.5	0.235	0.026
Existing Residential ^b	8.6	31.0	422.2	7.0	0.276	0.020
New Residential	2.2	5.3	157.5	1.6	0.410	0.014
Residential Total	14.2	51.2	712.6	10.0	0.278	0.020
Business, Nonprofit and Institutional Programs						
Efficient Product Rebates	5.2	32.5	380.3	5.1	0.160	0.014
Custom Incentives	6.1	34.3	427.2	3.6	0.176	0.014
Direct Installation	4.1	9.3	118.4	1.5	0.443	0.035
BNI Total	15.4	76.1	925.8	10.2	0.202	0.017
Enabling Strategies						
Education & Outreach	1.6	n/a	n/a	n/a	n/a	n/a
Development & Research	2.2	n/a	n/a	n/a	n/a	n/a
Other Enabling Strategies	0.7	n/a	n/a	n/a	n/a	n/a
Enabling Strategies Total	4.5	n/a	n/a	n/a	n/a	n/a
Total	34.1	127.2	1638.4	20.2	0.268	0.021

Currency is expressed in 2019 dollars.

Columns may not add correctly, due to rounding.

^a Based on values of program Weighted Average Measure Lives, which have been derived from the 2017 Evaluation process.

^b Includes participation by low income households.

With the exception of the 2015 continuation year, EfficiencyOne's and ENSC's past DSM Plans have been based on a data-modelled approach that calculated the cost effectiveness of programs using a TRC test. As 2019 is a continuation of the 2016-2018 DSM Resource Plan, which was developed through a data-modelled approach, EfficiencyOne determined to not conduct this modelling for the 2019 DSM Resource Plan as it would significantly increase the costs of developing the Plan, diverting ratepayer funds from energy efficiency programs, without realizing proportional benefits since the inputs have not materially changed.

The continuation plan concept was, in part, developed to ensure the continuation of cost-effective DSM in Nova Scotia. For example, since the inception of DSM activities in Nova

1 Scotia, the lifetime unit cost of achieved energy savings has been below 3 cents per kWh.
2 EfficiencyOne is confident that the programs proposed for 2019 are cost-effective. Because
3 the 2019 DSM Resource Plan is composed of measures and programs continuing from
4 2016-2018, and customer costs for measures are not expected to change significantly from
5 2018, its cost-effectiveness can be demonstrated by maintaining similar unit costs to the
6 2016-2018 Plan. To ensure the 2019 programs continue the trend of being cost-effective,
7 EfficiencyOne analyzed year-over-year program unit costs.

8
9 EfficiencyOne is not proposing to abandon full modelling and standard cost-effectiveness
10 screening tests in future DSM Resource Plans. The 2020-2022 DSM Resource Plan will
11 include these calculations and results.

12
13 The proposed 2019 energy and demand savings targets of 127.2 GWh and 20.2 MW are
14 similar to the approved annual averages in the 2016-2018 DSM Resource Plan (135.3 GWh
15 and 20.8 MW). The DSM Resource Plan investment level reflects the \$34,050,000
16 identified in the *Electricity Plan Implementation (2015) Act*, which is an average of the
17 annual 2016-2018 budget targets.

18
19 Appendix B contains additional details on the analysis and input data that EfficiencyOne
20 used to develop the 2019 targets and investment.

4. ADDITIONAL ITEMS

4.1 EfficiencyOne Financial Reporting and Internal Controls

EfficiencyOne has strengthened the reporting and internal control processes of the organization over the past several years. In 2013 and early 2014, EfficiencyOne engaged KPMG for Internal Audit Services, developed the organization's risk management policy, improved internal management reports, and successfully began transferring external audit procedures from a substantive to a control-based audit. In 2017, EfficiencyOne developed cost management strategies. The purpose of these strategies is to ensure that EfficiencyOne's costs are reasonable and are aligned with external market comparatives wherever possible. Also, with the approval of the Affiliate Code of Conduct (the Code) in 2017, EfficiencyOne developed internal controls to ensure alignment and compliance with the Code, which will be subject to a third-party review.

4.1.1 Internal Audit Services

In 2013, EfficiencyOne engaged KPMG to prepare a risk-based internal audit three-year plan, beginning in 2014. KPMG developed the plan according to its understanding of risk areas based on interviews with management and EfficiencyOne's Board of Directors, as well as a review of background documentation. This plan included internal audits in areas such as procurement activities, the effectiveness of program internal controls, and the monitoring and oversight of third party Delivery Agents. Related audit reports have been filed with the UARB, as requested in its letter pertaining to EfficiencyOne's 2015 Audited Financial Statements, dated August 5, 2016 (M07495).

In 2016, KPMG prepared an updated risk assessment and risk profile of the organization. This risk assessment was intended to inform the next three-year internal audit plan for 2017 through 2019. In 2017, internal audits were conducted for third party Delivery Agents, IT General Controls, and Cost Containment Processes. The internal audit of Cost Containment

Processes was completed and filed with the UARB in 2017, while the internal audits for third party Delivery Agents and IT General Controls will be completed and filed in the first half of 2018. The 2018 internal audits will review Privacy and Procurement Policy compliance, as well as a key process which has yet to be finalized. The 2019 Internal Audit Plan will be determined in late 2018.

4.1.2 Risk Management Policy

EfficiencyOne has had a Risk Management Policy in effect since March 2014. The organization has incorporated risk assessment in its decision-making processes as well as for reporting purposes. Risk assessments are completed as part of the annual budget and quarterly forecast procedures and for major procurement decisions.

4.1.3 Internal Management Reports

In 2013, the organization began to design monthly internal reporting documents that would provide management with useful, timely, and accurate information within each business area. Monthly actual results are compared to budget and forecast. A monthly operations report provides commentary and explanations for variances for both expenditures and energy savings.

Over the last several years, EfficiencyOne has implemented detailed procedures for the annual budget, quarterly forecasts, and month end reporting. In 2017, a Cost Containment audit was conducted to review these processes. EfficiencyOne has implemented the recommendations from this audit, resulting in strengthened and improved reporting functions.

4.1.4 Control Based External Audit Approach

In 2013, EfficiencyOne transferred accounts payable and payroll to a control-based audit

1 approach. This approach has eliminated the need for further substantive audit procedures
2 to be conducted for both accounts payable and payroll. Substantive audit procedures are
3 required if one or more of the controls do not pass during testing.
4

5 **4.2 Electronic Technical Reference Manual**

6

7 ENS's electronic Technical Reference Manual (eTRM) was completed in 2017, allowing
8 for its use in the delivery of the 2019 DSM Resource Plan. ENS will see several operational
9 benefits through its use in 2019, including:

- 10 • Consistency in assessing measure impacts across programs, and throughout
11 ENS's measure portfolio;
- 12 • Enhanced automation of measure impact calculations, with central oversight of
13 the entire measure portfolio through a dedicated technical team approach;
- 14 • Decreased evaluation effort and impact evaluation costs, due to the ability to
15 centrally inspect ENS's prescriptive and quasi-prescriptive measures and
16 assumptions; and
- 17 • Decreased administrative burden to implement changes in measure
18 characterizations associated with the results of the 2018 impact evaluations.

5. CONCLUSION

The 2019 DSM Resource Plan is based on historical experience, the approved 2016-2018 DSM Resource Plan and other insights as identified in section 3.1 of this Evidence. The 2019 DSM Resource Plan is focused on providing continued electricity efficiency and conservation services to Nova Scotians, through a Supply Agreement with NS Power, based on the average budget and comparable net incremental energy and net peak demand targets from the approved 2016-2018 DSM Resource Plan.

The one-year continuation of an existing approved Plan complies with the *Electricity Plan Implementation (2015) Act* requirements and approach and is consistent with the methodology used for the 2015 DSM Resource Plan filing.¹⁸ The 2019 DSM Resource Plan incorporates EfficiencyOne's experience delivering energy efficiency and conservation activities in Nova Scotia, along with potential market changes such as market saturation. Taking these into consideration will allow EfficiencyOne to continue providing innovative offerings and cost-effective energy savings for Nova Scotians.

With this Application, EfficiencyOne respectfully requests the UARB approve:

- the 2019 DSM Resource Plan, provided as Appendix A; and
- the Supply Agreement, provided alongside this Evidence.

¹⁸ The 2015 DSM Resource Plan was a one-year continuation of the existing 2013-2014 DSM Resource Plan, in accordance with the *Electricity Efficiency and Conservation Restructuring (2014) Act*.

Appendix A

2019 DSM Resource Plan

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1. INTRODUCTION

EfficiencyOne developed the 2019 DSM Resource Plan for the supply of electricity efficiency and conservation activities to Nova Scotia Power Inc. (NS Power), in accordance with the *Electricity Plan Implementation (2015) Act*, SNS 2015, c 31, s. 20(1) and the *Public Utilities Act*, RSNS 1989, c 380, s. 79. EfficiencyOne is the current holder of the Efficiency Nova Scotia (ENS) franchise, making it the exclusive supplier of electricity efficiency and conservation activities to NS Power. This document will reference EfficiencyOne with regard to development of the Plan and ENS with regard to DSM activities in Nova Scotia within the 2019 continuation year and all previous years.

The overall 2019 DSM investment, energy, and demand targets were developed based on the approved 2016-2018 DSM Resource Plan, following the approach established in the *Electricity Plan Implementation (2015) Act*. This Act extended the 2016-2018 contractual term to include 2019 and set a corresponding 2019 DSM investment amount of not greater than \$34,050,000.¹ This investment amount is a continuation of the average planned 2016-2018 DSM Resource Plan investment amounts. The energy and demand targets for 2019 are similar to the annual averages in the approved 2016-2018 Plan, and the 2019 Plan includes demand-focused pilots to be developed in collaboration with NS Power. The *Electricity Plan Implementation (2015) Act* also extended the current ENS Grant of Franchise by one year to December 2025.²

Among other things, the 2019 Plan is based on:

- ENS's experience;
- ENS's 2016-2018 suite of programs and services;

¹ The legislation states: "(1) Notwithstanding clause 79I(2)(a) of the *Public Utilities Act*, for the calendar year 2019, Nova Scotia Power shall enter into an agreement with the electricity efficiency and conservation franchise holder for the provision of electricity efficiency and conservation activities in an amount not greater than \$34,050,000. (2) Sections 79J, 79L and 79M of the *Public Utilities Act* apply mutatis mutandis to the agreement referred to in subsection (1)." *Electricity Plan Implementation (2015) Act*, SNS 2015, c 30, s 2.

² *Ibid*, at s 33.

- Market conditions (e.g. program and measure saturation);
- Operational data; and
- Program impact and process evaluations, including evaluated savings results, Delivery Agent input and participant feedback.

The 2019 DSM Resource Plan has been created in a manner similar to the 2015 DSM Resource Plan, which also used a continuation plan approach to prepare a legislated one-year DSM Resource Plan. At that time, the *Electricity Efficiency and Conservation Restructuring (2014) Act* also prescribed a budget limitation for the 2015 year. Similar to the 2015 Plan, EfficiencyOne used its experience to develop a plan that will continue the trend of evolving programs to provide cost-effective energy and demand savings. EfficiencyOne will continue to consider market conditions, including market transformation, while maintaining high levels of customer satisfaction.

Beginning in 2018 and continuing into 2019, EfficiencyOne will work with NS Power to negotiate a contract for 2020-2022, which will become the second three-year DSM Resource Plan, in accordance with s. 79J(2)(a) of the *Public Utilities Act*.

The 2019 DSM Resource Plan establishes the programs and components for delivery of the 2019 portfolio. Section 1 identifies the planned savings and investment targets. Sections 2 and 3 provide an overview of programs and services for Residential and Business, Non-Profit and Institutional (BNI) customers. Section 4 outlines Enabling Strategies, including Education and Outreach, Development and Research, and Other Enabling Strategies.

1.1 2019 DSM Resource Plan Savings and Investment

In 2019, EfficiencyOne will invest \$34.05 million (in 2019 dollars) to achieve 127.2 GWh and 20.2 MW of incremental annual net energy and peak demand savings at the generator.

Table 1 presents program investment budgets and targets for the planned 2019 portfolio.

Table 1 - 2019 DSM Resource Plan Savings and Investment

2019	Investment (\$ million)	Incremental Annual Net Energy Savings at the Generator (GWh)	Lifetime Net Energy Savings at the Generator (GWh) ^a	Incremental Annual Net Demand Savings at the Generator (MW)	First Year Unit Cost (\$/kWh)	Lifetime Unit Cost (\$/kWh) ^a
Residential DSM Programs						
Efficient Product Rebates	3.5	14.9	132.9	1.5	0.235	0.026
Existing Residential ^b	8.6	31.0	422.2	7.0	0.276	0.020
New Residential	2.2	5.3	157.5	1.6	0.410	0.014
Residential Total	14.2	51.2	712.6	10.0	0.278	0.020
Business, Nonprofit and Institutional Programs						
Efficient Product Rebates	5.2	32.5	380.3	5.1	0.160	0.014
Custom Incentives	6.1	34.3	427.2	3.6	0.176	0.014
Direct Installation	4.1	9.3	118.4	1.5	0.443	0.035
BNI Total	15.4	76.1	925.8	10.2	0.202	0.017
Enabling Strategies						
Education & Outreach	1.6	n/a	n/a	n/a	n/a	n/a
Development & Research	2.2	n/a	n/a	n/a	n/a	n/a
Other Enabling Strategies	0.7	n/a	n/a	n/a	n/a	n/a
Enabling Strategies Total	4.5	n/a	n/a	n/a	n/a	n/a
Total	34.1	127.2	1638.4	20.2	0.268	0.021

Currency is expressed in 2019 dollars.

Columns may not add correctly, due to rounding.

^a Based on values of program Weighted Average Measure Lives, which have been derived from the 2017 Evaluation process.

^b Includes participation by low income households.

Program targets for 2019 are based on a variety of considerations, including the approved 2016-2018 Plan, ENS program results from recent years, evaluation results, and program and measure saturation and transformation considerations.

The total budget, energy and demand savings targets for 2019 are similar to the average annual targets in the approved 2016-2018 Plan. These energy and demand savings targets reflect the trends in both 2016 and 2017. The slight variance from the 2016-2018 annual average targets is due to the allocation of \$1.0 million to Enabling Strategies for research and pilots that focus specifically on demand reduction.

The overall unit cost of the 2019 Plan is increased from the unit cost of recent years. This is largely to enable ENS to diversify its measure mix, which will reduce the level of savings obtained from lighting in the coming years, as discussed at recent DSM Advisory Group meetings. The approved 2016-2018 Plan included the same trend, via an increased focus on programs with lower savings from lighting measures, when compared with previous years. As such, the 2019 Plan continues that desired trend.

The energy savings unit cost for the 2019 Plan is \$0.268/kWh, compared to the average for the approved 2016-2018 Plan of \$0.252/kWh. There are a few notable reasons for the change in unit cost in 2019 compared to earlier years:

- **Enabling Strategies Budget.** The 2019 Enabling Strategies budget is \$1.7M higher than the level spent in 2017 and \$1.5M higher than spending in 2016. This 2019 Enabling Strategies budget is required to account for the additional costs that will be incurred in 2019 as a result of the 2020-2022 DSM Resource Plan Application process. This means a reduction in funding for programs, without the same magnitude of reduction in energy and demand targets. In addition, the investment in two demand reduction pilots increases the unit cost of the 2019 Plan. Overall, Enabling Strategies represent 13.2 percent of the 2019 Plan budget, which is above the average of 9.0 percent in the approved 2016-2018 Plan.
- **2017 Results.** In 2017 the program unit cost (not including Enabling Strategies) was \$0.211/kWh, compared to \$0.232/kWh in 2019. The increased unit cost for 2019 incorporates the continued desire to further diversify ENS's energy savings portfolio, with less savings coming from lighting projects.
- **2016 Energy Savings from Lighting Upgrades.** 2016 had the lowest unit cost in recent years, at \$0.224/kWh. One of the primary reasons for a lower unit cost in that year was the significant over-performance of the Instant Savings program component. In 2016, Instant Savings had the second lowest unit cost of any program component (after Strategic Energy Management) at \$0.121/kWh (not including Enabling Strategies). Instant Savings' verified 2016 energy savings (34.6 GWh) were significantly higher than the amount targeted in the Plan (8.1 GWh), which led to an overall reduction in unit cost for 2016 activities. The majority of these savings came from A-series LEDs; this trend is not expected to continue in 2019 as ENS seeks to diversify its portfolio.
- **2015 Energy Savings from the Home Energy Report (HER) Program.** A similar situation as the one described above for Instant Savings also occurred in 2015, where the HER program achieved significant energy savings (27.2 GWh), at a relatively low cost. This was a large contributing factor to ENS's low unit

cost of \$0.231/kWh for 2015. ENS's 2019 unit cost reflects, among other things, the fact that the HER program is no longer offered. For comparison, if savings and spending for both HER and the Low Income Program are removed from 2015 (as neither are currently available), the unit cost for 2015 would rise to \$0.270/kWh.

2. RESIDENTIAL PROGRAMS AND SERVICES

The programs included in the 2019 offerings to the Residential sector are the same as in the approved 2016-2018 DSM Resource Plan, with changes to marketing names resulting from the merger of certain components:

- Efficient Product Rebates (comprised of the Instant Savings and Appliance Retirement program components);
- Existing Residential (comprised of the Efficient Product Installation,³ Home Energy Assessment and Green Heat program components); and
- New Residential (marketed as New Home Construction).

ENS will continue to incent a variety of energy efficient products and to encourage residents and landlords to pursue more energy efficiency projects by providing increased support for more complex and/or more substantial upgrades. This will involve providing further assistance for heating systems and building envelope improvements (as examples), for both existing and new buildings. These efforts are intended to diversify the portfolio by decreasing reliance on savings from lighting measures and shifting resources to non-lighting measures. This is reflected in an increase to savings targets, relative to actual results from recent years, for program components such as Home Energy Assessment, which does not offer incentives for lighting.

³ In 2017, the Residential Direct Install (RDI) and Rental Properties and Condos (RPC) program components merged to form Efficient Product Installation.

2.1 Efficient Product Rebates (Residential)

Efficient Product Rebates is made up of two program components which are available to all homeowners and renters across the province:

- Appliance Retirement; and
- Instant Savings.

Appliance Retirement seeks to responsibly decommission and recycle functioning, but less-efficient, home appliances such as refrigerators, freezers and room air conditioners. This component has proven to be an effective offering in ENS's portfolio. In 2019, ENS intends to continue retiring old inefficient appliances in Nova Scotia. ENS also recognizes that at some point in the future this market will become saturated (as more and more appliances are retired) to the point of no longer being cost effective in its current state.

In an effort to sustain cost-effectiveness in 2019, marketing will play a key role in encouraging Nova Scotians to take advantage of this service, in addition to ENS seeking other sources for appliance retirements. ENS anticipates Appliance Retirement will achieve fewer savings in 2019 compared to the approved 2016-2018 DSM Resource Plan. This is based on the historical trend of a reduced number of appliances being replaced each year.

Instant Savings provides in-store rebates on a variety of energy efficient products such as lighting and appliances. This program component is delivered by partnering with a large number of retailers across the province, and focuses on promoting ENERGY STAR[®] certified products where possible.

A key consideration for 2019 will be the market evolution of LED lighting technologies. One of Instant Savings' intents is to help transform the LED lighting market to the point where rebates are no longer needed (i.e., where a customer purchases the efficient product, even in the absence of rebates). ENS will consider a variety of information when deciding what rebates are appropriate. Incentive setting research completed in 2017 and 2018 will help

1 inform decisions on rebate levels, and may result in some rebates being removed from
2 products.

3
4 ENS anticipates an increase in 2019 net incremental energy and peak demand savings when
5 compared to the approved 2016-2018 DSM Resource Plan. This outlook is influenced, in
6 part, by the energy savings achieved in 2016 and 2017. In 2019, ENS anticipates Instant
7 Savings will realize significantly lower energy savings than the levels achieved in 2016 and
8 2017. The majority of savings in recent years came from A-series LEDs; this trend is not
9 expected to continue in 2019 as ENS seeks to diversify its portfolio. To counter a reduction
10 in savings by potentially removing rebates on some lighting products, ENS will continue to
11 investigate other energy efficient technologies to add to the program, helping homeowners
12 and renters save on their electricity bills.

14 **2.2 Existing Residential**

15
16 Existing Residential is made up of the following three program components:

- 17 • Home Energy Assessment;
- 18 • Green Heat; and
- 19 • Efficient Product Installation.

20
21 Existing Residential encourages participants to make cost-effective energy efficiency
22 changes to their homes. This program serves all types of residential dwellings in Nova Scotia,
23 including single detached houses, duplexes, townhouses, mobile/mini homes, rental housing,
24 and other multi-family dwellings including apartments and condominiums.

25
26 The Existing Residential program includes a variety of energy efficient upgrade options for
27 customers. For example, homeowners are encouraged to complete upgrades to their building
28 envelope or Heating, Ventilation and Air Conditioning (HVAC) systems. Given the potential
29 significance of these energy savings in relation to electricity bills, ENS has placed more of a
30 focus on these upgrades in recent years by adding new measures and reducing barriers to

1 participation. This trend will continue in 2019, with two program components (Home Energy
2 Assessment and Green Heat) having energy saving targets that are higher than recent years.
3 In addition to building envelope and HVAC improvements, ENS offers the direct installation
4 of lower-cost energy saving technologies (e.g., lighting, domestic hot water system upgrades,
5 and smart power strips) for homeowners and renters.

6
7 In 2019, ENS will continue to use DSM funds to support a First Nations pilot program that
8 is being launched in 2018 and primarily funded by the Province of Nova Scotia. The DSM-
9 funded portion of the pilot will seek to deliver significant electrical energy savings to on-
10 reserve, Band-owned homes, where the household is income-qualified. DSM funds will be
11 used to conduct energy assessments and complete significant energy efficiency upgrades for
12 electrically heated homes, focusing on building envelope and/or heating system upgrades.
13 The pilot will be offered in all 13 First Nations communities across the Province, with priority
14 being given to the upgrades that result in the most significant energy savings.

15
16 Home Energy Assessment has been a staple energy efficiency program in Nova Scotia for
17 over ten years. Homeowners begin with a home energy assessment conducted by a qualified
18 service organization, with the majority of that cost subsidized by ENS. A tailored report is
19 provided and incentives are available for qualifying upgrades to the building envelope (e.g.,
20 insulation, air sealing, and windows/doors), space heating/cooling, domestic water heating,
21 and ventilation systems.

22
23 Home Energy Assessment is delivered through a partnership with Natural Resources Canada
24 (NRCAN)-approved Service Organizations. Homeowners interested in gaining an
25 understanding of the various energy-saving options for their home, along with a desire to
26 make significant changes to their electricity bills, are encouraged to participate.

27
28 The energy saving target for Home Energy Assessment is higher than results in recent years:
29 it is almost double the energy savings achieved in 2016 and roughly one-third higher than

the result in 2017. Increasing the focus on this program component is one way that ENS plans to diversify energy savings, with less focus on lighting measures.

Green Heat offers incentives for space and water heating systems similar to those of Home Energy Assessment. However, Green Heat does not require a home visit and offers more simplified access to rebates for the purchase of efficient space and water heating systems which offset electricity use in the home. As with 2016-2018, ENS will continue to review additional technologies to help encourage electricity efficiency and conservation activities, including other existing or emerging technologies. Efforts will also be investigated and tested to encourage greater participation.

Similar to Home Energy Assessment, the 2019 energy saving target for Green Heat is increased compared to recent years: more than 20 percent higher than the level achieved in 2016, and 60 percent higher than the level achieved in 2017. Also similar to Home Energy Assessment, Green Heat does not offer incentives for lighting upgrades.

In 2019, ENS will continue to offer either rebates and/or financing as incentives for Home Energy Assessment and to offer rebates for Green Heat participants. ENS plans to continue to grow both components over time, as they are two of the main Residential components that can help customers to achieve significant savings on their electricity bills.

Finally, Efficient Product Installation offers low-cost energy efficient upgrades to participants at no cost. Efficient Product Installation is comprised of the former Rental Properties and Condos program component, which focused on larger buildings with more rental units, and the Residential Direct Install component, which focused on homes and residential buildings with a smaller number of units. These two components merged to form Efficient Product Installation on January 1, 2017, to simplify administration and facilitate the offering of a more consistent line of products in households across Nova Scotia. Both components were effective in past years, helping tens of thousands of Nova Scotians to-date.

Any homeowner or renter (via their landlord) in Nova Scotia is eligible for free installation of energy-efficient products such as lighting, upgrades to their electric domestic hot water system, and other electricity-saving devices. Based on housing levels in Nova Scotia and past participation, ENS estimates the Efficient Product Installation saturation level to be approximately 33 percent by the end of 2017.

ENS plans to use Efficient Product Installation to continue to generate a high level of energy savings in 2019, albeit less than the 2016-2018 average. This reduction is based on ENS's experience, as it is becoming more challenging over time to gain new participants. Similarly, future participants may also adopt a certain level of efficient lighting on their own, or through program components such as Instant Savings. ENS will continue to seek out new energy efficient measures and other methods to help participants cost-effectively save more electricity in their homes.

2.3 New Residential

The New Residential program aims to increase the number of homes built in Nova Scotia that exceed the energy efficiency levels of homes built to minimum building code energy performance requirements. In addition, the program aims to increase the number of homes installing ENERGY STAR® certified products. The ideal time to incorporate energy efficiency into any building is during the design and early construction phases. In fact, some upgrade options (e.g., adding more insulation to walls) can be very challenging if not completed at the onset, resulting in lost opportunities for energy savings. This makes it even more important to build as efficient a home as possible from the start. The measure life of upgrades and the overall level of energy savings is significant in New Residential. For these reasons, ENS will continue its efforts to grow its energy savings from the New Residential program.

For most participants, detailed design advice is provided by ENS staff and NRCan registered Energy Advisors before construction of a home. This advice is based on an energy analysis

conducted by the registered Energy Advisor using home energy modeling software, which uses construction plans to project the energy consumption of the home. The registered Energy Advisor then provides tailored recommendations and projected energy savings for a variety of upgrade options. Upon completion of the new home, a final evaluation is conducted by the registered Energy Advisor, giving the home its energy rating.

ENS anticipates that the New Residential program will continue to gradually evolve. While many participants are expected to take part in the historical program structure above (with an EnerGuide rating or ENERGY STAR® performance level), ENS anticipates offering incentives for even higher-performing homes, potentially based on Passive House or other near net-zero energy rating systems. Incentives provided will evolve as the market transforms and if further changes are made to the Building Code.

New Residential energy and demand targets for 2019 are more than 30 percent higher than the savings achieved in 2016, and more than 50 percent higher than those of 2017. To grow the program in 2019, ENS will use a variety of strategies, which may include incentives, outreach to builder and permit offices, and contractor education and training, among other options. This is another strategy to help diversify energy savings.

3. BUSINESS, NON-PROFIT AND INSTITUTIONAL (BNI) PROGRAMS AND SERVICES

The BNI programs provide a combination of technical, educational, and financial support to help customers incorporate energy efficiency into their businesses. This can include influencing short-term decisions as well as incorporating energy efficiency into ongoing business practices.

The BNI initiatives include a variety of services to encourage customers to make energy efficient decisions ranging from standard purchases (e.g., choosing one technology over

another when making a purchase) to more in-depth and complex decisions (e.g., constructing a new building or completing significant retrofits to an existing facility).

In 2019, ENS will continue to leverage and grow the support of qualified industry professionals to promote and deliver BNI initiatives. These professionals have existing relationships and the required experience and expertise in their respective fields, and are essential to helping customers understand and make cost-effective decisions on energy efficiency initiatives. This includes working with members of the Efficiency Trade Network (ETN). Members of this network receive training and updates on ENS initiatives, and are a valuable source of promotion for both efficient measures and ENS services. For more information on the ETN and associated initiatives, please refer to section 4.3.1, below.

The programs included in the 2019 offerings to the BNI sector are the same as in the approved 2016-2018 DSM Resource Plan, and will continue to evolve with market conditions and participant needs:

- Efficient Product Rebates (marketed as Business Energy Rebates);
- Custom Incentives (comprised of the Custom, Energy Management Information Systems (EMIS), and Strategic Energy Management (SEM) program components); and
- Direct Installation (marketed as Small Business Energy Solutions).

3.1 Efficient Product Rebates (BNI)

The BNI Efficient Product Rebates program provides customers with financial incentives (rebates or financing) to purchase approved energy efficient products. The rebates provided for each product are in most cases prescriptive, set in advance, and based on the energy performance and standard application of the product. Rebates are offered through point-of-purchase discounts through a province-wide network of distribution partners, or through mail-in applications. In some cases, rebates will be adjusted to reflect the electricity-use impacts

corresponding to actual installed conditions, based on information provided via the mail-in process.

A variety of measures are supported in this program. The list of measures will continue to evolve over time, and is expected to include measures such as: lighting; HVAC systems and controls; agricultural equipment; variable speed drives for motors; compressed air; refrigeration; kitchen / food service and IT technologies. The energy savings target for 2019 is very close to the average annual target in the approved 2016-2018 DSM Resource Plan.

The Efficient Product Rebates program works with businesses, non-profits, institutions, multi-unit residential landlords and others, in an effort to encourage customers to adopt the more energy efficient option when making purchasing decisions. ENS supports products in both retrofit and new construction projects. Similar to the Instant Savings component in Residential, as a specific efficient technology becomes more of a standard practice, ENS will regularly update its level and type of support for a given product. The 2017 and 2018 incentive setting research is expected to help inform incentive decisions for products included in this program in 2019. In recent years the majority of the savings from this program has been from lighting upgrades, and ENS plans to review additional measure options, as well as consider market trends when establishing lighting incentives.

3.2 Custom Incentives

The Custom Incentives program consists of the following three program components:

- Custom;
- Energy Management Information Systems (EMIS); and
- Strategic Energy Management (SEM).

The Custom Incentives program works directly with customers to identify and implement unique and cost-effective electrical energy and demand saving measures on a case-by-case basis, where incentives from other programs do not apply. Custom Incentives offer a

simplified customer experience for projects that are often more complex than upgrades under other ENS programs.

Custom Incentives involves a one-on-one working relationship between ENS and the customer. This allows for customized technical and financial support, with energy and demand savings being considered on a case-by-case basis. Supported measures achieve savings in a variety of end uses such as processes, compressed air, building envelope, HVAC equipment, controls, refrigeration, motors, and more.

The Custom Incentives program offers a variety of services to customers, including:

- Helping customers identify and secure qualified third-party sources of technical expertise;
- Providing rebates on the cost of initial scoping studies and/or detailed feasibility studies;
- Providing incentives for technical assistance to achieve more efficient designs in new facilities;
- Providing financial incentives (rebates or financing) for implementing cost-effective electrical energy efficiency projects;
- Providing incentives for the use of best practices in systems commissioning;
- Providing technical and/or financial incentives for improvements to compressed air systems; and
- Supporting customers through technical and financial assistance to better understand and manage the energy used in their facilities, and to make a variety of changes to reduce energy use.

Custom Incentives participants are generally recruited via networking, referrals and direct contact. On-Site Energy Managers (OEMs) also play an important role in identifying potential Custom Incentives projects; the OEM service places a trained energy manager at a customer's workplace, to develop energy management plans and facilitate participation in

1 ENS programs. In many instances, due to the complexity and size of the upgrades, there can
2 be long lead times for these projects.

3
4 In some cases, customers can benefit from multiple offerings within the Custom Incentives
5 program, and are encouraged to take advantage of this opportunity to further reduce energy
6 use. All three of the Custom Incentives program components will continue in 2019, with the
7 overall program targets growing in relation to energy savings of recent years and remaining
8 similar to the 2016-2018 Plan. This is another method by which ENS intends to further
9 diversify its energy savings, as the level of lighting savings from Custom will continue to be
10 relatively low.

11 12 **3.3 Direct Installation**

13
14 The Direct Installation program (marketed as Small Business Energy Solutions or “SBES”)
15 has undergone a variety of changes in recent years.

16
17 Typical participants include small offices, retail shops, convenience and grocery stores,
18 service stations, restaurants, lodgings, landlords (common spaces in multi-unit residential
19 buildings), non-profit organizations, cafeterias, pharmacies, bakeries, and farms.

20
21 Under SBES, participants are eligible for incentives (both rebates and financing) for
22 installing energy efficient measures. Some participants are eligible to receive an energy audit
23 as part of their involvement in the program, providing them with a list of upgrade
24 opportunities. Other participants complete the do-it-yourself (DIY) option, with projects
25 identified by contractors or the participant. Rebates are paid after project completion and
26 verification. SBES offers rebates of up to 60 percent of participant costs, in addition to
27 financing repaid on NS Power bills for a term of up to two years.

28
29 A variety of measures are included in SBES, such as: lighting, building envelope, HVAC
30 upgrades, and upgrades to kitchen and laundry facilities. SBES will continue to consider

support for new non-lighting measures that will further diversify sources of energy savings. Furthermore, the program will continue to evolve based on participant feedback and results from the most recent changes to the program.

4. ENABLING STRATEGIES

Enabling Strategies are an essential component of this DSM Plan, and are required for ENS to meet energy and demand savings targets. In this and other plans, EfficiencyOne has and will continue to use Enabling Strategies where it can invest in, among other things, research and programs that help inform energy and cost savings to Nova Scotians. ENS's 2019 Enabling Strategies will include:

- Education and Outreach;
- Development and Research; and
- Other Enabling Strategies (Capacity Building, Working with Governments and Regulatory Affairs).

Enabling Strategies make possible future savings within programs and services by meeting the following objectives:

- increase awareness of, and education about, DSM programs and services, driving participation;
- evolve DSM programs and services by innovating and improving delivery of these services to Nova Scotians; and
- drive market transformation.

4.1 Education and Outreach

Since 2008, Education and Outreach has been an important part of electricity DSM Plans in Nova Scotia. These strategies will continue through 2019 to help increase program participation, foster a culture of efficiency throughout the province, and educate students, families, and businesses on the benefits of energy efficiency. Energy savings are not

1 attributed directly to Education and Outreach activities. Rather, energy savings are captured
2 through participation in the individual DSM programs that benefit from these broader
3 activities.

4
5 By creating a culture of efficiency throughout the province, Nova Scotians learn how and
6 why it is important to adopt energy efficient behaviours that will benefit themselves and their
7 communities. This behaviour change will encourage participation in DSM programs and
8 encourage Nova Scotians to live a more efficient and sustainable lifestyle. A targeted
9 approach to businesses educates small businesses across the province on the potential for
10 energy savings and reduced operation costs from energy efficiency.

11
12 Education and Outreach strategies for 2019 will include building on past and current
13 activities, research and feedback from Nova Scotians, as well as participating in public
14 speaking engagements, trade shows, and social media. Areas of focus will include:

- 15 • Educating customers on the value provided by electricity efficiency and
16 conservation and ways to achieve cost-effective net incremental energy and
17 peak demand savings that lower their electric utility bills;
- 18 • Educating students on energy efficiency, focusing on its economic and
19 environmental benefits;
- 20 • Increasing public awareness of the benefits of participating in electricity
21 efficiency and conservation programs;
- 22 • Enabling and encouraging a culture of efficiency and the adoption of energy
23 efficiency as a social norm through a focus on individual and community-based
24 commitments to energy efficiency;
- 25 • Connecting potential customers to relevant programs and services; and
- 26 • Learning from customers, to ensure their experiences and advice are
27 incorporated to continuously improve programs and services.

28
29 The following initiatives support the strategies identified above:

- Continual enhancement of ENS's website to expand the availability of technical information, program materials, assistance, and links to other resources;
- Complementary social media (Facebook, Twitter, Instagram, LinkedIn) strategies to drive awareness of energy efficiency and ENS's programs and services;
- Sharing Nova Scotians' energy efficiency success stories to encourage others to participate;
- Continual development of the Efficiency Trade Network (trade partners) to build capacity and increase program participation through training, workshops, information sharing, professional development, etc.;
- Nurturing and developing key partnerships with community groups, associations and aligned organizations;
- Attending community events, speaking engagements, presentations, and information sessions to encourage individuals, businesses, and organizations to participate in energy efficiency programs;
- Attending Home Shows and Trade Shows across Nova Scotia to encourage program participation;
- Supporting the Green Schools Nova Scotia program, to supplement learning and build awareness among youth about energy efficiency and to create a culture of efficiency in Nova Scotia;
- Monitoring media stories relating to energy efficiency;
- Supporting the development of energy efficiency courses at post-secondary institutions such as Dalhousie University and Saint Mary's University;
- Supporting educational workshops for non-profits and community groups across the province; and
- Pursuing and supporting additional activities as opportunities arise.

4.2 Development and Research

ENS is committed to achieving cost-effective incremental net energy and peak demand savings for its customers. This requires continued research and development activities in 2019. These activities will:

- support the evolution of DSM programs and future DSM Resource Plans via research and development initiatives; and
- improve customer service and engagement through Customer Relationship Management via development activities.

4.2.1 Research

Throughout 2019, ENS will conduct research to gain further market insights and stay current with emerging technologies and initiatives from other jurisdictions. Findings will help guide program decisions by providing a greater understanding of new technologies and potential offerings, which can then be used for new pilots, program updates, or other innovative initiatives. This is especially useful for informing business decisions, considering the need to evolve programs response to potential market transformation and saturation of some technologies. Insights from participants and the general public can help ENS shape program offerings, by removing barriers to adopting energy efficiency initiatives, while maintaining high levels of participant satisfaction.

One relatively new area of market research pertains to incentive levels. ENS plans to continue its incentive setting research in 2018, which will add rigour to assessing 2019 incentive levels. The results of this research may also help further inform additional research plans to ensure ENS continues to set appropriate incentive levels. Findings from this research will help ENS maintain a high standard of service delivery and support the effectiveness of its portfolio.

1 Additional research efforts will include an ongoing examination of the trends of ENS
2 activities. Understanding the successes and challenges of ENS efforts is critical to identifying
3 areas for improvements. For example, findings may identify opportunities to help customers
4 achieve deeper savings (higher energy savings per participant), or enable ENS to realize cost
5 savings in the promotion and delivery of its programs.
6

7 **4.2.2 Development**

8

9 ENS will continue working with First Nations communities in Nova Scotia. Through both
10 DSM and Provincially-funded activities, ENS has worked with First Nations communities
11 on a variety of energy efficiency projects and programs. In 2019, ENS will continue to work
12 closely with First Nations communities to gather feedback on the development and design of
13 energy efficiency and conservation programs. This may lead to ENS exploring opportunities
14 for potential future programs and services.
15

16 ENS will develop pilots targeting demand reductions in 2019. The importance of including
17 peak demand reductions as part of the 2019 DSM Plan is due to continued firm demand
18 growth in Nova Scotia over the past number of years. ENS has included a budget for demand
19 reduction pilots as part of this Application and looks forward to collaborating with NS Power
20 on these initiatives.⁴
21

22 Demand reduction activities have the primary goal of reducing demand, whereas energy
23 efficiency activities have the primary goal of reducing energy consumption. Demand
24 reduction initiatives help customers reduce their demand, which can in turn reduce NS
25 Power's peak demand. This can also help demand-billed customers lower their electricity
26 bills. As such, demand reduction initiatives have the potential to reduce facility peak billing

⁴ The *Public Utilities Act* (s. 79A(b)(iii)) defines electricity efficiency and conservation activities as including activities that reduce demand during NS Power's periods of highest demand.

and/or customer demand in periods within and outside of the NS Power system coincident peak period.

In addition to the 2019 demand reduction pilots, which will explore options to reduce both facility peak demand (where applicable) and NS Power system peak demand, ENS anticipates exploring demand-focused activities and best practices undertaken in leading jurisdictions, in collaboration with NS Power for potential future DSM programs. The 2019 budget includes \$1.0 million for exploring demand reduction and developing and implementing pilot activities.

Although planning is in the early stages, ENS is considering the development of two demand reduction pilots. One pilot would be focused on residential customers, while the other would focus on BNI customers. These pilot activities will serve to demonstrate the benefits of demand reduction activities, including decreased capacity-related costs for all customer groups, access to time-of-use rates (for certain customer classes), and the direct benefits of reductions in billed demand (for those customer groups billed for facility peak demand).

Potential measures currently being considered include, but are not limited to:

- Incentives for residential and BNI electric thermal storage systems;
- Incentives for demand-limiting hot-water systems;
- The addition of demand-focused measures gaining eligibility under the Custom program; and
- The addition of demand-focused measures within prescriptive BNI programs.

ENS anticipates the selection of pilot activities will be further informed by initial planning and consultation with interested stakeholders, including the DSM Advisory Group.

4.2.3 Customer Relationship Management (CRM)

An improved information tracking system is expected to be complete and in full operation before the start of 2019. In addition to reducing information management costs (through easier access to information, improved quality data, and automation), the system will provide the technical foundation for evolving ENS's customer-centric approach to service delivery and marketing and communications. CRM practices and principles are widely used to maintain and improve relationships with customers, with the goal to drive loyalty and engagement with an organization. Analysis of customer and other information captured in the new system will guide how ENS approaches existing and potential participants, and facilitate program design and delivery decisions, leading to improved services and participant interactions.

4.3 Other Enabling Strategies

The Other Enabling Strategies category includes the following sub-categories:

- Capacity Building;
- Working with Governments; and
- Regulatory Affairs.

4.3.1 Capacity Building

In 2019, ENS will focus efforts on capacity building in Nova Scotia by enhancing existing training and quality assurance for Delivery Agents and building industry capacity through its ETN.

ENS will continue to train Delivery Agents to directly answer participant inquiries and provide energy efficiency information related to the relevant services for each participant.

1 In 2019, ENS will continue to build industry capacity through training and educating the
2 ETN through events such as the Bright Business Conference and Awards and hosting other
3 specific energy efficiency focused training. ENS will also continue to collaborate with
4 industry partners by offering ETN members discounted rates for related training
5 opportunities.

6
7 ENS will also focus on providing the details of its offerings through pre-recorded modules
8 as well as in-person events across the province for large program updates to ensure questions
9 or concerns are addressed in a timely matter.

10
11 The Network News will continue to provide ETN members with advanced notice of ENS
12 initiatives and to solicit their feedback. Newsletter topics include program updates,
13 procurement opportunities, pilot outcomes, and industry trends.

14 15 **4.3.2 Working with Governments**

16
17 In 2019, ENS will continue to support the development and implementation of energy
18 efficiency codes and standards, in collaboration with both the Provincial and Federal
19 governments, as well as other stakeholders. This includes supporting the Provincial
20 government in introducing new codes and regulations, and providing expertise and market data
21 to both levels of government where appropriate. In addition, ENS expects to continue to
22 support the Canadian Standards Association's (CSA's) efforts to develop and update relevant
23 energy efficiency-related standards through active participation in their Steering Committee on
24 Performance and Energy Efficiency Standards (SCOPEER). ENS anticipates it will also assist
25 the CSA at the committee (a standing committee for a particular end-use [e.g., HVAC]) or
26 Technical Subcommittee (struck for the development of a particular standard) levels, as
27 opportunities arise.

4.3.3 Regulatory Affairs

Regulatory Affairs activities include UARB processes, DSM Advisory Group initiatives and stakeholder consultation work, industry research, and legal work relating to ENS initiatives.

In 2019, Regulatory Affairs initiatives will include:

- Negotiating the 2020-2022 DSM Resource Plan with NS Power and gaining stakeholder and UARB-approval of the same;
- Developing and/or filing regular report updates with the UARB on topics including:
 - 2019 Quarterly Reports;
 - 2018 Evaluation Reports;
 - 2018 Annual Progress Report;
 - 2018 Audited Financial Statements;
 - 2019 Historical-looking Rate and Bill Impact Analysis;
 - evaluation and verification recommendation updates; and
 - other studies, reports, and updates, as appropriate.

Throughout 2019, ENS will continue to host DSM Advisory Group meetings and to work closely with stakeholders to discuss ongoing initiatives, as appropriate. Other engagements will include working with the Evaluation and Verification Consultants to facilitate their efforts and pursuing commitments arising from the 2019 DSM Resource Plan regulatory process.

Appendix B

2019 DSM Resource Plan Development Approach and Details

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1. 2019 DSM RESOURCE PLAN SUMMARY

The 2019 DSM Resource Plan, presented in Appendix A, identifies DSM programs, services, strategies, investments, and energy and demand targets. The plan is cost-effective and is based upon the approved 2016-2018 DSM Resource Plan, ENS historical results, ENS experience, and anticipated changes for 2019 related to an evolving energy efficiency market.

1.1 Energy Savings and Investment

Table 1 provides a summary of the energy and demand savings, and investment for the 2019 DSM Resource Plan.

Table 1 - 2019 DSM Resource Plan Savings and Investment

2019	Investment (\$ million)	Incremental Annual Net Energy Savings at the Generator (GWh)	Lifetime Net Energy Savings at the Generator (GWh) ^a	Incremental Annual Net Demand Savings at the Generator (MW)	First Year Unit Cost (\$/kWh)	Lifetime Unit Cost (\$/kWh) ^a
Residential DSM Programs						
Efficient Product Rebates	3.5	14.9	132.9	1.5	0.235	0.026
Existing Residential ^b	8.6	31.0	422.2	7.0	0.276	0.020
New Residential	2.2	5.3	157.5	1.6	0.410	0.014
Residential Total	14.2	51.2	712.6	10.0	0.278	0.020
Business, Nonprofit and Institutional Programs						
Efficient Product Rebates	5.2	32.5	380.3	5.1	0.160	0.014
Custom Incentives	6.1	34.3	427.2	3.6	0.176	0.014
Direct Installation	4.1	9.3	118.4	1.5	0.443	0.035
BNI Total	15.4	76.1	925.8	10.2	0.202	0.017
Enabling Strategies						
Education & Outreach	1.6	n/a	n/a	n/a	n/a	n/a
Development & Research	2.2	n/a	n/a	n/a	n/a	n/a
Other Enabling Strategies	0.7	n/a	n/a	n/a	n/a	n/a
Enabling Strategies Total	4.5	n/a	n/a	n/a	n/a	n/a
Total	34.1	127.2	1638.4	20.2	0.268	0.021

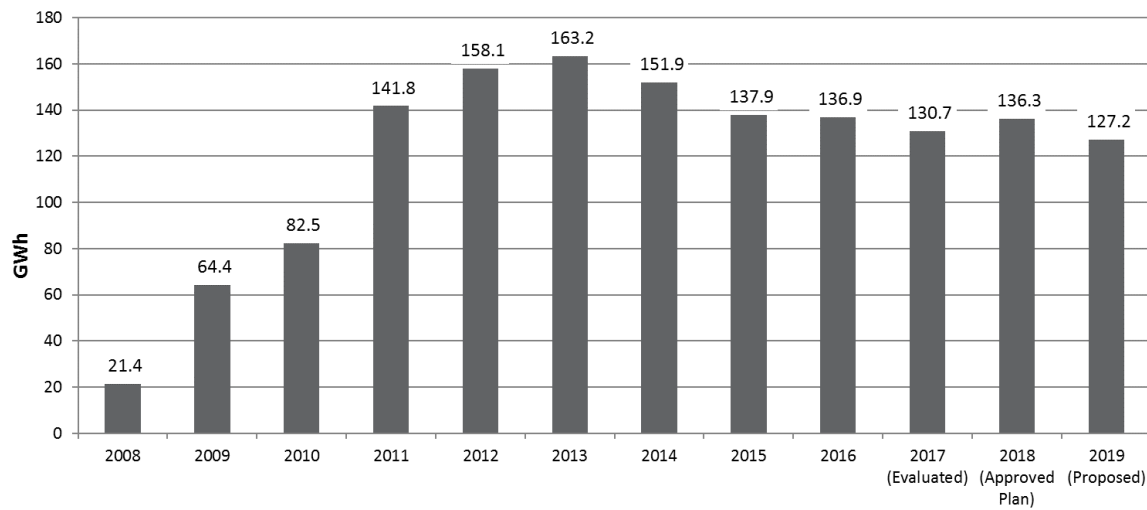
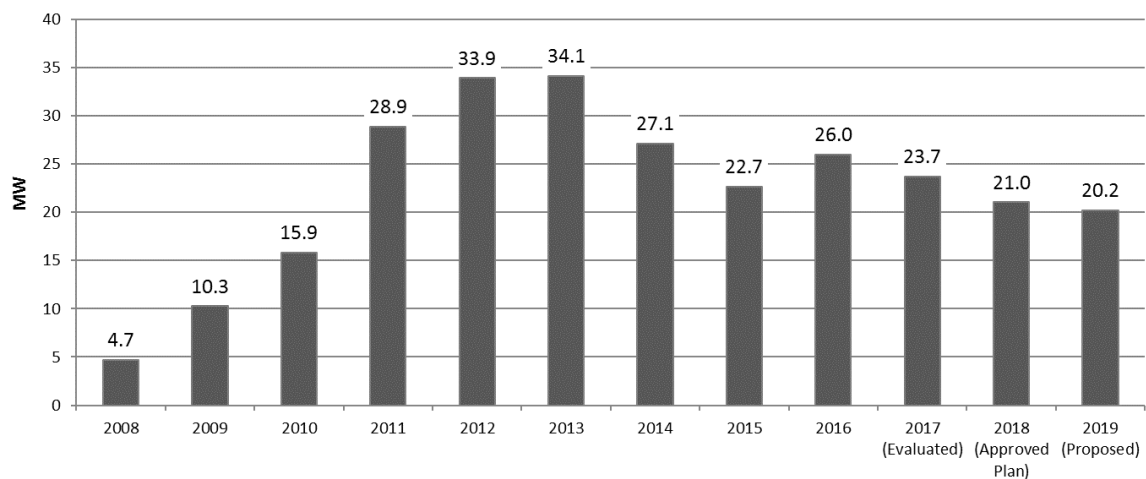
Currency is expressed in 2019 dollars.

Columns may not add correctly, due to rounding.

^a Based on values of program Weighted Average Measure Lives, which have been derived from the 2017 Evaluation process.

^b Includes participation by low income households.

Table 2 and Table 3 compare the 2019 DSM Resource Plan energy and demand saving targets to verified results for 2008 through 2016, evaluated results for 2017 and the planned savings for 2018.

Table 2 – Actual 2008-2017 Energy Savings and Planned 2018-2019 Energy Savings**Table 3 - Actual 2008-2017 Demand Savings and Planned 2018-2019 Demand Savings**

The overall 2019 DSM investment is based on the average from the approved 2016-2018 DSM Resource Plan, following the approach established in the *Electricity Plan Implementation (2015) Act*. This Act extended the 2016-2018 term to include 2019 and set a corresponding 2019 DSM investment amount of not greater than \$34,050,000.¹ This

¹ The legislation states: “(1) Notwithstanding clause 79I(2)(a) of the *Public Utilities Act*, for the calendar year 2019, Nova Scotia Power shall enter into an agreement with the electricity efficiency and conservation franchise holder for the provision of electricity efficiency and conservation activities in an amount not greater than \$34,050,000. (2) Sections 79J, 79L and 79M of the *Public Utilities Act* apply mutatis mutandis to the agreement referred to in subsection (1).” *Electricity Plan Implementation (2015) Act*, SNS 2015, c 30, s 20.

investment amount is a continuation of the average planned 2016-2018 DSM Resource Plan investment amounts. This ensures certainty around the amount of DSM spending for the duration of NS Power's Rate Stability Period (2017-2019, inclusive). The *Electricity Plan Implementation (2015) Act* also extended the current ENS Grant of Franchise by one year to December 2025,² enabling the next two DSM Resource Plans to remain as three-year agreements in compliance with the *Public Utilities Act*.

2. RESIDENTIAL PROGRAM TARGETS AND INVESTMENTS

2.1 Efficient Product Rebates (Residential)

This program contains the Instant Savings and Appliance Retirement components. Overall, the energy savings target in 2019 is 19 percent higher than that of the annual average in the 2016-2018 Plan. While this is an increase over the approved Plan, it represents significant reductions in energy savings from lighting, when compared to the 2016 and 2017 results.

Instant Savings' targets were derived by considering the approved targets in the 2016-2018 DSM Resource Plan, results from recent years, and an expectation that the market will continue to evolve, with a likelihood of some LED products not being included in 2019 due to a drop in retail prices and potential market transformation. The 2019 Instant Savings unit cost is expected to be lower than that of the approved 2016-2018 DSM Resource Plan, and also of the 2014 and 2015 investments. However, the unit cost is expected to be higher than the actual 2016 result, as 2016 was a unique year for Instant Savings with higher than anticipated energy savings. Overall, the energy savings target for this component is higher than that of the annual average of the 2016-2018 DSM Resource Plan, but significantly lower than the 2016 and 2017 results.

Appliance Retirement energy savings are expected to decrease in relation to both the approved 2016-2018 annual investments and actual expenditures from recent years. This is

² *Ibid* at s 33.

1 due to a decreasing number of old appliances in the market. To offset this decrease, ENS
2 will continue to consider other potential participants for the service. The unit cost for the
3 program component is higher than in the approved 2016-2018 DSM Resource Plan, but
4 lower than the 2016 unit cost.

6 **2.2 Existing Residential**

8 Existing Residential is comprised of the Home Energy Assessment, Green Heat and
9 Efficient Product Installation components. The 2019 Existing Residential Program has an
10 energy saving target that is 26 percent lower than the annual average in the approved 2016-
11 2018 Plan.

13 The energy savings target for the Home Energy Assessment component is lower than the
14 average for the approved 2016-2018 DSM Resource Plan, however, still represents a
15 significant increase over recent years. The unit cost is higher than that of the approved
16 2016-2018 DSM Resource Plan, in an effort to more closely match the actual unit cost of
17 recent years. A need for increased participation and the potential addition of new measures
18 are factored into the 2019 budget and targets.

20 Similarly, the 2019 Green Heat component energy savings target is lower than that of the
21 approved 2016-2018 DSM Resource Plan, but higher than the actuals from 2016 and 2017.
22 The unit cost is higher than that in the 2016-2018 DSM Resource Plan; this change was
23 informed by unit cost results in recent years.

25 The 2019 Efficient Product Installation component includes all residential direct
26 installations (single family homes and multi-unit buildings). The unit cost is similar to that
27 of the approved 2016-2018 DSM Resource Plan for the two components that were merged
28 to create this offering (Residential Direct Install and Rental Properties and Condos), and
29 similar to 2016 and 2017. The energy savings target has been reduced, relative to the 2016-
30 2018 Plan.

2.3 New Residential

New Residential consists of the New Home Construction component. The New Residential program energy savings target is higher than that in the approved 2016-2018 DSM Resource Plan (35%), and actual results from recent years. This change is due to the desire to increase participation in the program in an effort to further diversify energy savings and help more Nova Scotians make energy efficient decisions for their home during the design phase (the ideal time). The unit cost is on par with that of 2017, but higher than the approved 2016-2018 DSM Resource Plan. This can be attributed to a recent increase in incentive levels further to participant, Evaluation, and Verification recommendations, in an effort to encourage greater program participation.

3. BNI PROGRAM TARGETS AND INVESTMENTS

3.1 Efficient Products Rebates (BNI)

BNI Efficient Product Rebates consists of the Business Energy Rebates component. The investment and energy savings targets for BNI Efficient Product Rebates have been reduced slightly from the approved 2016-2018 DSM Resource Plan, by 9 percent and 1 percent, respectively. The unit cost remains close to that of recent years. As lighting makes up the majority of energy savings within this program, efforts will be made to further diversify its measures. To reflect the potential reduction in savings from lighting, the 2019 energy saving targets were reduced compared to the program's historical performance.

3.2 Custom Incentives

Custom Incentives consists of the program components: Custom; Energy Management Information Systems; and Strategic Energy Management. The 2019 Custom Incentives program energy savings target is the same as the average annual energy savings in the approved 2016-2018 DSM Resource Plan. The unit cost, however, has been reduced, following the trend from recent years. Custom has the potential to help BNI customers

1 achieve more significant energy savings (for both existing buildings and for new
2 construction). In addition, only a small portion of Custom savings are lighting-based, and
3 as such are less likely to be affected by the associated transforming market. While the target
4 is the same as in the 2016-2018 DSM Resource Plan, it represents a much greater increase
5 when compared to actuals of recent years (roughly one-third higher than 2016 actuals and
6 roughly 50% more than 2017 actuals).

8 **3.3 Direct Installation**

9
10 Direct Installation consists of the Small Business Energy Solutions component. The energy
11 saving target for the 2019 Direct Installation program is a continuation of the targets in the
12 approved 2016-2018 DSM Resource Plan. While ENS has not achieved this level of savings
13 in recent years (2015 - 2017), as the program continues to evolve, ENS intends to continue
14 increasing energy savings from participating small businesses. This was recently
15 demonstrated in 2017, where savings increased over previous years.

16
17 The Direct Installation unit cost is higher than the average for the approved 2016-2018
18 DSM Resource Plan, to better reflect the results from recent years.³ This increase in unit
19 cost compared to the approved 2016-2018 DSM Resource Plan is largely due to program
20 restructuring and resulting incentive changes made in August 2015, as well as updates to,
21 *inter alia*, runtime estimates further to recent evaluation results. These changes contributed
22 to lower-than-anticipated participation rates, leading to a higher cost per kWh achieved in
23 recent years. While the unit cost for Direct Installation saw significant improvement in 2017
24 (alongside increased participation), ENS expects the 2019 unit cost to remain above the
25 approved 2016-2018 DSM Resource Plan average.

³ The average unit cost for Direct Installation in the 2016-2018 DSM Resource Plan is lower than the actual unit cost of any of the four recent years (2014-2017).

4. DATA SOURCES

A variety of data sources were used to develop the 2019 DSM Resource Plan, including the following:

- Approved 2016-2018 DSM Resource Plan. As the 2019 budget and overall targets are based on the approved 2016-2018 DSM Resource Plan, the make-up of the associated approved programs was also a significant consideration when developing the 2019 program mix.
- Results from recent years. In particular, results from 2016 and 2017 were considered given that these were the most up-to-date assumptions for programs and measures at the time this 2019 DSM Resource Plan was developed.
- Independent evaluations for 2008 through 2017, which are subsequently reviewed by the UARB's Verification Consultant. The purpose of the evaluation is to quantify net incremental energy and peak demand savings. Each year, updates can be made to net-to-gross ratios, savings from individual measures, interactive effects, spillover, market effects, and installation rates. As such, in crafting the 2019 targets and budget, a focus was placed on historical findings from these reports, with a particular emphasis on more recent years. Additional useful information contained in these reports includes participant and trade partner feedback, in addition to Evaluator recommendations.
- Market considerations. This applies to both program and measure saturation and transformation. The 2017 Evaluation reports featured a specific section on Market Transformation. In particular, lighting has received a notable amount of attention recently, given the high uptake of LED technologies and the general trend of falling prices. Related to saturation levels, the 2016 ENS residential socket study found that 66 percent of the residential sockets had either CFLs or LEDs. While the remaining number of sockets is still substantial in terms of volume and energy savings potential, ENS also recognizes that at some point incentives may no longer be needed (at a certain point consumers may choose the more efficient option in the absence of rebates). Targets and budgets considered this likelihood, and with a greater desire to diversify the mix of

energy savings, targets for programs and program components such as Home Energy Assessment, Green Heat, New Home Construction, and Custom have been increased in relation to the actuals from recent years and/or the approved 2016-2018 DSM Resource Plan. ENS also estimates that these programs and program components have low saturation levels, suggesting the potential energy savings are still substantial. Where market studies were not available, EfficiencyOne's experience and knowledge of general trends was considered when creating the 2019 DSM Resource Plan.

The 2019 Plan is further informed by EfficiencyOne's experience and knowledge of industry best practices and research.

5. COST EFFECTIVENESS

Since its inception, ENS (and ENSC prior to 2015) has used a full-modelling approach to develop its DSM Plans (with the exception of the 2015 DSM Plan, which was also a continuation plan). These plans relied upon Navigant's Electricity Resource Assessment Model (ELRAM).⁴ This full-service DSM planning model is capable of potential assessment, market elasticity and uptake estimates, cost-effectiveness testing, modelling baseline changes and calculating planned program budgets, among other things. This model allows the provision of a full-suite of cost-effectiveness data at the measure, program, and portfolio levels.

ENS, through careful consideration, has designed the 2019 DSM Plan based on a continuation approach, similar to 2015. This means the 2019 Plan is a continuation of the 2016-2018 Plan, which was developed using Navigant's ELRAM. As such, ENS has demonstrated the relative cost-effectiveness of the 2019 DSM Plan by comparing it to the 2016-2018 DSM Plan on which it is based.

⁴ Summit Blue assisted in preparing the 2010 DSM Plan. Summit Blue subsequently became part of Navigant Consulting Inc.

Understanding the importance of producing a DSM Plan that is cost-effective, ENS has demonstrated the cost-effectiveness of the 2019 DSM Plan in two key ways:

- Measure, program and portfolio consistency with the cost-effective approved 2016-2018 DSM Plan; and
- Comparison of the first-year unit costs within the approved 2016-2018 DSM Plan to those within the 2019 DSM Plan.

5.1 Portfolio Consistency with the Cost-Effective 2016-2018 DSM Resource Plan

EfficiencyOne based the development of the 2019 DSM Resource Plan on a continuation-approach. As stated elsewhere in this document, this continuation-approach was necessitated due to changes in legislation that coordinated DSM investment for 2019 with the 2017-2019 Rate Stability Period, as implemented by NS Power. The continuation approach not only altered the development process of the 2019 DSM Resource Plan, but also influenced the program and portfolio design approach.

In an effort to maintain a similar cost-effectiveness profile as compared to the 2016-2018 DSM Resource Plan, large-scale changes to measures, program operation, or portfolio composition have been deferred to, at minimum, the next three-year planning cycle. By maintaining a similar mix of measures within a given program, and the investment and targets of a given program within the broader portfolio, EfficiencyOne intends for the 2019 DSM Plan to be a continuation of the approved 2016-2018 DSM Resource Plan in all material manners.

EfficiencyOne's ongoing research associated with implementing the Incentive Setting Methodology Report is likely to continue to affect incentive levels across the portfolio. These changes would impact Program Administrator Cost test results, but not Total Resource Cost (TRC) test results. Incentives within the TRC test are considered a transfer payment between the utility and customer, and not included.⁵

⁵ [California] Governor's Office of Planning and Research, *California Standard Practice Manual*, July 2002, at 18.

To illustrate the similarities of portfolio design between the 2016-2018 DSM Resource Plan and the 2019 DSM Resource Plan, Table 4, Table 5 and Table 6 below illustrate the similarities between the two plans on an energy, demand, and investment basis.

Table 4 - Comparison of Approved 2016-2018 Average Annual Energy Savings to 2019 Annual Energy Savings by Program

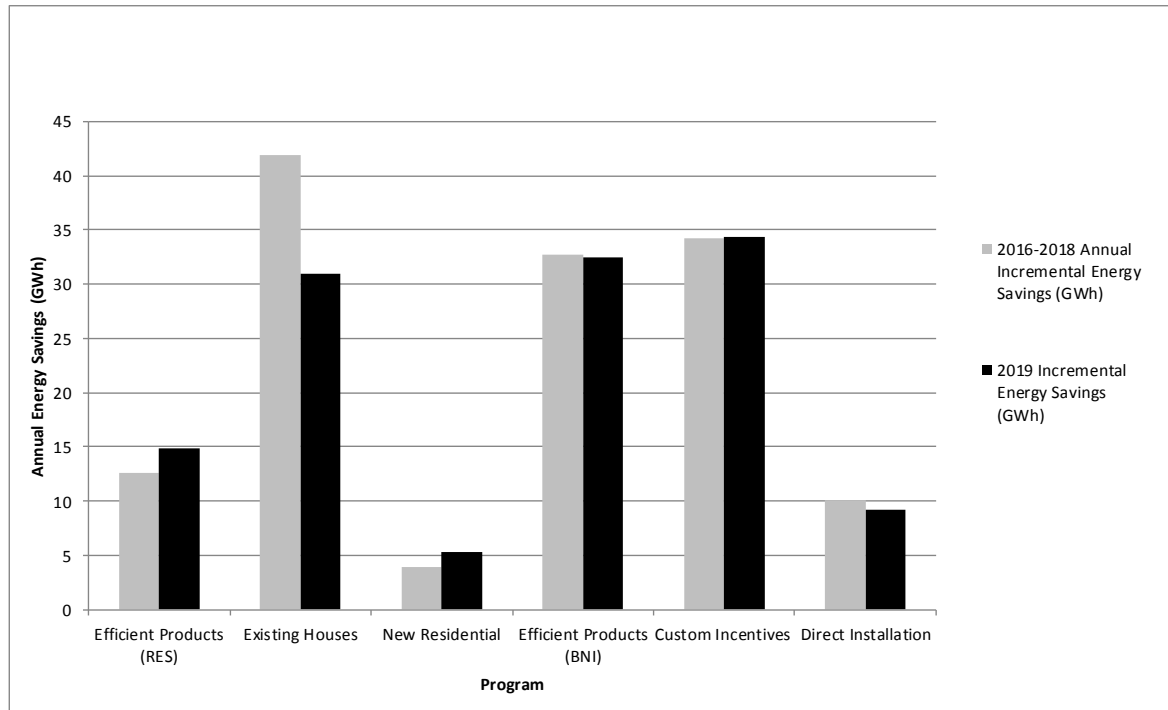


Table 5 - Comparison of Approved 2016-2018 Average Annual Demand Savings to 2019 Annual Demand Savings by Program

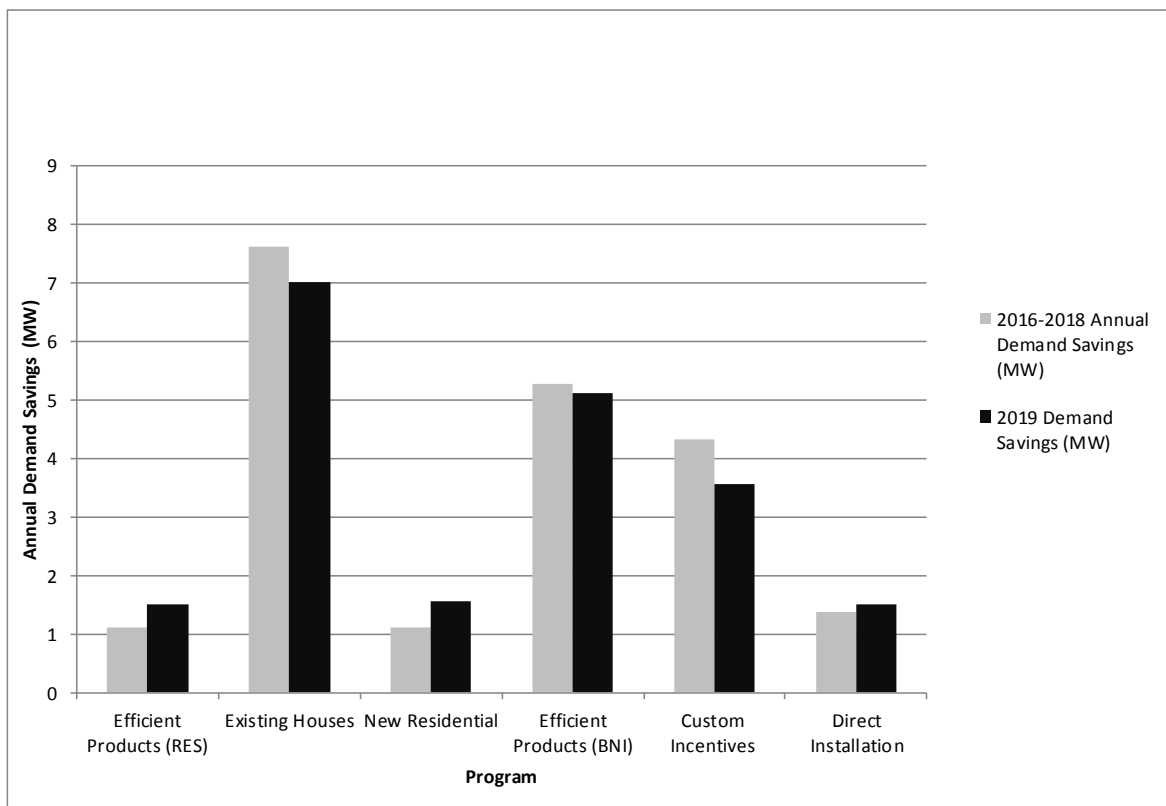
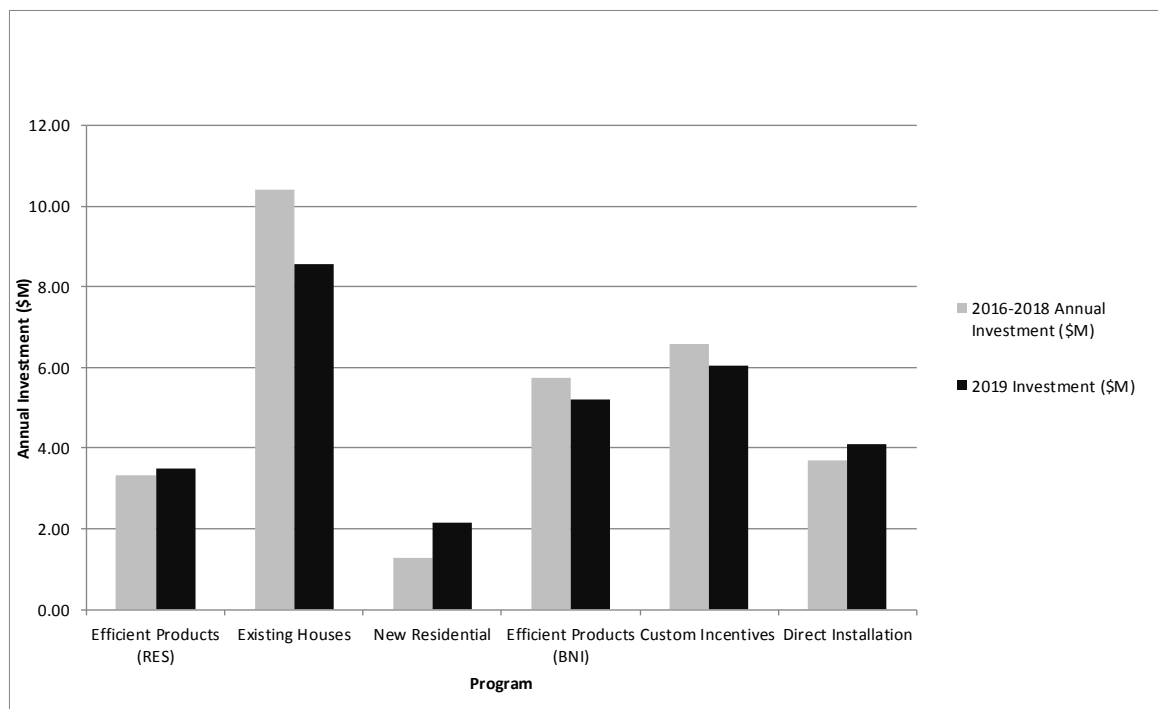


Table 6 - Comparison of Approved 2016-2018 Average Annual Investment to 2019 Annual Investment by Program



The similarity of program weighting, with respect to energy savings, demand savings, and investment serves as a preliminary indication of the continued cost-effectiveness of the 2019 DSM Plan.

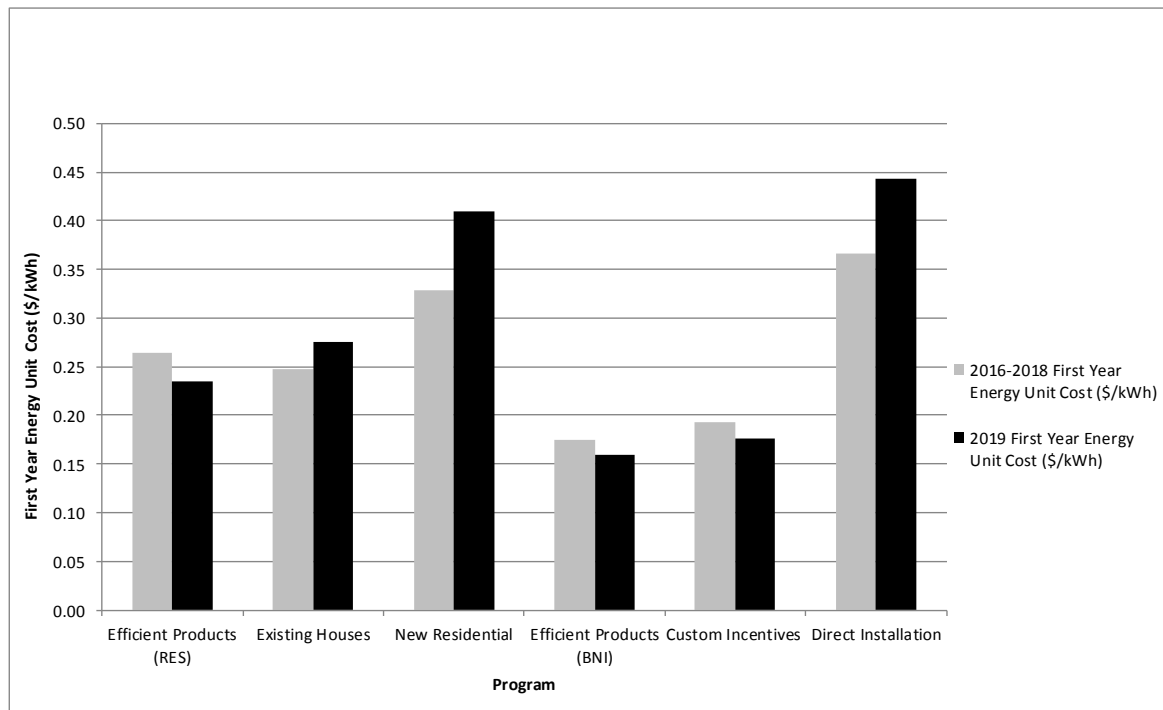
5.2 First-Year Unit Cost Comparison

First-year unit costs are an important management tool for ENS, and are one of several metrics used on a day-to-day basis to track and measure program performance. First-year unit costs represent the program administrator investment required to generate a unit of resource savings, which may be annual energy savings or system coincident peak demand savings.

While first-year unit costs do not correlate to cost-effectiveness in an abstract comparison of DSM programs,⁶ they do correlate well as a proxy to cost-effectiveness results when comparing programs that offer similar groups of measures, and similar avoided costs of capacity and energy.

Table 7 and Table 8 below offer comparisons between the first-year program unit costs of the approved 2016-2018 DSM Resource Plan, and the 2019 DSM Resource Plan, for energy and system coincident peak demand, respectively.

Table 7 - Comparison of Approved 2016-2018 Average First-Year Energy Unit Cost to 2019 First-Year Energy Unit Cost by Program and Portfolio



⁶ This can be attributed to the fact that first-year unit costs do not consider the lifetime of a measure, or the weighted-average measure life of a group of measures, a program, or a portfolio.

Table 8 - Comparison of Approved 2016-2018 Average First-Year Demand Unit Cost to 2019 First-Year Demand Unit Cost by Program and Portfolio

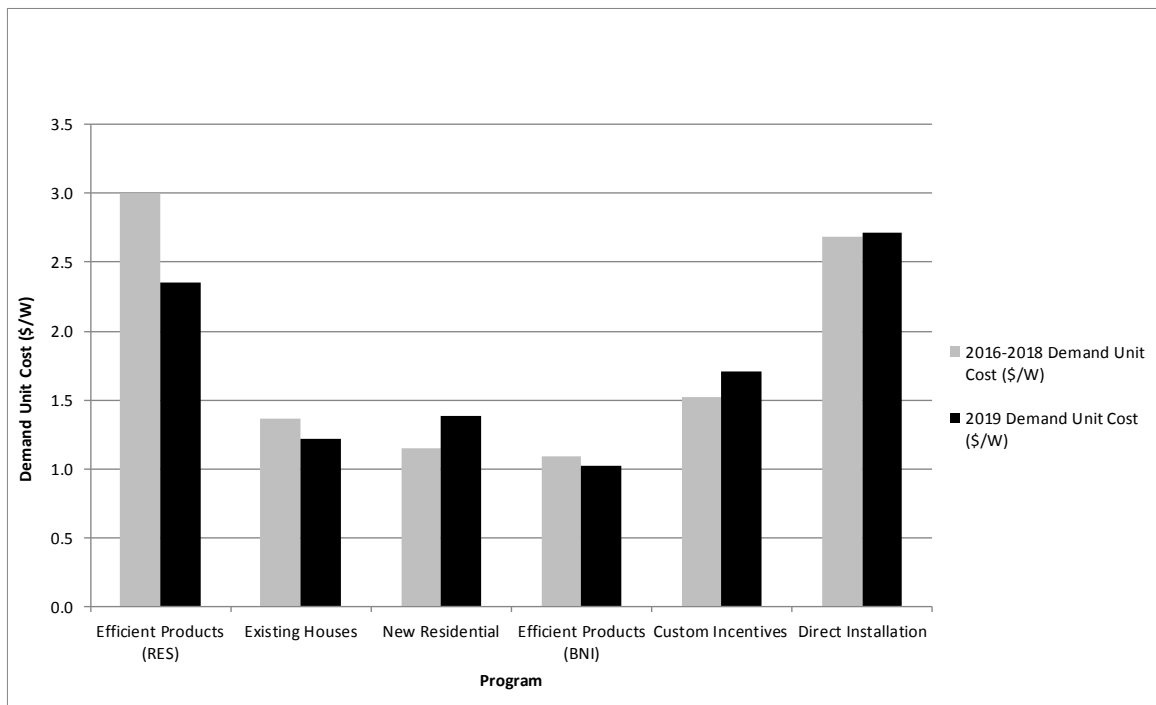


Table 9 provides the relative changes in first-year unit costs by program, as compared to approved 2016-18 DSM Resource Plan averages.

Table 9 - Relative Change in First-Year Unit Costs from Approved 2016-2018 DSM Resource Plan to 2019 DSM Resource Plan

Program	Relative Change in First-Year Energy Unit Costs (%)	Relative Change in First-Year Demand Unit Costs (%)
Efficient Products (Residential)	-11%	-22%
Existing Houses	11%	-10%
New Residential	25%	21%
Efficient Products (BNI)	-9%	-6%
Custom Incentives	-9%	12%
Direct Installation	21%	1%

The most notable differences in first-year unit costs occur for the New Residential and Direct Installation programs. For New Residential, this is largely precipitated by a redesign

to its incentive structure, with rationale for changes provided in section 2.3, above. For Direct Installation, this is largely due to program restructuring and resulting incentive changes, as well as updates to, *inter alia*, runtime estimates resulting from recent evaluation results. Further information is provided in section 3.3, above. As the relative level of incentive spending does not impact the TRC test, these incentive-related effects are not expected to drive changes to the TRC test results relative to 2016-2018, for which both of these programs screened positively.

5.3 Cost-Effectiveness Summary

ENS submits that the 2019 DSM Resource Plan is cost-effective, based on the following key points:

- The approved 2016-2018 DSM Resource Plan was cost-effective by a wide margin. The 2016, 2017, and 2018 program years all passed the TRC test at the program level and have TRC test results of 2.3, 2.4 and 2.5 at the portfolio level;
- The 2019 DSM Resource Plan has a very similar mix of measures and a similar program structure when compared to the approved 2016-2018 DSM Resource Plan; and
- The proposed DSM Resource Plan has comparable first-year energy and demand unit costs at the portfolio level, and limited changes at the program level.

6. ENABLING STRATEGIES

Enabling Strategies are essential for the effective delivery of DSM programs. Continuing to promote a culture of energy efficiency in Nova Scotia will help drive program uptake and contribute to market transformation. As with the 2019 DSM program mix, the proposed 2019 Enabling Strategies budget was developed in relation to the approved 2016-2018 Plan and spending from recent years. In 2019, the Enabling Strategies budget will make up 13.2 percent of the overall DSM Resource Plan budget, which is higher than the 9.5 percent in 2017, 9.7 percent in 2016, and the filed 2016-2018 average of 9.0 percent. There are two primary reasons for this increase. First, \$1.0 million is allocated to Enabling Strategies for

1 demand-focused activities. Second, additional budget is required for the regulatory process
2 associated with the 2020-2022 DSM Plan.

3 4 **7. ORGANIZATIONAL PERFORMANCE**

5
6 One method EfficiencyOne uses to meet targets within budget is to have a company-wide
7 focus on results. Through its performance management balanced scorecard approach,
8 EfficiencyOne ties its DSM objectives directly to each employee. This helps ensure that all
9 employees understand how their responsibilities affect the company's mandated objectives.

10
11 This approach has helped contribute to EfficiencyOne's performance to-date, which
12 includes not only meeting targets within budget, but also high (and sustained) levels of
13 Customer Satisfaction (89% in 2016) and high employee engagement scores (91% in 2016).
14 Recently, EfficiencyOne has also been named as one of Canada's Greenest Employers for
15 2017.⁷ EfficiencyOne's success also led to receiving two ENERGY STAR® Advocate of
16 the Year awards from Natural Resources Canada (in 2013 and 2016).⁸ Furthermore, the
17 International Energy Agency also noted EfficiencyOne's innovative approaches to
18 achieving energy savings in their 2015 Energy Efficiency Market Report.⁹ Finally,
19 recognition of Canada's first energy efficiency utility (ENS) was also included in the
20 Federal Government's 2016 Pan-Canadian Framework on Clean Growth and Climate
21 Change.¹⁰

⁷ "2017 Winners" Canada's Top 100 Environmental, online: Canada's Top 100
<<http://www.canadastop100.com/environmental/>>.

⁸ Natural Resources Canada, "Winners' profiles – 2016" online: NRCAN <<http://www.nrcan.gc.ca/energy/products/for-participants/awards/18610>> and Natural Resources Canada, "Previous winners 2014 to 2013" online: NRCAN <<https://www.nrcan.gc.ca/energy/products/for-participants/awards/13559>>.

⁹ International Energy Agency, *Energy Efficiency Market Report 2015 – Market Trends and Medium Term Prospects* (Paris: IEA, 2015) at 109.

¹⁰ Government of Canada, *Pan-Canadian Framework on Clean Growth and Climate Change – Canada's Plan to Address Climate Change and Grow the Economy*, 2016 at 14 and 64.

1 **8. CONCLUSION**

2

3 ENS's 2019 DSM activities are based on a continuation of the approved 2016-2018 DSM

4 Resource Plan. The budget for 2019 is identical to the average annual budget in the 2016-

5 2018 Plan. This is consistent with the approach taken in the *Electricity Plan Implementation*

6 (2015) Act with respect to the 2019 DSM investment amount. Energy saving and peak

7 demand targets for 2019 are lower than the annual average in the 2016-2018 Plan. Similar

8 to the 2015 continuation year, the 2019 DSM Resource Plan did not use a resource

9 modelling approach as the 2019 program mix is based on the 2016-2018 DSM Resource

10 Plan, for which resource modelling was conducted. Instead, the 2019 DSM Resource Plan

11 uses a combination of, *inter alia*, extending an already approved DSM Resource Plan,

12 updating cost-effectiveness insights via unit cost analyses, and adapting the Plan where

13 necessary based on EfficiencyOne's experience delivering cost-effective energy and

14 demand savings.

Appendix C

Forward-looking Rate and Bill Impact Analysis

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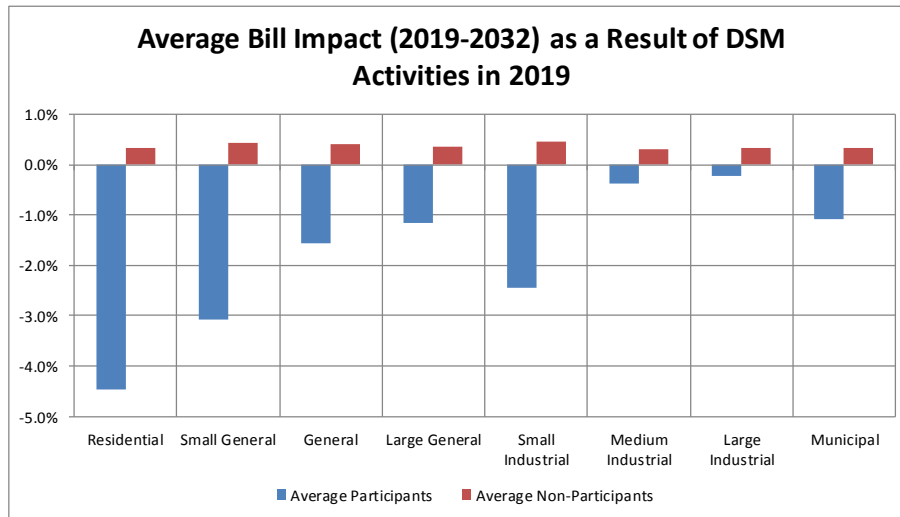
LIST OF ATTACHMENTS

Attachment 1: 2019 Plan Rate and Bill Impact Analysis Results by Rate Class
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Attachment 3: 2019 Plan Rate and Bill Impact Analysis Equations

EXECUTIVE SUMMARY

Efficiency Nova Scotia's 2019 DSM Resource Plan rate and bill impact analysis provides a broad trend-based picture of the rate and bill impacts of proposed Demand-Side Management (DSM) activities to be carried out in 2019, looking forward until 2032, when the modelled impacts of 2019 measures expire. The analysis compares differences between two scenarios – a no-new-DSM scenario that does not include 2019 DSM or any rate and bill impacts arising from it, and a DSM scenario that allocates program expenditures, avoided costs, and recovery of lost revenues arising from 2019 DSM to each participating rate class, excluding Unmetered. The analysis examines DSM effects in isolation of utility effects such as the specific timing of infrastructure upgrades or general rate applications, or the creation of rate stability periods. Using a levelized cost approach, the analysis provides insight into the average effect of DSM on rates and bills over the long term, as opposed to an attempt to forecast future annual NS Power rates.

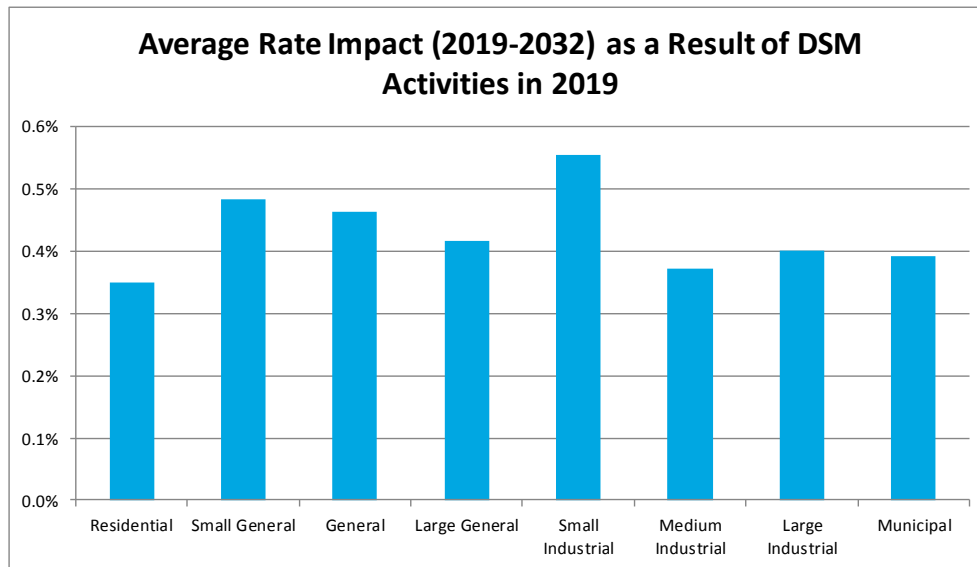
Figure 1 shows the forecast average electricity bill impacts for participants and non-participants. Variations in average participant savings between classes are driven by the ability of a typical energy efficiency project to impact a customer's total bill – generally, participants in smaller classes achieve deeper savings per project relative to their total consumption, while participants in larger classes achieve less deep savings per-project, but are able to participate more frequently.

Figure 1: Average Bill Impact (2019-2032) as a Result of DSM Activities in 2019

The general modelling approach is the same as was used for the forward-looking 2016-2018 DSM Resource Plan analysis (isolation of effects arising from proposed DSM only), however, the model itself has evolved over that timeframe with input from the DSM Advisory Group; in its current form, the model is structurally identical to the version that EfficiencyOne used for its 2017 historical analysis.

The results show that the projected impacts of the proposed 2019 DSM Plan are in line with nominal impacts from previously approved DSM from 2011-2018. In every rate class, over the life of DSM measures (2019-2032), average rate impacts are roughly +0.35% to +0.55% of the no-new-DSM scenario (see Figure 2). Over this period, DSM delivered in 2019 will offset over 2 TWh of energy production and produce over 20 MW of system-peak demand reductions, reducing average participant bills by up to 4.5%, while producing minimal bill impacts for non-participants. The dominant short-term rate impact results from the recovery of DSM program costs, and will not result in a rate increase as these recovery amounts are included as part of NS Power's rate stabilization period.

Figure 2: Average Rate Impact (2019-2032) as a Result of DSM Activities in 2019



In evaluation of total DSM impacts, it is important to also consider benefits that do not directly impact rates or bills, such as the reduction of greenhouse gas emissions. This investment will avoid the release of approximately 850,000 tonnes of CO₂e over 2019-2032, roughly equivalent to the annual emissions from the Tufts Cove generating station.

Other benefits include the reduction of energy poverty, investment in local businesses that deliver efficiency services, reduced reliance on foreign fuel supplies, increased productivity in businesses, increased occupant comfort in homes and businesses, and increased room in operating budgets of public agencies, among others.

1. INTRODUCTION

This analysis provides a high-level estimate of the impact of Demand-Side Management (DSM) activities proposed within EfficiencyOne's 2019 DSM Resource Plan on customer rates and bills, within each participating rate class, excluding Unmetered. The current analysis estimates impacts from 2019 to 2032, based on proposed DSM program delivery in 2019.

The rate and bill impact analysis (RBIA) considers that some customers participate in DSM programs, reducing their energy use and lowering their energy bill, and that all customers experience rate impacts associated with DSM investment. This analysis forecasts these impacts so they can be assessed by the Nova Scotia Utility and Review Board ("Board") and stakeholders, and considered in decisions on DSM investment. It also provides an avenue to examine historical participation rates, which are a key indicator of the degree to which EfficiencyOne has operated programs that were available to all customers, and informs EfficiencyOne about the participation impacts that result from changes in program delivery.

In normal planning cycles, when proposing a 3-year DSM Resource Plan, EfficiencyOne will examine alternate scenarios of DSM investment; the current analysis examines a single scenario of DSM investment, in line with the 2019 Plan continuation approach. However, the output graphs also include historical participation figures for reference (with actual results for 2011-2016 and estimates for 2017 and 2018).

The RBIA model, initially filed on November 14, 2013 along with a detailed methodology report, is designed to show the average, long-term effect of DSM on rates and bills. The model was developed by ENS Corporation and Elenchus Research Associates and built on a sample framework provided by the Board's consultant on this matter, Synapse Energy Economics. Prior to the 2013 filing, it was reviewed several times by Synapse and subsequently revised to ensure it served its required purposes. It has been revised several times since then, based on feedback from past filings and discussions with the DSM

1 Advisory Group (DSMAG). The model structure used for the current analysis is identical
2 to the version used in EfficiencyOne's 2017 RBIA, filed on 31 October 2017; any potential
3 changes resulting from stakeholder comments on the 2017 RBIA will be addressed through
4 2018 as EfficiencyOne prepares for its historical 2018 analysis.

5
6 Section 2 provides an overview of the model framework and discusses key assumptions.
7 Results are discussed in Section 3, with overall trends followed by individual rate class
8 impacts. Concluding remarks are made in Section 4. Attachment 1 provides outputs from
9 the model for each rate class analyzed. A list of assumptions and their derivations are also
10 included as Attachment 2. Attachment 3 includes a list of equations to describe the lost
11 revenue and avoided cost calculations. The model, a Microsoft Excel file, has been
12 included in the electronic version of this filing.

2. METHODOLOGY AND ASSUMPTIONS

This section describes the overall modelling approach and key assumptions.

2.1 Scenarios

The model compares two scenarios: a DSM scenario and a no-new-DSM scenario. The DSM scenario includes the utility system costs and benefits of proposed DSM programs for 2019. The no-new-DSM scenario does not include any DSM costs or benefits for 2019. Both scenarios include the load impacts and residual rate impacts of DSM programs operated from 2011-2018, and neither includes any DSM beyond 2019. Only the differences between the scenarios are presented, isolating the lifetime effects of 2019 DSM.

2.2 Customer Classes

The model presents results, by rate class, for the following NS Power customer classes:

- Residential (rate codes 2, 3, 4, 5, 6, 9 and 16)
- Small General (rate code 10)
- General (rate code 11)
- Large General (rate code 12)
- Small Industrial (rate code 21)
- Medium Industrial (rate code 22)
- Large Industrial (rate codes 23 and 25, and customers under the 'One part high voltage real time pricing' tariff)
- Municipal (rate code 24)

The six municipal electric utilities (MEUs) are treated as the only six customers in the Municipal rate class, and each MEU is considered to be a participant in ENS programs when any customer within their distribution system participates in an ENS program. Participation of individual customers connected to MEU distribution systems is not modelled.

2.3 Time Period definitions

In this analysis,

- The DSM delivery period is the timeframe over which DSM programs are delivered. In this analysis, the DSM delivery period is 2019.
- The cost recovery period is the timeframe over which DSM program costs are recovered. Program costs for 2019 are assumed to be completely recovered within 2019.
- The avoided costs period is the timeframe over which the benefits of DSM are realized. In this analysis, measures installed in 2019 have an average measure life of approximately 13 years at the portfolio level, so the avoided costs period is 2019-2031.
- The lost revenues period is the timeframe over which DSM affects the revenues collected by NS Power, relative to the no-new-DSM scenario. Weighted-average measure lives are averaged at the portfolio level for the calculation of lost avoided costs, but are averaged at the class level for calculation of lost revenues (this difference in modelling is due to the fundamental construction of the model, as a small amount of savings occur outside of the modelled classes but still contribute to avoided costs). In this analysis, measures installed in 2019 for the Residential class have an average measure life of approximately 14 years (the longest of all classes), so the lost revenues period is 2019-2032.
- The study period is the timeframe over which impacts are analyzed and presented, and by which average impacts are calculated. In this analysis, the study period is 2019-2032.

2.4 Programs

Since the entire portfolio of programs impacts future rates and bills, the analysis includes all ENS programs that are funded by NS Power and recovered from electricity system ratepayers, and provided within the DSM delivery period.

2.5 Calculating Rate Impacts

No-new-DSM scenario rates

For 2019, the forecasted rates as part of the rate stability period are used as the no-new-DSM rates, since they are ‘locked in’ and will be active whether or not any incremental DSM is pursued in 2019. The calculated incremental rate impacts therefore estimate the approximate portion of rates attributable to DSM¹. After 2019, energy and demand rates are assumed to escalate at 2.7% per year, consistent with the assumption used for evaluation of DSM impacts in the 2014 Integrated Resource Plan (IRP).

For rate classes with more than one energy block price, NS Power has provided estimates of the annual class consumption in each block over the 2011-2019 period. Beyond 2019, the ratio of block 1 energy consumption to total energy consumption is assumed to remain constant. The individual block rates are used to calculate the total class revenue from energy sales (block 1, block 2, and FAM charges), which is then redistributed amongst the total kWh sales for the class, producing a single average energy rate for each class that accounts for block 1, block 2, and FAM charges.

DSM scenario rates

The DSM rates are calculated by taking the average no-new-DSM rates, adding a program cost recovery component (upward rate pressure), adding a lost revenue component (upward rate pressure), and subtracting an avoided costs component (downward rate pressure), for each year of the study period. Two key assumptions are that a) all lost revenues must be recovered (including lost energy revenues) and b) all avoided costs do not need to be recovered (including avoided energy costs). Together, these two assumptions model the reallocation of ‘lost’ fixed costs from unbilled sales into an upward rate pressure.

¹ An alternative approach would have been to estimate the amount of DSM cost recovery in 2019 rates for each class and remove it, producing a set of theoretical 2019 rates that truly included no DSM cost recovery. Since the main output of this rate analysis is the approximate percentage rate impact attributable to DSM, not a forecast of precise future rates, EfficiencyOne opted for a simpler approach that relies on actual 2019 rates. The approach EfficiencyOne used is conservative, as it would tend to overestimate the lost revenues.

1 The model does not forecast the timing of general rate applications, or the occurrence of
2 any future rate adjustments. In this way, the DSM effects are isolated from all other utility
3 effects impacting rates, and the rate effects presented here should be interpreted as the
4 annual 'rate pressure' from DSM.

5
6 Program cost recovery component

7 Expenditures for the 2019 Plan were allocated to rate classes, and are assumed to be fully
8 recovered within 2019. These costs are converted to a \$/kWh program cost recovery
9 component by dividing costs by forecast annual kWh sales within each rate class.

10
11 Avoided costs

12 This analysis uses levelized avoided costs in four categories: generation capacity (\$/MW),
13 transmission capacity (\$/MW), distribution capacity (\$/MW) and avoided energy
14 (\$/MWh). These avoided cost rates are respectively multiplied by peak demand or energy
15 savings for the entire system, for each year of the avoided costs period.

16
17 Lost revenue recovery component

18 Lost NS Power revenues are calculated at the rate class level by multiplying DSM energy
19 and demand savings by no-new-DSM rates, and are then summed to the portfolio level.
20 This determines the difference in revenue collection between the DSM and no-new-DSM
21 scenarios.

22
23 Lost revenue from peak demand reductions

24 EfficiencyOne estimates annual system peak coincident demand savings, not demand
25 savings coincident with monthly customer peaks. For this reason, a conversion factor is
26 necessary to calculate lost NS Power revenues from customer demand reductions. In 2017,
27 NS Power provided ratios of coincident demand contributions to total billed demand for
28 each rate class. Because there is no direct way to correlate peak demand savings with billed
29 demand savings, EfficiencyOne has employed the assumption that, for each rate class, the
30 ratio between annual system coincident peak demand contribution and total billed demand

is the same as the ratio between annual system coincident peak demand savings and billed demand savings (i.e. the ratio for savings is assumed to be the same as the ratio for load).

Allocation of avoided costs and lost NS Power revenues to rate classes

The annual avoided costs and lost revenues are summed to the portfolio level and then reallocated back to rate classes based on their share of the total revenue requirement. For rate classes without demand charges, each is divided by kWh sales within the class to form a \$/kWh component of energy rates. For rate classes with demand rates, it is assumed that energy and demand rates in the DSM scenario change by the same percentage, and so avoided costs and lost revenues are allocated to both a \$/kWh energy component and a \$/kW demand component.

Transformer credits

In some classes, customers who own their own distribution transformer receive a credit on the rates they pay. Since only a portion of customers receive this credit, it is not included in rates used in the model.

2.6 Calculating Bill Impacts

Non-participant consumption

In the no-new-DSM scenario, for each rate class, in each year, the estimate of total class energy consumption is divided by the number of customers to produce an estimate of the average customer's consumption. In the DSM scenario, non-participants in DSM programs are assumed to use the same amount of energy as they do in the no-new-DSM scenario.

Participant consumption

For the DSM scenario, within each rate class, in each year, total annual savings (including current-year savings and persistent savings from past years) are divided equally amongst the number of cumulative participants. The model does not estimate impacts for multiple 'depths of participation' – all participants are assumed to save the same amount of energy

and demand. In reality, some participants would save much more, and others would save much less.

Total customer consumption

The output graphs include a third category of participants, called Total Customers. This is determined by allocating DSM savings for the class equally among all customers, including non-participants. It provides an estimate of bills in what may be considered a hypothetical ideal scenario from a customer equity perspective, where all customers use the same amount of energy and achieve the same level of savings, as well as providing an overall view of rate class effects.

2.7 Calculating Participation Impacts

For historical-looking RBIA's, EfficiencyOne combines participant records (for programs that track participant information) with participant records from previous years. In this way, EfficiencyOne can identify the first year that a customer participated in a program, so that they are only counted once as a unique participant, and cumulative participation rates can be determined. For the presentation of annual participation figures, customers are counted once in each year they participate.

For the current analysis, which looks only at DSM delivered in 2019, EfficiencyOne has estimated participation figures based on actual participation records from 2016 (the most recent year for which EfficiencyOne has integrated participant records with previous years). Each 2016 participant figure (one for each program within each rate class) was multiplied by the ratio of expected 2019 to actual 2016 energy savings to produce participation estimates for 2019. This approach is reasonable since the proposed 2019 measure mix for each program, within each class, is not significantly different than in 2016.

For illustrative purposes, participation graphs provided in Attachment 1 include historical participation in 2011-2018 DSM programs. These participation figures are identical to those used in EfficiencyOne's historical 2017 RBIA.

3. 2019 ANALYSIS RESULTS

Summary sheets for rate, bill, and participation impacts for each applicable rate class are included in Attachment 1. The graphs presented on the summary sheets have been selected based on representative outputs from the model.

It is important to note that the analysis relies on the use of levelized avoided costs, as the intent is to model the average, long-term effect of DSM on rates and bills. As such, greater confidence should be placed in average, long-term results than results for any specific year.

3.1 Overall Rate Impacts

The general trend in rates, visible in all classes, is that the avoided costs (downward rate pressure) and lost revenues (upward rate pressure) resulting from 2019 programs are approximately in balance throughout the life of DSM measures. In 2019, there is a net upward pressure on rates due to recovery of program costs in that year; note that the necessary cost recovery amount is already accounted for within 2019 rates. The net result for most classes, when averaged over the study period, is that rates are slightly higher (0.35% to 0.55%) with DSM than without. Note that the analysis does not consider the current (2017-2019) rate stabilization period or the level of DSM cost recovery already embedded in rates through that period; instead it adds the calculated annual DSM rate impacts on top of no-new-DSM rates and examines the resulting difference between the two.

Figure 3 illustrates the annual rate effects. This pattern illustrates the annual program cost recovery and lost revenue recovery amounts, but the avoided costs impact is smoothed by the use of levelized avoided costs. Table 1 presents the average rate impacts over the study period, compared to the results of the historical 2017 RBIA. When comparing results, note that both the DSM delivery periods and study periods differ between these two analyses: the 2017 RBIA included DSM from 2011-2018 with impacts averaged over 2011-2033, including deferral and amortization of 2015 DSM costs, while the current analysis includes

only DSM in 2019 with impacts averaged between 2019-2032. Forecasted rate impacts in all classes attributable to the 2019 DSM Plan are less than a tenth of a cent when averaged over the duration of installed measures (i.e. the study period).

Figure 3: Rate Impacts as a Result of DSM Activities in 2019 (using levelized avoided costs)

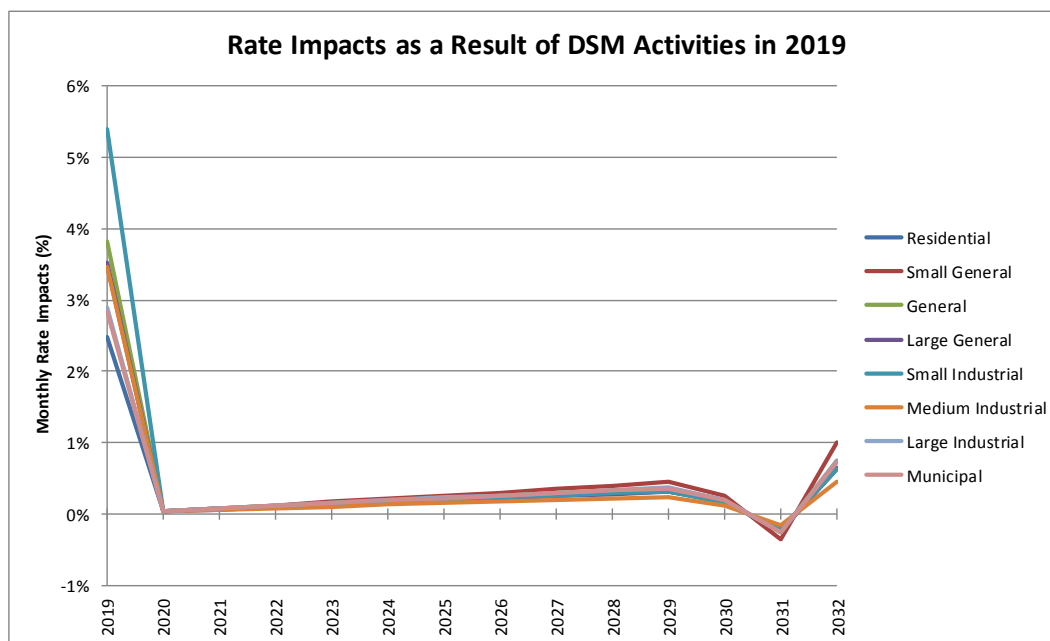


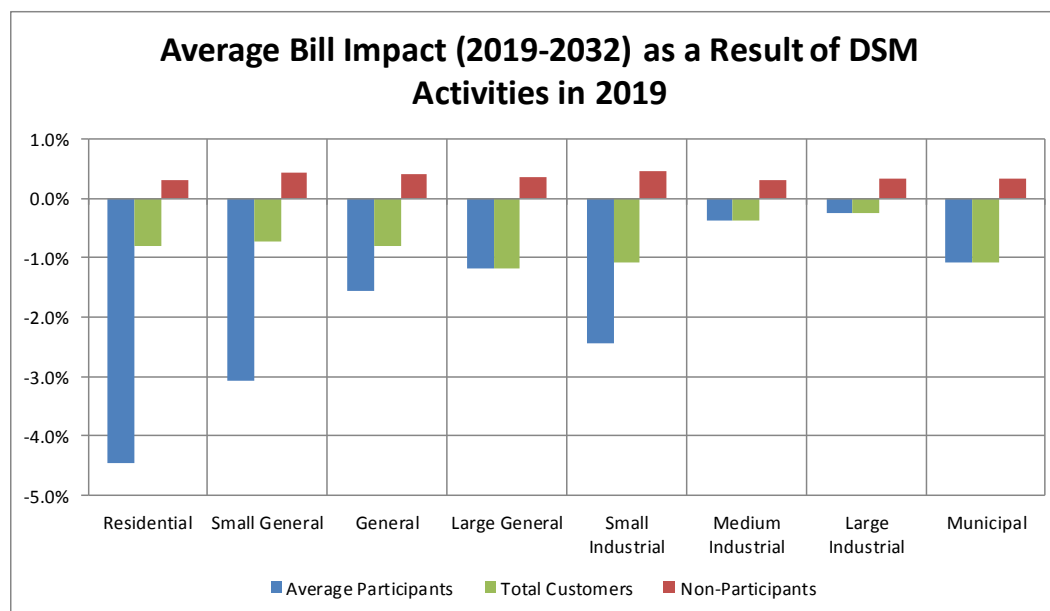
Table 1: Average Rate Impact compared to No-New-DSM Scenario, 2017 Historical to 2019 Forecast Results Comparison

Rate Class	2017 Historical RBIA Result (Average Impact over 2011-2033)		2019 Plan RBIA Result (Average Impact over 2019-2032)	
	(cents/kWh)	(%)	(cents/kWh)	(%)
Residential	+0.031	+0.27%	+0.061	+0.35%
Small General	+0.116	+0.92%	+0.081	+0.48%
General	+0.057	+0.62%	+0.054	+0.46%
Large General	+0.044	+0.60%	+0.044	+0.42%
Small Industrial	+0.053	+0.62%	+0.061	+0.55%
Medium Industrial	+0.013	+0.21%	+0.032	+0.37%
Large Industrial	-0.004	-0.03%	+0.037	+0.40%
Municipal	-0.004	-0.03%	+0.037	+0.39%

3.2 Overall Bill Impacts

The analysis shows that between 2019 and 2032, participants in 2019 ENS programs will see average bill reductions (by class) of up to 4.5% (Residential). The average bill increase for non-participants (for each rate class) over this period is less than 0.5% of the no-new-DSM scenario. Average bill impacts for participants, non-participants and total customers are presented in Figure 4. Variations in average participant savings between classes are driven by the ability of a typical energy efficiency project to impact a customer's total bill – generally, participants in smaller classes achieve deeper savings per project relative to their total consumption, while participants in larger classes achieve less deep savings per-project, but are able to participate more frequently.

Figure 4: Average Bill Impact (2019-2032) as a Result of DSM Activities in 2019

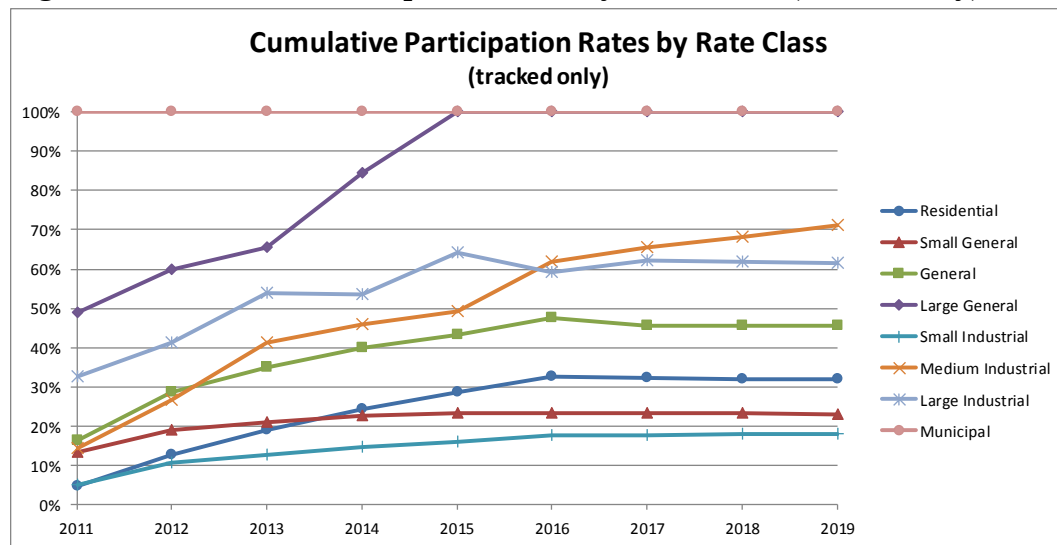


3.3 Overall Participation Impacts

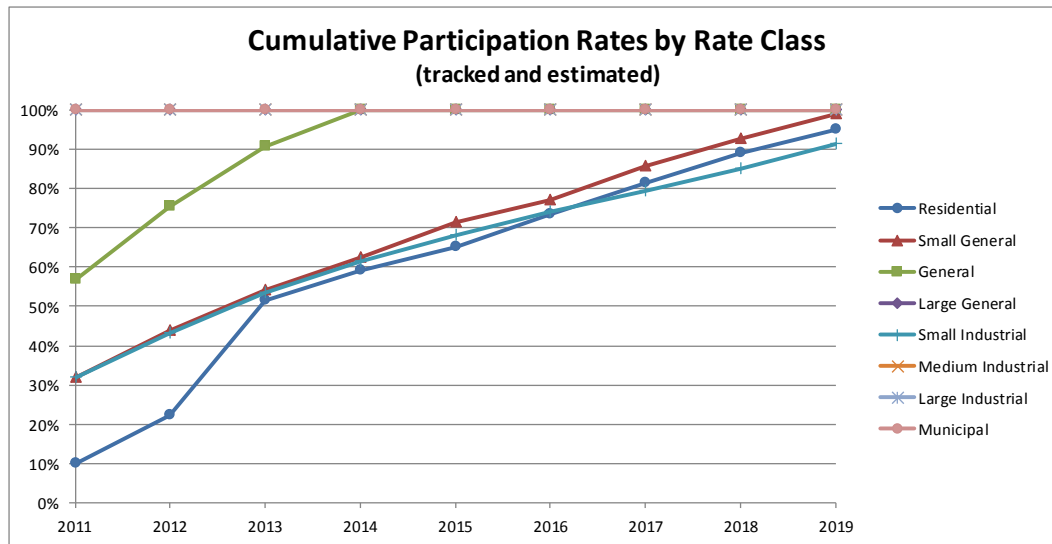
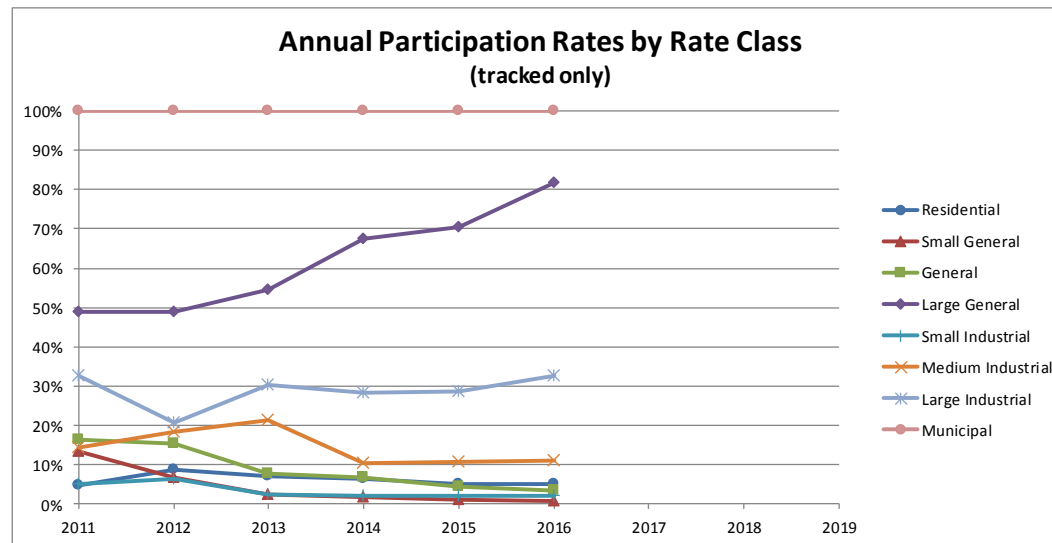
Participation figures are presented here to illustrate that the 2019 Plan reflects a continuation of activities from recent years. Figures 5 through 8 present actual participation for 2011-2016 and estimates for 2017 and 2018, all of which was included in EfficiencyOne's 2017 RBIA, updated with estimates for 2019.

Two types of participation figures are presented – tracked and estimated. Tracked participants are those for which EfficiencyOne has had direct contact with the customer, and collected personally identifying information such as address and NS Power account number. Estimated participants are those for which EfficiencyOne had not collected such identifying information. For years with actual results (2011-2016), participant numbers are estimated for point-of-sale programs. For forecast years (2017-2019), all participants are shown as estimated. Cumulative participation is presented in Figure 5 (tracked participants only) and Figure 6 (tracked and estimated participants), including estimates of participation for 2017-2019. EfficiencyOne employs the assumption that all customers in the Large General, Medium Industrial, Large Industrial and Municipal classes participate in BER-IR each year, so these classes show 100% participation in Figure 6 for all years. The other, smaller-customer-consumption classes show that cumulative participation rates have been steadily climbing since 2011. Figures 7 and 8 present annual participation impacts.

Figure 5: Cumulative Participation Rates by Rate Class² (tracked only)



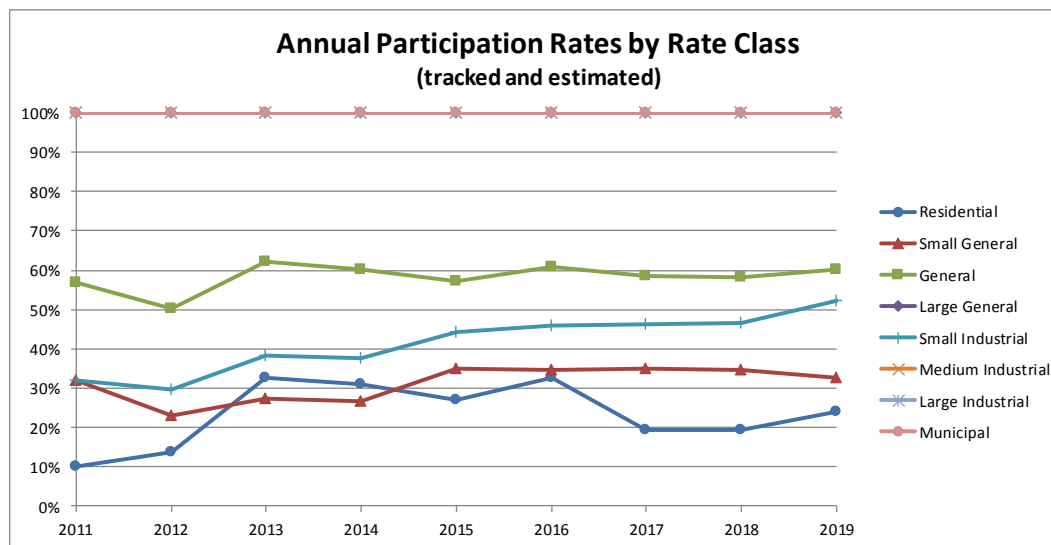
² All 2017-2019 participation is shown as “estimated” rather than “tracked”, causing the cumulative participation to flatten in those years. Any changes over 2017-2019 in this figure are due to projected changes in the number of customers in the class.

Figure 6: Cumulative Participation Rates by Rate Class³ (tracked and estimated)**Figure 7: Annual Participation Rates by Rate Class⁴ (tracked only)**

³ The Large General, Medium Industrial, Large Industrial and Municipal classes have 100% participation in each year.

⁴ 2017-2019 participation is included as “estimated” rather than “tracked” and so is not present in this figure.

1

Figure 8: Annual Participation Rates by Rate Class⁵ (tracked and estimated)

⁵ The Large General, Medium Industrial, Large Industrial and Municipal classes have 100% participation in each year.

3.4 Results by Rate Class

This section highlights important results in more detail, by individual rate class.

3.4.1 Residential

- As modeled, the Residential class includes Rate Codes 2, 3, 6, 9 and 16 (Domestic), as well as 4 and 5 (Charitable).
Residential
↑ 0.3% Rates
↓ 4.5% Participant bills
- Participants in the Residential class see an average bill decrease of 4.5% over the study period.
- Non-Participants see an average bill increase of 0.3% over the study period.
- The average rate impact over the study period is an increase of 0.3%, or 0.061 cents/kWh.
- Energy Savings Actions (the Home Energy Report) began in 2013. In 2014 and 2015, the pilot program continued with the same group of participants, so no new participants were counted. Roughly 7% of HER participants left the program in 2014 and another 7% in 2015, which is reflected in the annual participant counts. The forecasted 2017 drop in annual participation is reflective of the discontinuation of the HER program in 2016.

3.4.2 Small General

- As modeled, the Small General class includes Rate Code 10 only.
Small General
↑ 0.5% Rates
↓ 3.1% Participant bills
- Participants in the Small General class see an average bill decrease of 3.1% over the study period.
- Non-Participants see an average bill increase of 0.4% over the study period.
- The average rate impact over the study period is an increase of 0.5%, or 0.081 cents/kWh.

- Very high 2011 participation in Efficient Products (Residential) is due to the fact that ENS's Commercial Direct Install program was categorized as Efficient Products (Residential) in this year only. In 2012 it was re-categorized under Small Business Direct Install. The participation rates expressed as percentages are percentages of eligible participants, where the proportion of the Small General class deemed eligible is only 10% for Efficient Products (Residential), but 100% for Small Business Direct Install. This explains why, when the participation rate is expressed as a fraction of eligible customers in the Small General class, the re-categorization of Commercial Direct Install produces a much lower incremental participation rate impact under the Small Business Direct Install program than it had under the Efficient Products (Residential) program.

3.4.3 General

- As modeled, the General class includes Rate Code 11 only. General
- Participants in the General class see an average bill decrease of 1.6% over the study period. ↑ 0.5% Rates
↓ 1.6% Participant bills
- Non-Participants see an average bill increase of 0.4% over the study period.
- The average rate impact over the study period is an increase of 0.5%, or 0.054 cents/kWh.
- In this rate class, cumulative participation reaches the rate class maximum of 100% participation in 2014. For this reason, the bill effects for the participant group reflect the bill effects for total customers after this point. The non-participant line is still shown, even though no non-participants may exist in the rate class. This non-participant line is useful when considering a participant with very little energy and demand savings (e.g., small point-of-sale purchase only).

3.4.4 Large General

- As modeled, the Large General class includes Rate Code 12 only.

-
- Participants in the Large General class see an average bill decrease of 1.2% over the study period. Large General
↑ 0.4% Rates
 - Non-Participants see an average bill increase of 0.4% over the study period. ↓ 1.2% Participant bills
-
- The average rate impact over the study period is an increase of 0.4%, or 0.044 cents/kWh.
 - In this rate class, cumulative participation reaches the rate class maximum of 100% participation in 2011. For this reason, the bill effects for the participant group reflect the bill effects for total customers. The non-participant line is still shown, even though no non-participants may exist in the rate class. This non-participant line is useful when considering a participant with very little energy and demand savings (e.g., small point-of-sale purchase only).
 - The Large General class primarily participates in the Efficient Product Rebates (BNI) and Custom Incentives programs. All other annual program participation rates appear erratic due to the very low percentage of customers deemed eligible for those programs and the small number of customers in the class.

3.4.5 Small Industrial

-
- As modeled, the Small Industrial class includes Rate Code 21 only. Small Industrial
 - Participants in the Small Industrial class see an average bill decrease of 2.5% over the study period. ↑ 0.6% Rates
↓ 2.5% Participant bills
-
- Non-Participants see an average bill increase of 0.5% over the study period.
 - The average rate impact over the study period is an increase of 0.6%, or 0.061 cents/kWh.
 - Very high 2011 participation in Efficient Products (Residential) is due to the fact that ENS's Commercial Direct Install program was categorized as Efficient Products (Residential) in this year only. In 2012 it was re-categorized under Small

Business Direct Install. The participation rates expressed as percentages are percentages of eligible participants, where the proportion of the Small Industrial class deemed eligible is only 1% for Efficient Products (Residential), but 100% for Small Business Direct Install. This explains why, when the participation rate is expressed as a fraction of eligible customers in the Small Industrial class, the re-categorization of Commercial Direct Install produces a much lower incremental participation rate impact under the Small Business Direct Install program than it had under the Efficient Products (Residential) program.

3.4.6 Medium Industrial

- As modeled, the Medium Industrial class includes Rate Code 22 only. Medium Industrial
- Participants in the Medium Industrial class see an average bill decrease of 0.4% over the study period. $\uparrow 0.4\%$ Rates
 $\downarrow 0.4\%$ Participant bills
- Non-Participants see an average bill increase of 0.3% over the study period.
- The average rate impact over the study period is an increase of 0.4%, or 0.032 cents/kWh.
- In this rate class, cumulative participation reaches the rate class maximum of 100% participation in 2011. For this reason, the bill effects for the participant group reflect the bill effects for total customers. The non-participant line is still shown, even though no non-participants may exist in the rate class. This non-participant line is useful when considering a participant with very little energy and demand savings (e.g., small point-of-sale purchase only).

3.4.7 Large Industrial

- As modeled, the Large Industrial class includes Rate Code 23 (Large Industrial), Rate Code 25 (Large Industrial, interruptible service), and the one-part high voltage real time pricing tariff. Large Industrial
- $\uparrow 0.4\%$ Rates
- $\downarrow 0.2\%$ Participant bills

- Participants in the Large Industrial class see an average bill decrease of 0.2% over the study period.
- Non-Participants see an average bill increase of 0.3% over the study period.
- The average rate impact over the study period is an increase of 0.4%, or 0.037 cents/kWh.
- In this rate class, cumulative participation reaches the rate class maximum of 100% participation in 2011. For this reason, the bill effects for the participant group reflect the bill effects for total customers. The non-participant line is still shown, even though no non-participants may exist in the rate class. This non-participant line is useful when considering a participant with very little energy and demand savings (e.g., small point-of-sale purchase only).

3.4.8 Municipal

- As modeled, the Municipal class includes Rate Code 24 only.
- Municipal utilities see an average bill decrease of 1.1% over the study period.
- The average rate impact over the study period is an increase of 0.4%, or 0.037 cents/kWh.
- Since there was participation in ENS programs from all six Municipal Electric Utilities in each year of the DSM delivery period, the bill impacts for participants match those for total customers exactly. This is a simplification of the rate and bill effects for individual MEU customers, as their individual participation is not modelled in the analysis.

Municipal

↑ 0.4% Rates

↓ 1.1% Participant bills

4. CONCLUSION

This analysis captures the impacts of proposed 2019 DSM programs to customer rates and bills throughout the full lifetime of the DSM impacts. The analysis does not predict actual annual rates or bills in any year, as these are also impacted by the timing of capacity upgrades, base cost of fuel reset processes, creation of rate stability periods and general rate applications. The impacts have been calculated as the incremental effect of 2019 DSM programs, additional to all 2011-2018 DSM and irrespective of any DSM pursued in 2020 or beyond.

The results show that the projected impacts of the proposed 2019 DSM Plan are in line with nominal impacts from previously approved DSM from 2011-2018. The dominant short-term rate impact results from the recovery of DSM program costs, and will not result in a rate increase as these recovery amounts are included as part of NS Power's rate stabilization period.

In evaluation of total DSM impacts, it is important to also consider benefits that do not directly impact rates or bills, such as the reduction of greenhouse gas emissions, reduction of energy poverty, investment in local businesses that deliver efficiency services, reduced reliance on foreign fuel supplies, increased productivity in businesses, increased occupant comfort in homes and businesses, and increased room in operating budgets of public agencies, among others.

EfficiencyOne will continue to work with the DSMAG to adapt its model to produce the most useful results and welcomes feedback on the model structure and assumptions.

Appendix C - Attachment 1

2019 Plan Rate and Bill Impact Analysis Results by Rate Class

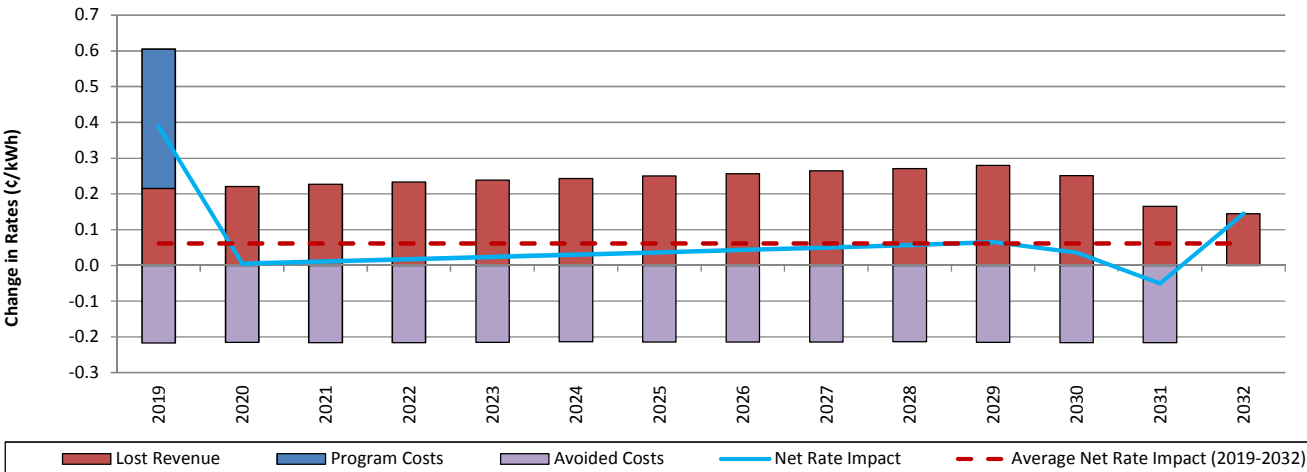
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Line#

Rate and Bill Impacts of DSM on the Residential Class

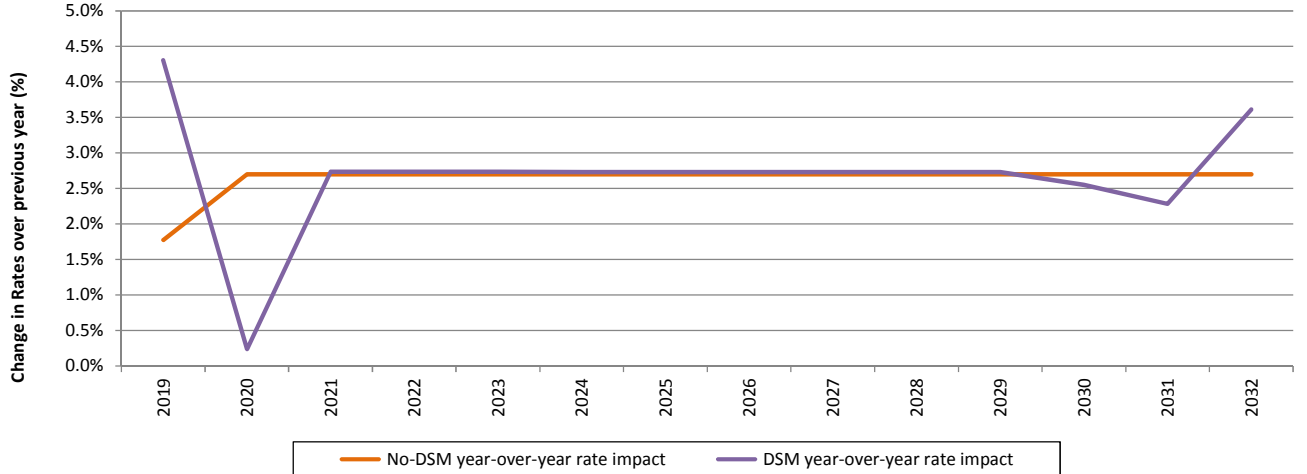
	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	Units
Impacts of DSM on the Residential Rate Class																							
Incremental DSM Savings	53.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	GWh
Cumulative DSM Savings	53.7	53.7	53.7	53.7	53.7	53.7	53.7	53.7	53.7	53.7	53.7	53.7	53.7	53.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	GWh
DSM Costs for the Rate Class	17,060,557	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Dollars
Cumulative Number of New Participants	448,712	448,712	448,712	448,712	448,712	448,712	448,712	448,712	448,712	448,712	448,712	448,712	448,712	448,712	448,712	448,712	448,712	448,712	448,712	448,712	448,712	448,712	
Annual Average Savings per Participant (Cumulative)	470	470	470	470	470	470	470	470	470	470	470	470	470	470	0	0	0	0	0	0	0	0	kWh
Annual Number of Participants	114,294	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Annual Average Savings per Participant (Current Year)	470	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	kWh
Cumulative Cost per kWh Saved	31.749	31.749	31.749	31.749	31.749	31.749	31.749	31.749	31.749	31.749	31.749	31.749	31.749	31.749	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	cents

Change in Residential Rates as a Result of DSM



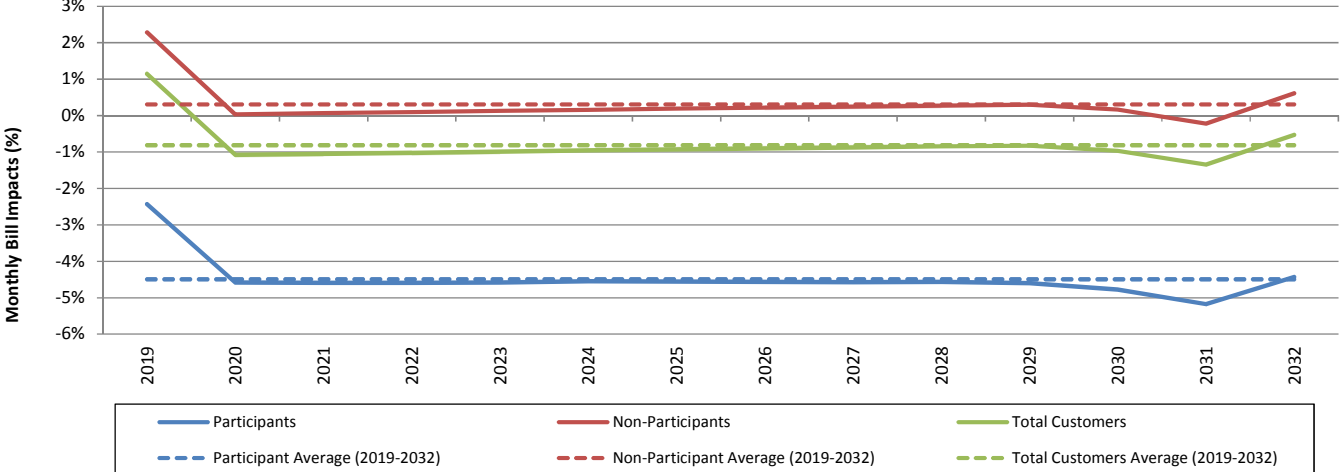
This graph shows estimated rate impacts of DSM, relative to the no-DSM scenario. Blue bars show the impact of program cost recovery. Red bars show the impact of lost revenues due to reduced sales. Purple bars show the impact of avoided utility costs. The blue line is the net rate effect (sum of positive and negative rate pressures), which

Year-over-year change in Residential Rates with and without DSM



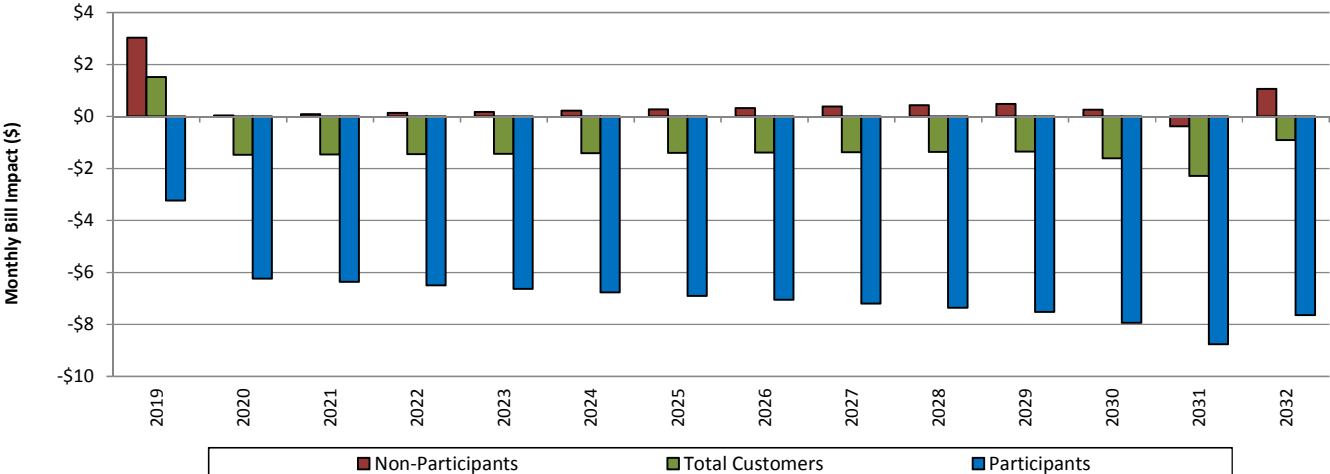
This graph shows the annual percentage change in rates over the previous year, for both the DSM and no-DSM scenarios.

Average Change in Residential Bills as a Result of DSM

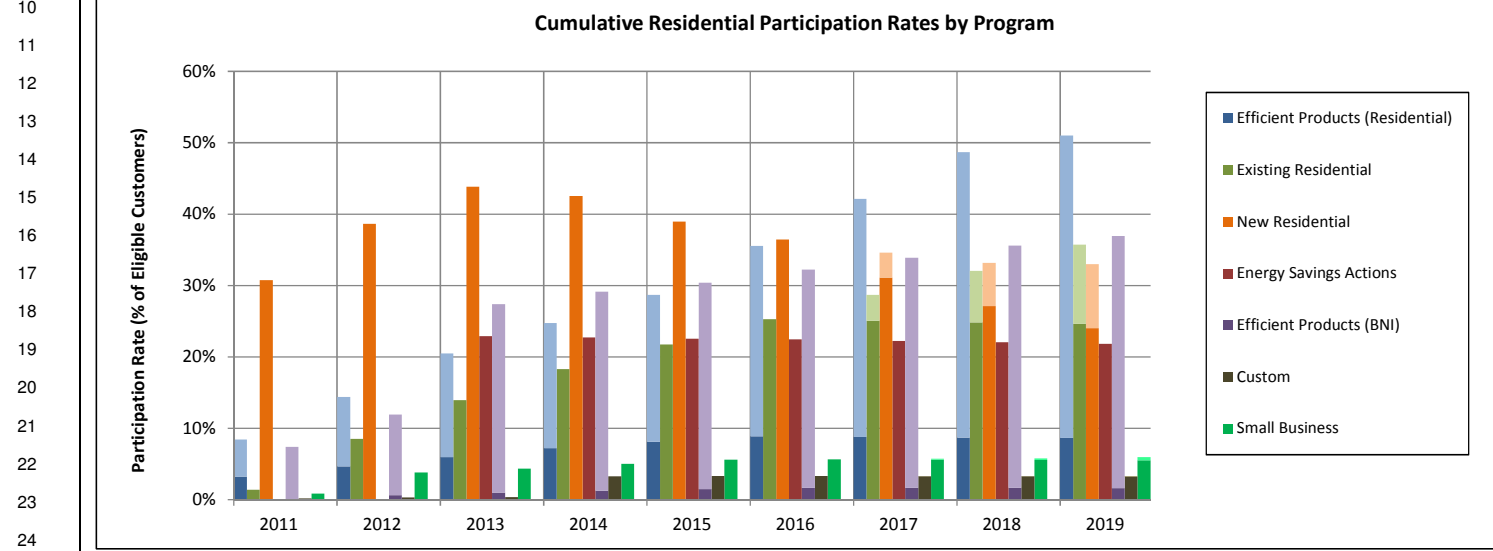


This graph shows estimated bill impacts of DSM as percentage differences relative to the no-DSM scenario. 'Participants' represents a customer with average energy use and average DSM savings. 'Non-Participants' represents a customer with average energy use and no DSM savings. 'Total Customers' is a hypothetical scenario where DSM savings are allocated equally to all customers in the class.

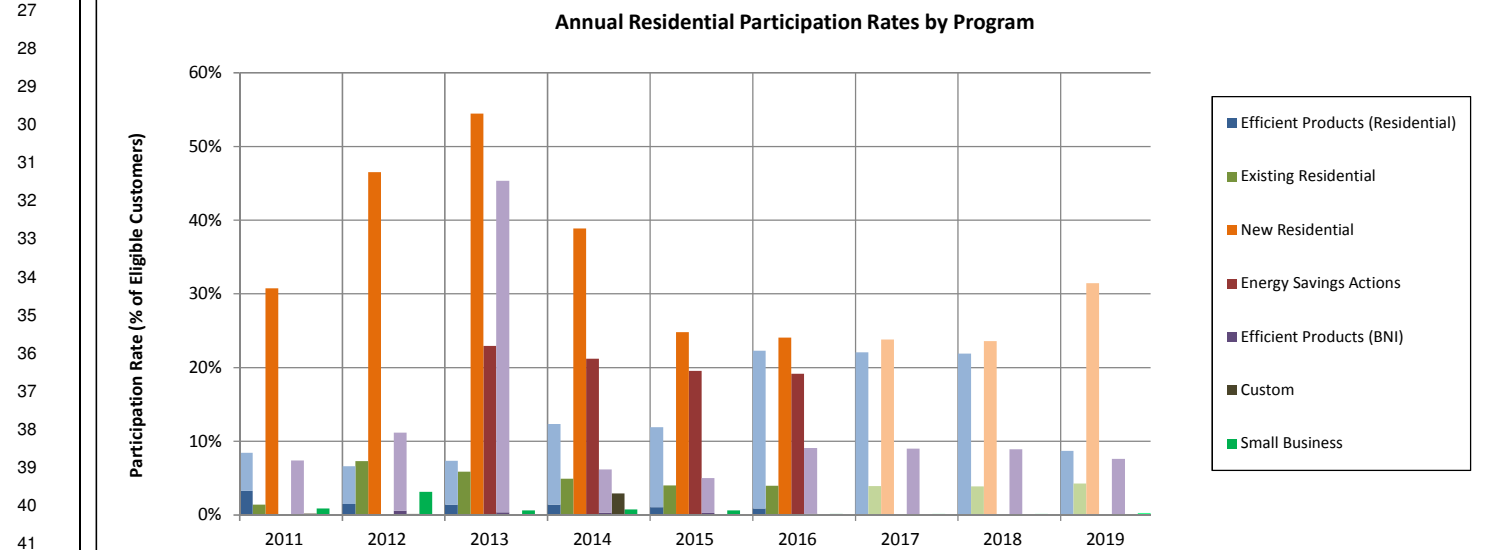
Average Change in Residential Bills in Comparison to a No-DSM Scenario



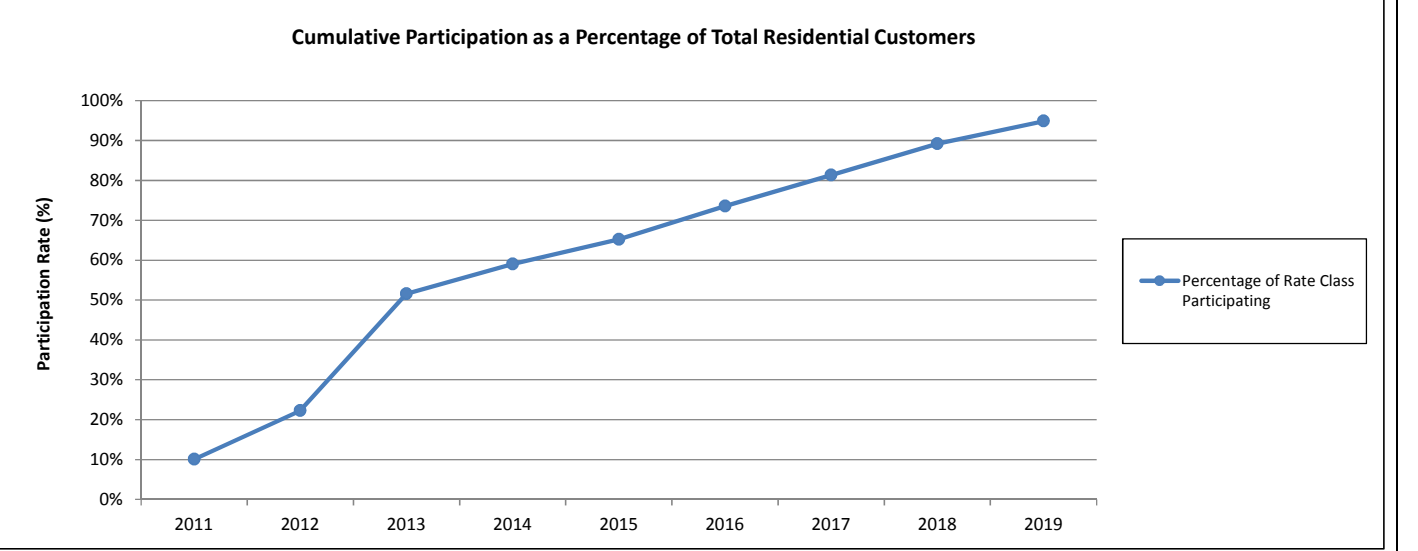
This graph shows monthly bill impacts relative to the no-DSM scenario in absolute terms, for the same groups of customers as the graph shown above it.

[illegible]

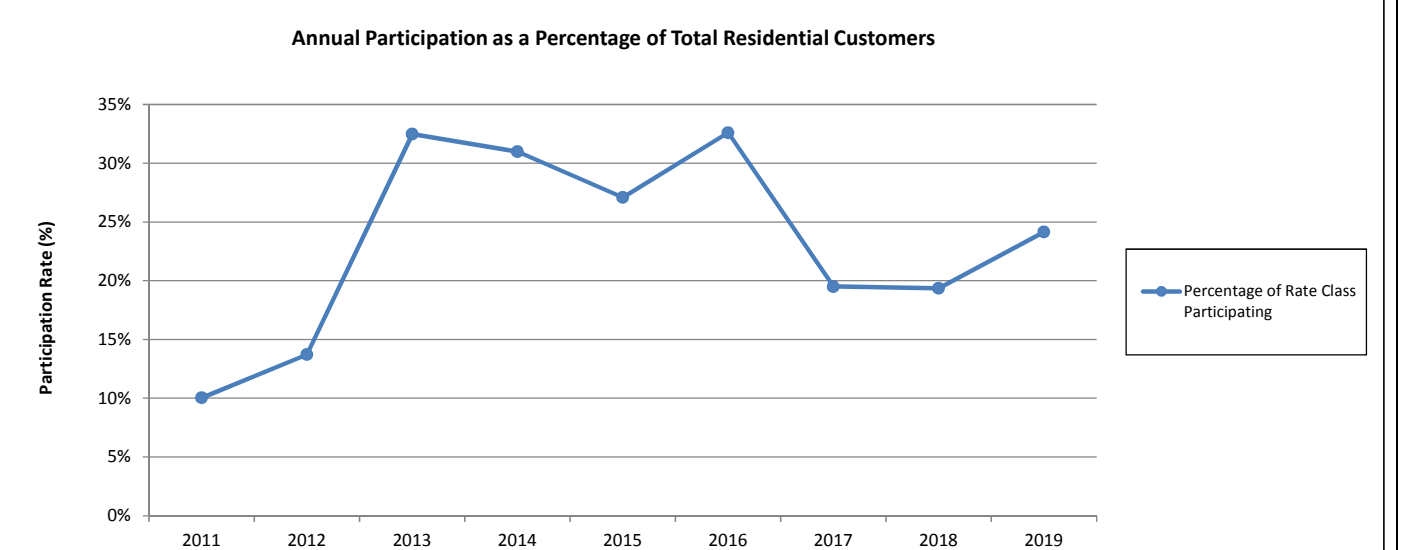
25 This graph shows cumulative program participation for the class, as a percentage of eligible participants for each program. Each participant is counted once for each program, in
26 the first year that they participate in the program. Darker bars show "tracked" participants; lighter bars show "estimated" participants for programs where individual customer
information is not obtained. All 2017-2019 participation is shown as "estimated".



This graph shows annual program participation for the class, as a percentage of eligible participants for each program. Each participant is counted once in each year that they participate. Darker bars show "tracked" participants; lighter bars show "estimated" participants for programs where individual customer information is not obtained. All 2017-2019 participation is shown as "estimated".



This graph shows cumulative program participation for the class, as a percentage of total customers in the class. Each participant is counted once, in the first that year they participate.



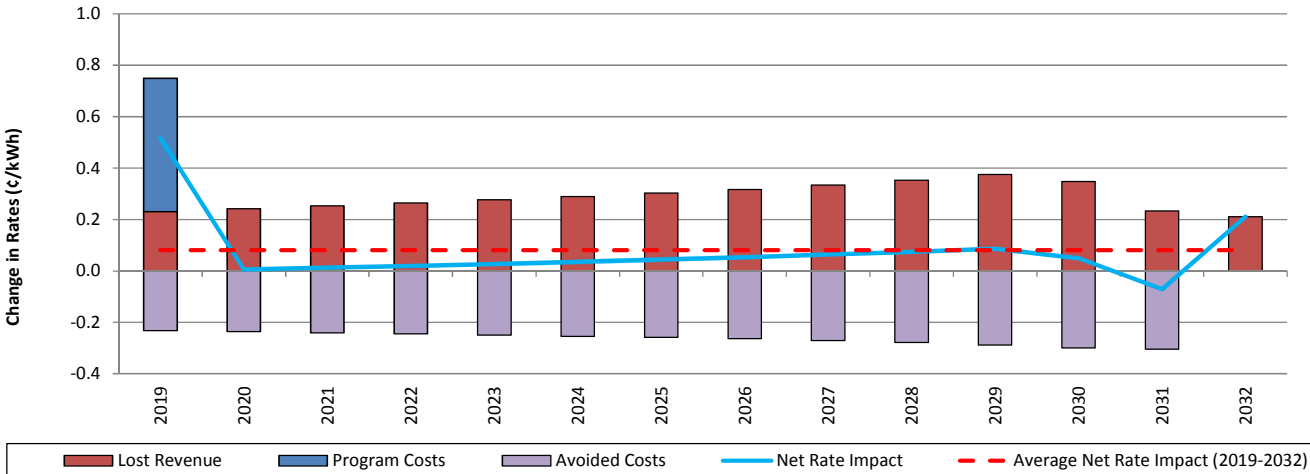
This graph shows annual program participation for the class, as a percentage of total customers in the class. Each customer is counted once for each year that they participate in any program.

Line#

Rate and Bill Impacts of DSM on the Small General Class

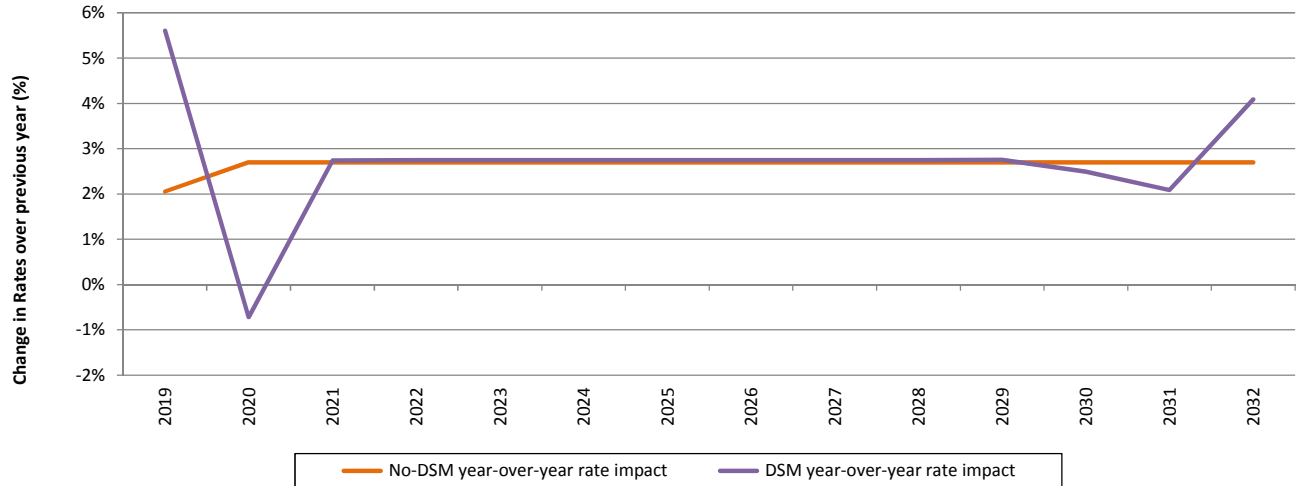
	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	Units
Impacts of DSM on the Small General Rate Class																							
Incremental DSM Savings	2.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	GWh
Cumulative DSM Savings	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	GWh
DSM Costs for the Rate Class	1,130,277	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Dollars
Cumulative Number of New Participants	24,539	24,539	24,539	24,539	24,539	24,539	24,539	24,539	24,539	24,539	24,539	24,539	24,539	24,539	24,539	24,539	24,539	24,539	24,539	24,539	24,539	24,539	
Annual Average Savings per Participant (Cumulative)	363	363	363	363	363	363	363	363	363	363	363	363	363	0	0	0	0	0	0	0	0	0	kWh
Annual Number of Participants	8,080	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Annual Average Savings per Participant (Current Year)	363	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	kWh
Cumulative Cost per kWh Saved	38.583	38.583	38.583	38.583	38.583	38.583	38.583	38.583	38.583	38.583	38.583	38.583	38.583	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	cents

Change in Small General Rates as a Result of DSM



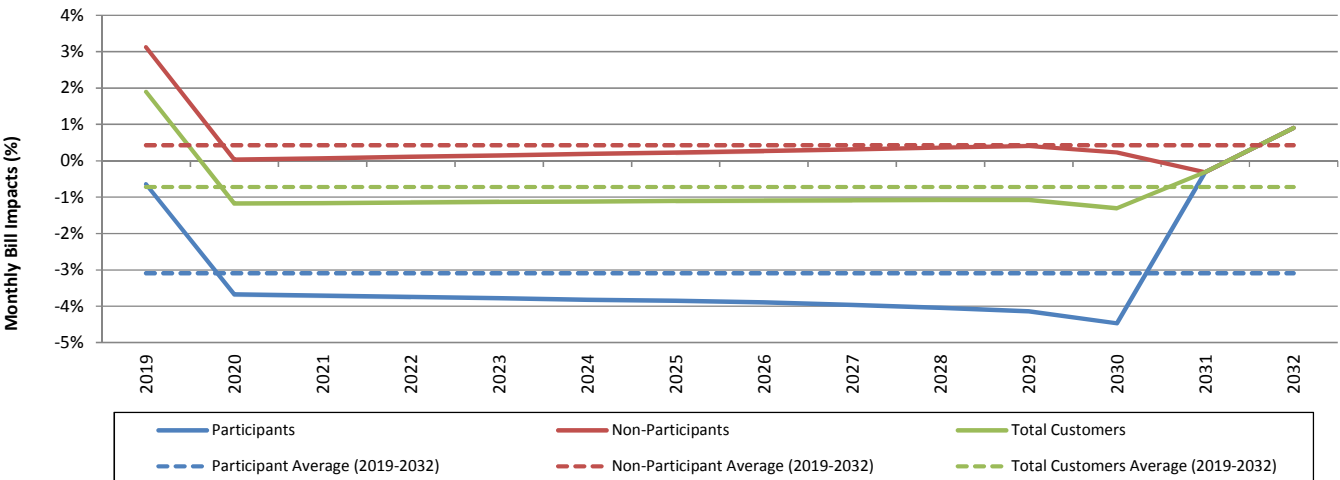
This graph shows estimated rate impacts of DSM, relative to the no-DSM scenario. Blue bars show the impact of program cost recovery. Red bars show the impact of lost revenues due to reduced sales. Purple bars show the impact of avoided utility costs. The blue line is the net rate effect (sum of positive and negative rate pressures), which accounts for recovery of fixed costs that are not avoided due to DSM. The dotted red line shows the average net rate impact of DSM over the study period.

Year-over-year change in Small General Rates with and without DSM



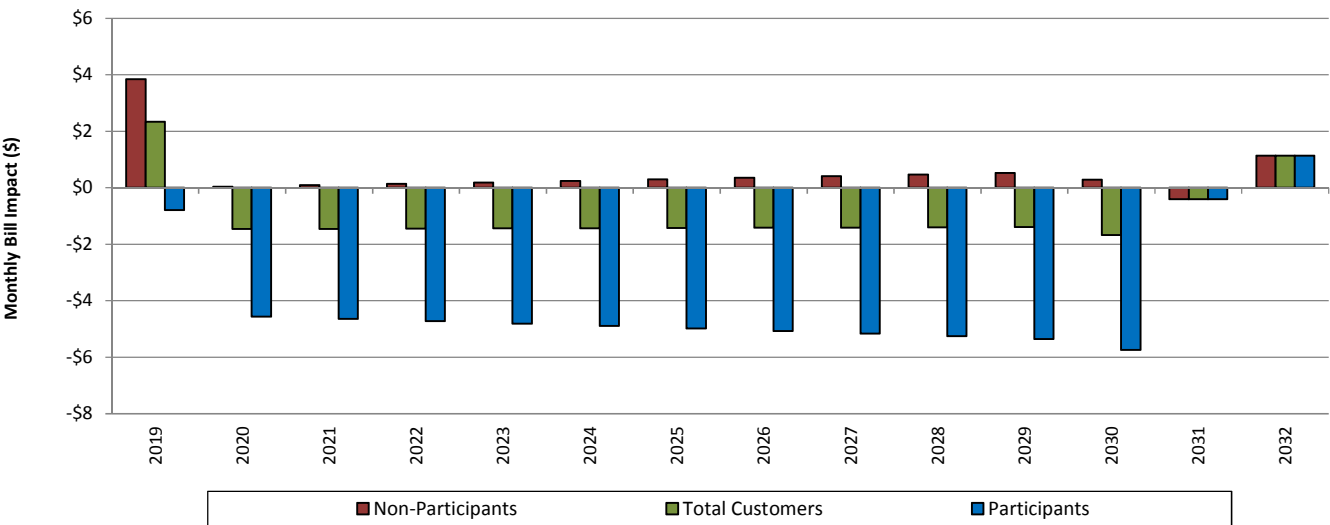
This graph shows the annual percentage change in rates over the previous year, for both the DSM and no-DSM scenarios.

Average Change in Small General Bills as a Result of DSM



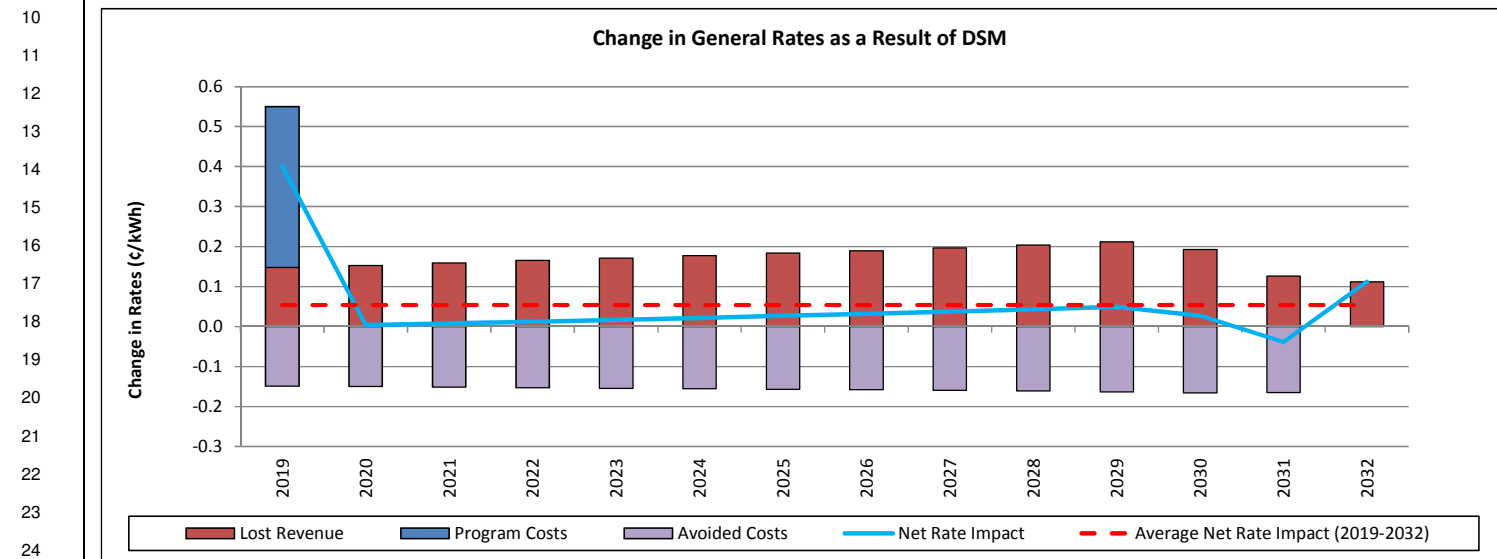
This graph shows estimated bill impacts of DSM as percentage differences relative to the no-DSM scenario. 'Participants' represents a customer with average energy use and average DSM savings. 'Non-Participants' represents a customer with average energy use and no DSM savings. 'Total Customers' is a hypothetical scenario where DSM savings are allocated equally to all customers in the class.

Average Change in Small General Bills in Comparison to a No-DSM Scenario

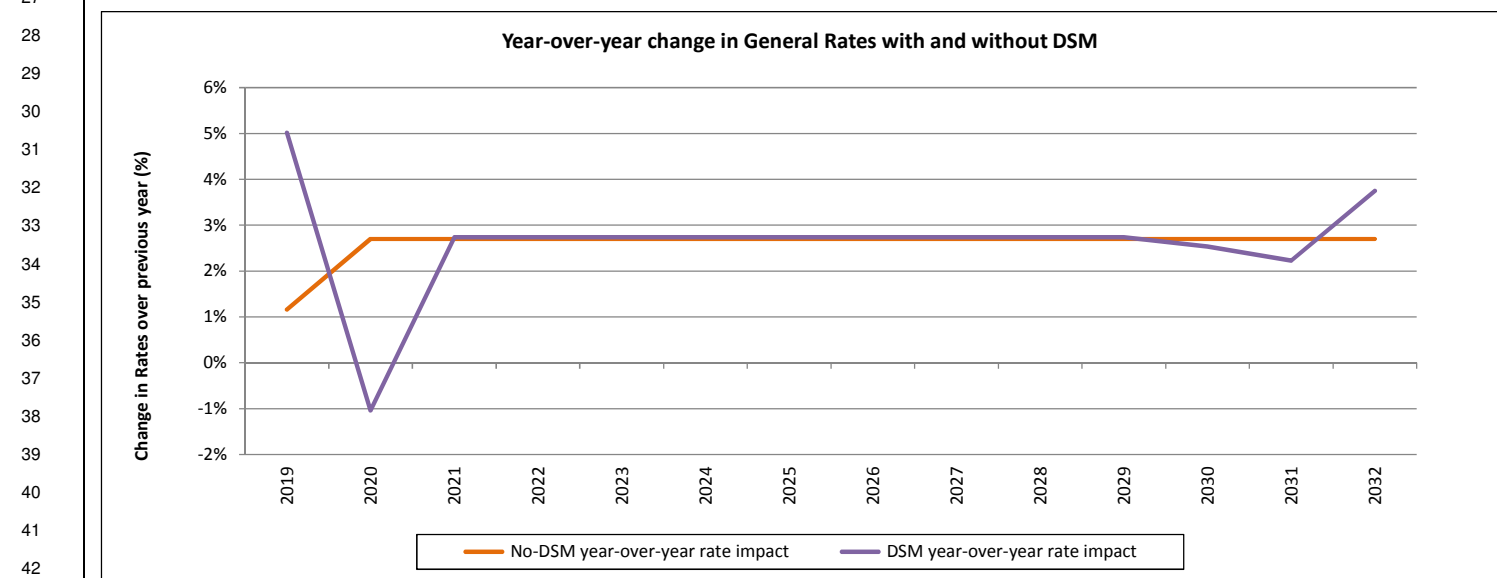


This graph shows monthly bill impacts relative to the no-DSM scenario in absolute terms, for the same groups of customers as the graph shown above it.

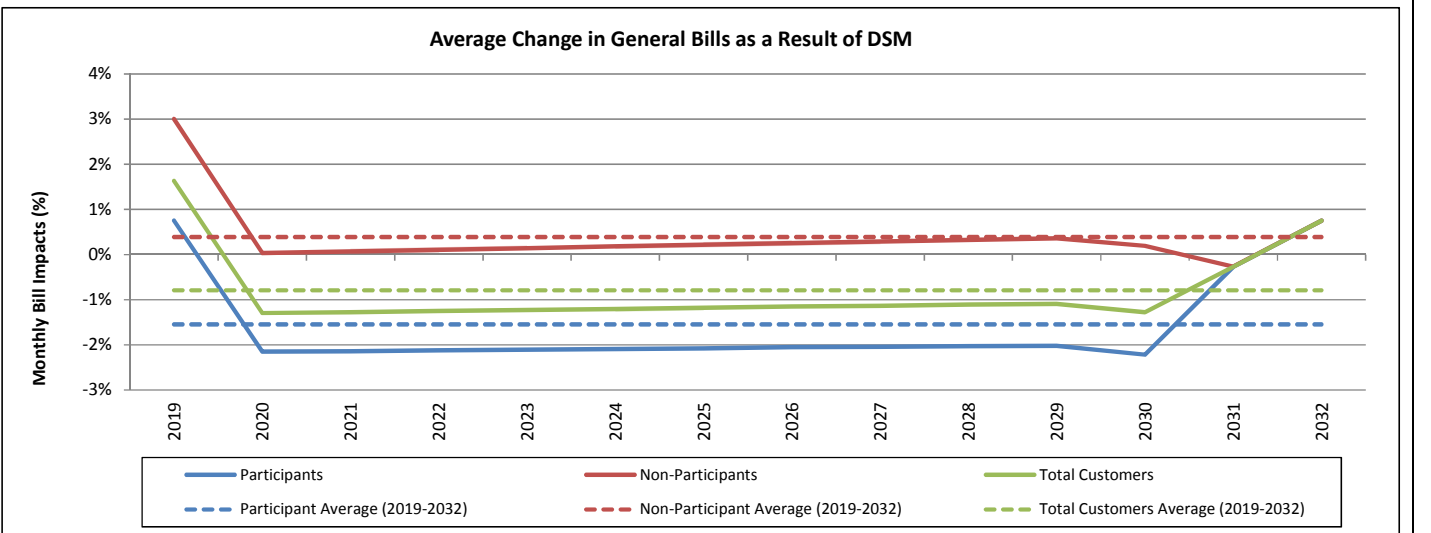
Line#	Rate and Bill Impacts of DSM on the Small General Class																							
1	Impacts of DSM on the Small General Rate Class	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	Units
2	Incremental DSM Savings	2.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	GWh
3	Cumulative DSM Savings	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	GWh
4	DSM Costs for the Rate Class	1,130,277	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Dollars
5	Cumulative Number of New Participants	24,539	24,539	24,539	24,539	24,539	24,539	24,539	24,539	24,539	24,539	24,539	24,539	24,539	24,539	24,539	24,539	24,539	24,539	24,539	24,539	24,539	24,539	
6	Annual Average Savings per Participant (Cumulative)	363	363	363	363	363	363	363	363	363	363	363	363	363	0	0	0	0	0	0	0	0	0	kWh
7	Annual Number of Participants	8,080	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
8	Annual Average Savings per Participant (Current Year)	363	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	kWh
9	Cumulative Cost per kWh Saved	38.583	38.583	38.583	38.583	38.583	38.583	38.583	38.583	38.583	38.583	38.583	38.583	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	cents
10																								
11	Cumulative Small General Participation Rates by Program												Cumulative Participation as a Percentage of Total Small General Customers											
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24																								
25	This graph shows cumulative program participation for the class, as a percentage of eligible participants for each program. Each participant is counted once for each program, in the first year that they participate in the program. Darker bars show tracked participants; lighter bars show estimated participants for programs where individual customer information is not obtained. All 2017-2019 participation is shown as "estimated".												This graph shows cumulative program participation for the class, as a percentage of total customers in the class. Each participant is counted once, in the first that year they participate.											
26																								
27																								
28	Annual Small General Participation Rates by Program												Annual Participation as a Percentage of Total Small General Customers											
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42	This graph shows annual program participation for the class, as a percentage of eligible participants for each program. Each participant is counted once in each year that they participate. Darker bars show tracked participants; lighter bars show estimated participants for programs where individual customer information is not obtained. All 2017-2019 participation is shown as "estimated".												This graph shows annual program participation for the class, as a percentage of total customers in the class. Each customer is counted once for each year that they participate in any program.											
43																								
44																								

[illegible]

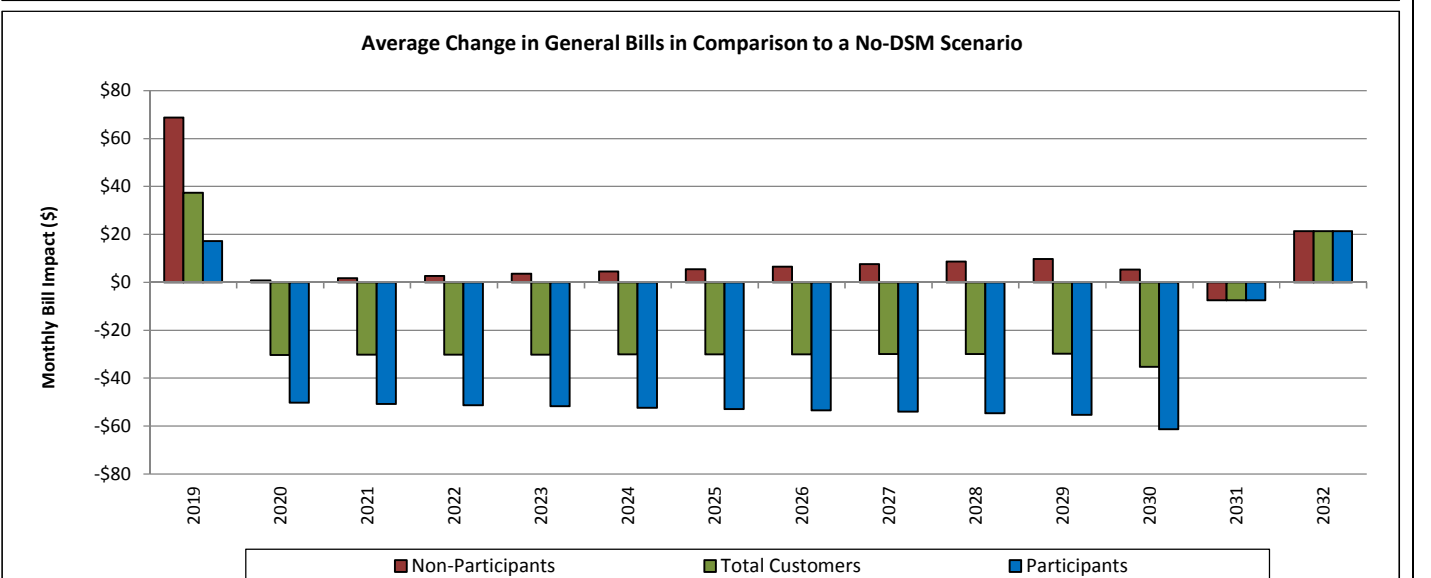
25 This graph shows estimated rate impacts of DSM, relative to the no-DSM scenario. Blue bars show the impact of program cost recovery. Red bars show the impact of lost
26 revenues due to reduced sales. Purple bars show the impact of avoided utility costs. The blue line is the net rate effect (sum of positive and negative rate pressures), which
27 accounts for recovery of fixed costs that are not avoided due to DSM. The dotted red line shows the average net rate impact of DSM over the study period.



43 This graph shows the annual percentage change in rates over the previous year, for both the DSM and no-DSM scenarios.



This graph shows estimated bill impacts of DSM as percentage differences relative to the no-DSM scenario. 'Participants' represents a customer with average energy use and average DSM savings. 'Non-Participants' represents a customer with average energy use and no DSM savings. 'Total Customers' is a hypothetical scenario where DSM savings are allocated equally to all customers in the class. In this class, after 2011, all customers are assumed to have participated, so the Participants line matches the Total Customers line.



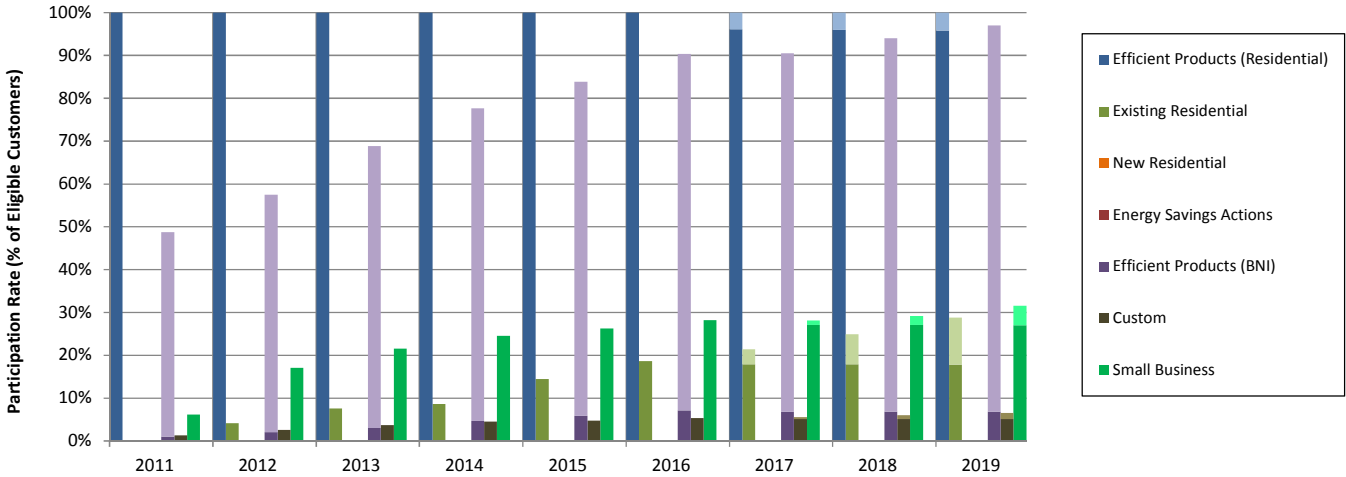
This graph shows monthly bill impacts relative to the no-DSM scenario in absolute terms, for the same groups of customers as the graph shown above it.

Line#

Rate and Bill Impacts of DSM on the General Class

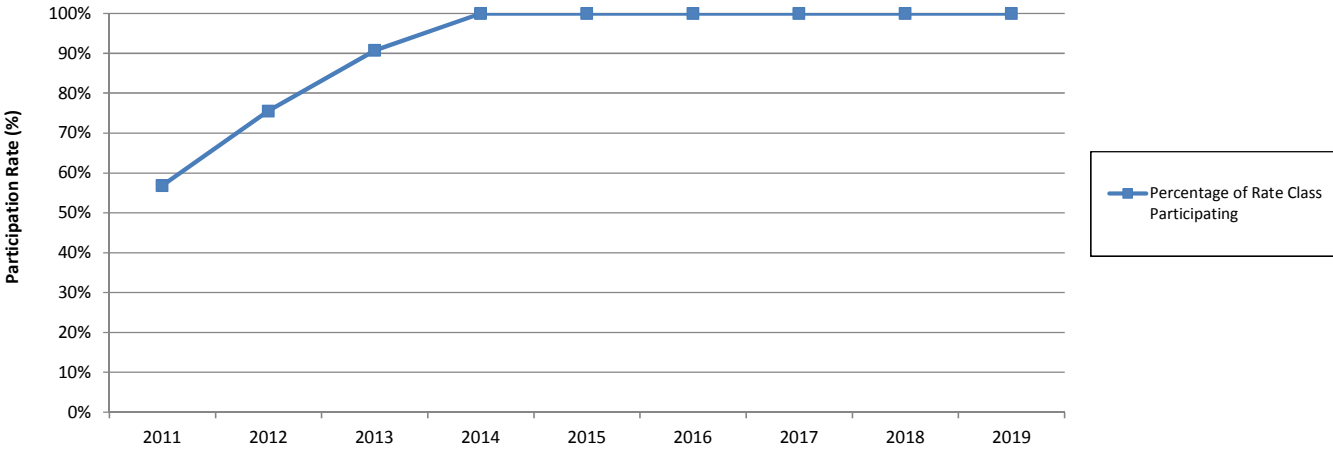
	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	Units	
Impacts of DSM on the General Rate Class																								
Incremental DSM Savings	38.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	GWh
Cumulative DSM Savings	38.6	38.6	38.6	38.6	38.6	38.6	38.6	38.6	38.6	38.6	38.6	38.6	38.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	GWh
DSM Costs for the Rate Class	9,435,317	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Dollars
Cumulative Number of New Participants	14,844	14,844	14,844	14,844	14,844	14,844	14,844	14,844	14,844	14,844	14,844	14,844	14,844	14,844	14,844	14,844	14,844	14,844	14,844	14,844	14,844	14,844	14,844	
Annual Average Savings per Participant (Cumulative)	5,544	5,544	5,544	5,544	5,544	5,544	5,544	5,544	5,544	5,544	5,544	5,544	0	0	0	0	0	0	0	0	0	0	0	kWh
Annual Number of Participants	6,971	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Annual Average Savings per Participant (Current Year)	5,544	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	kWh
Cumulative Cost per kWh Saved	24.414	24.414	24.414	24.414	24.414	24.414	24.414	24.414	24.414	24.414	24.414	24.414	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	cents

Cumulative General Participation Rates by Program



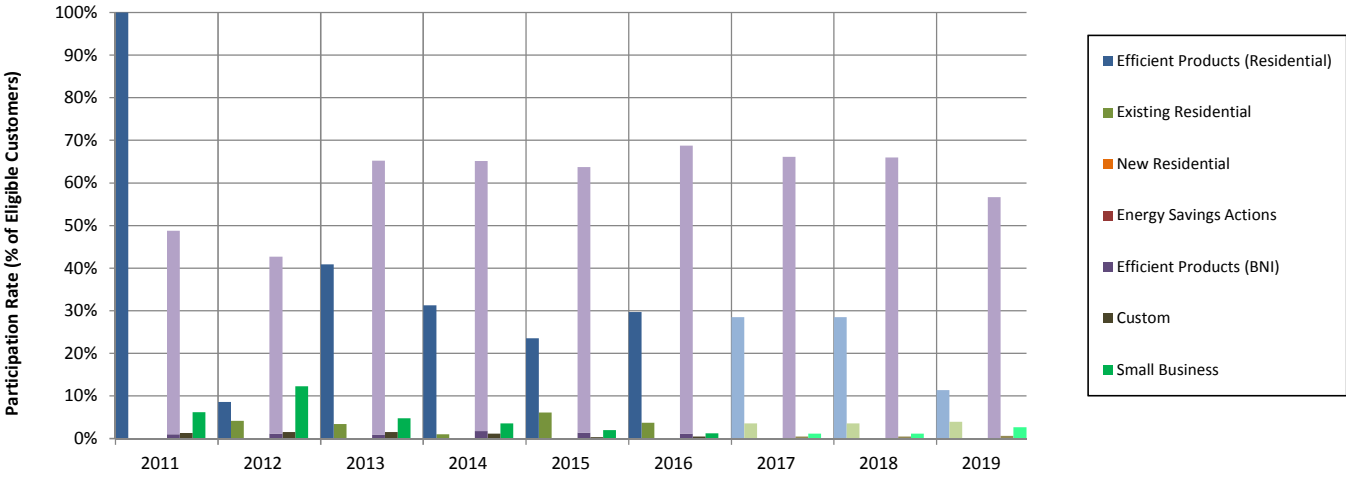
This graph shows cumulative program participation for the class, as a percentage of eligible participants for each program. Each participant is counted once for each program, in the first year that they participate in the program. Darker bars show tracked participants; lighter bars show estimated participants for programs where individual customer information is not obtained. All 2017-2019 participation is shown as "estimated".

Cumulative Participation as a Percentage of Total Small General Customers



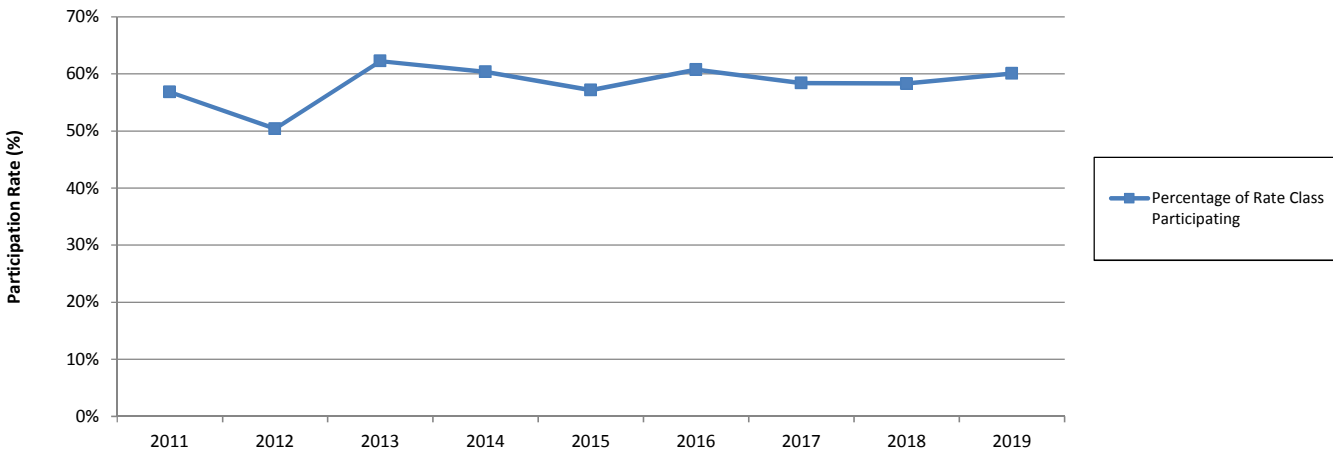
This graph shows cumulative program participation for the class, as a percentage of total customers in the class. Each participant is counted once, in the first that year they participate.

Annual General Participation Rates by Program

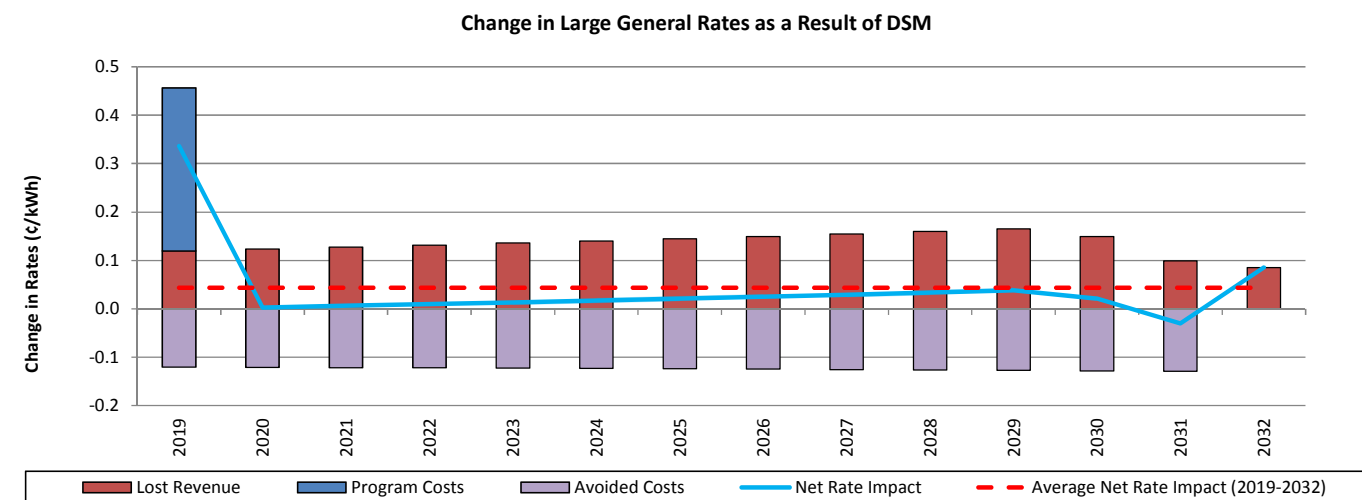


This graph shows annual program participation for the class, as a percentage of eligible participants for each program. Each participant is counted once in each year that they participate. Darker bars show tracked participants; lighter bars show estimated participants for programs where individual customer information is not obtained. All 2017-2019 participation is shown as "estimated".

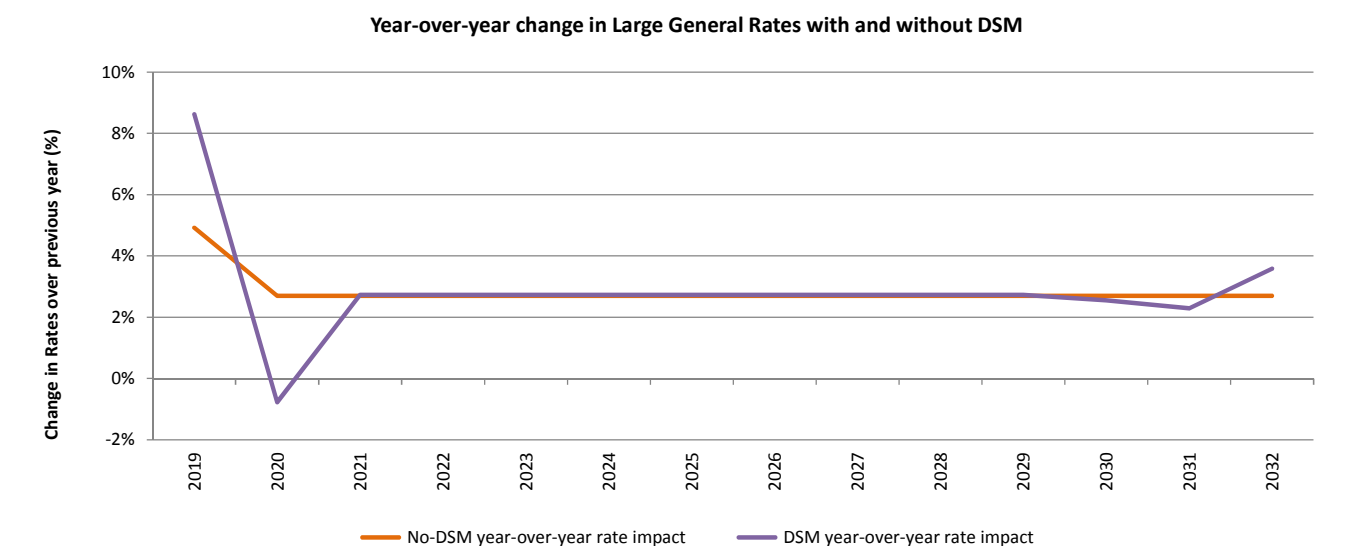
Annual Participation as a Percentage of Total Small General Customers



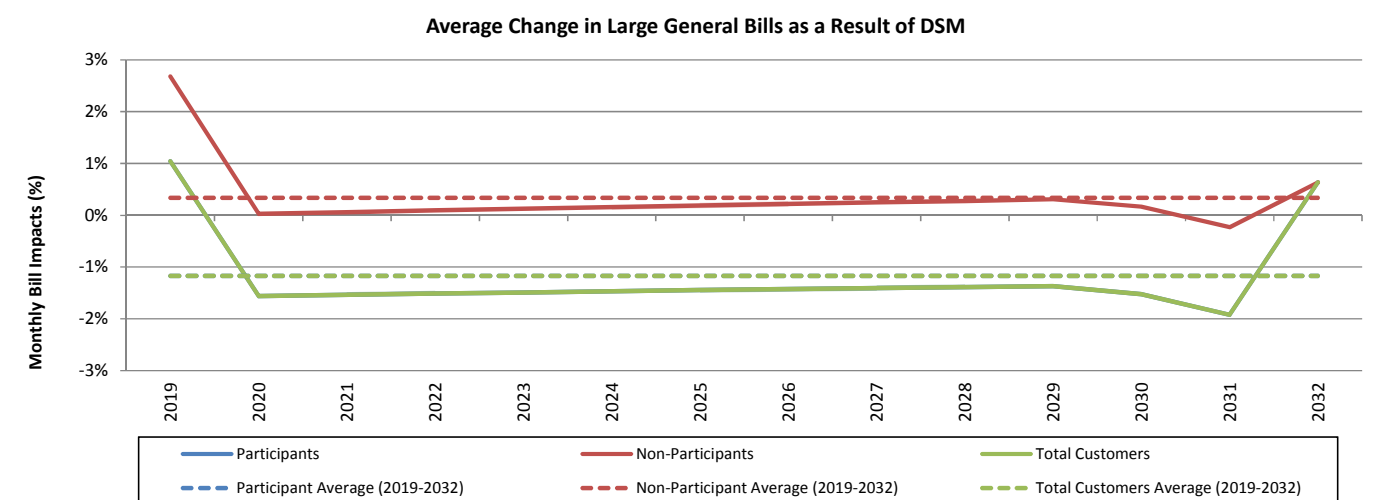
This graph shows annual program participation for the class, as a percentage of total customers in the class. Each customer is counted once for each year that they participate in any program.

[illegible]

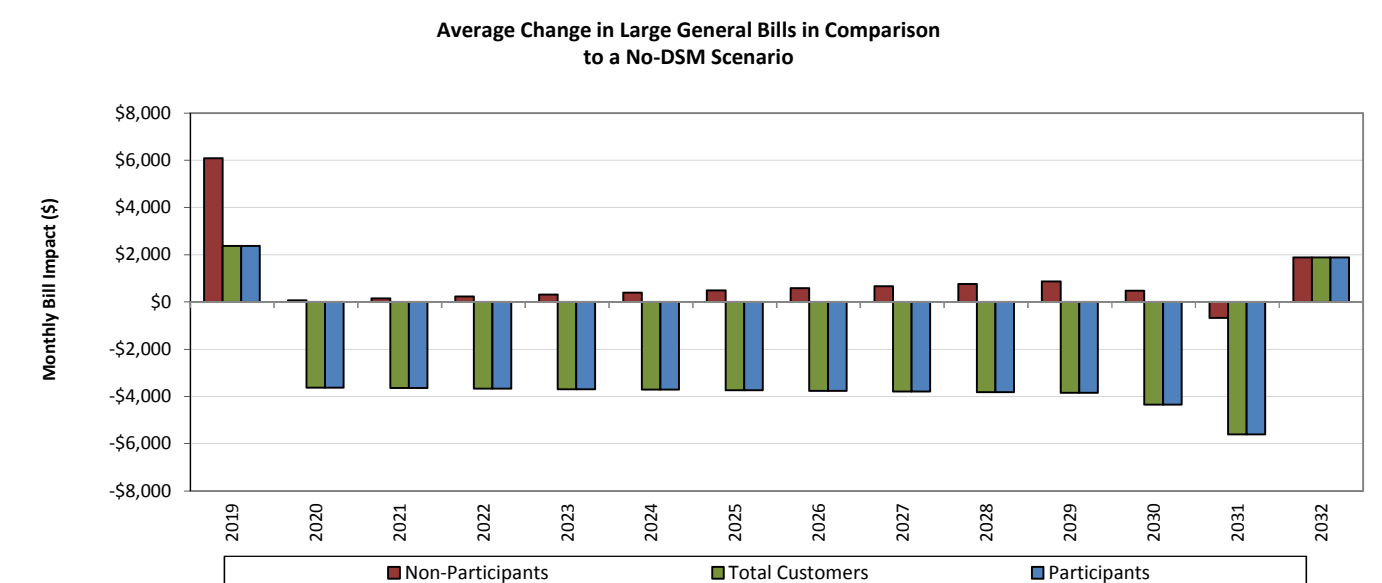
This graph shows estimated rate impacts of DSM, relative to the no-DSM scenario. Blue bars show the impact of program cost recovery. Red bars show the impact of lost revenues due to reduced sales. Purple bars show the impact of avoided utility costs. The blue line is the net rate effect (sum of positive and negative rate pressures), which accounts for recovery of fixed costs that are not avoided due to DSM. The dotted red line shows the average net rate impact of DSM over the study period.



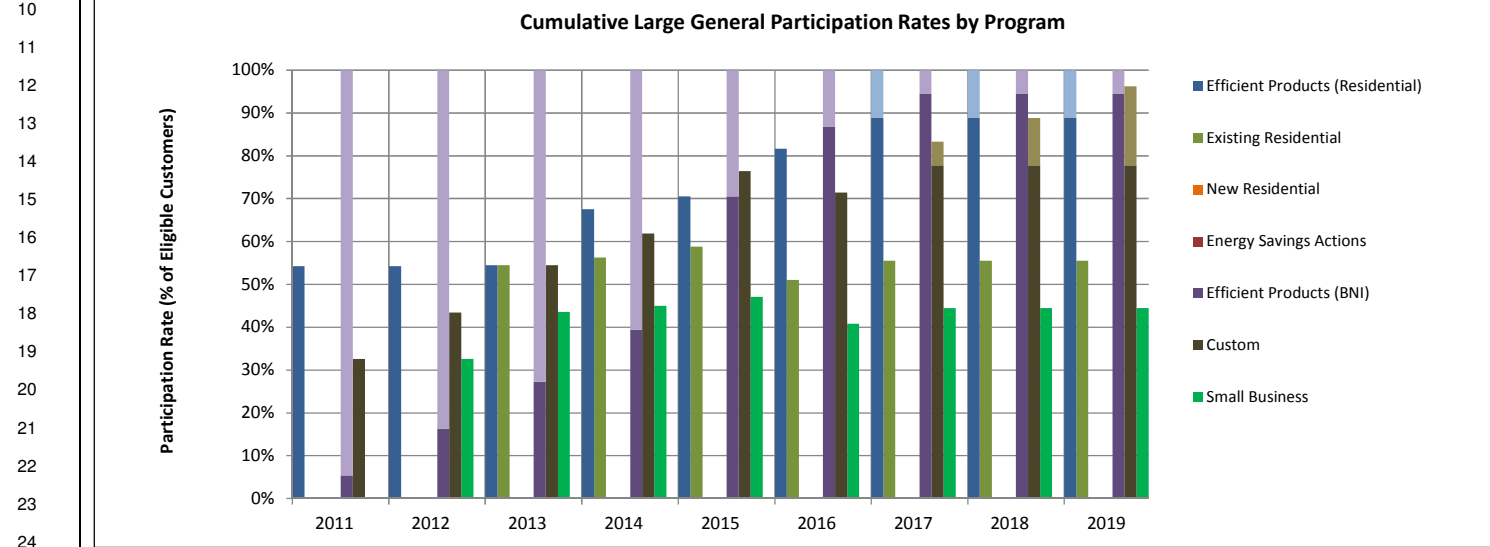
This graph shows the annual percentage change in rates over the previous year, for both the DSM and no-DSM scenarios.



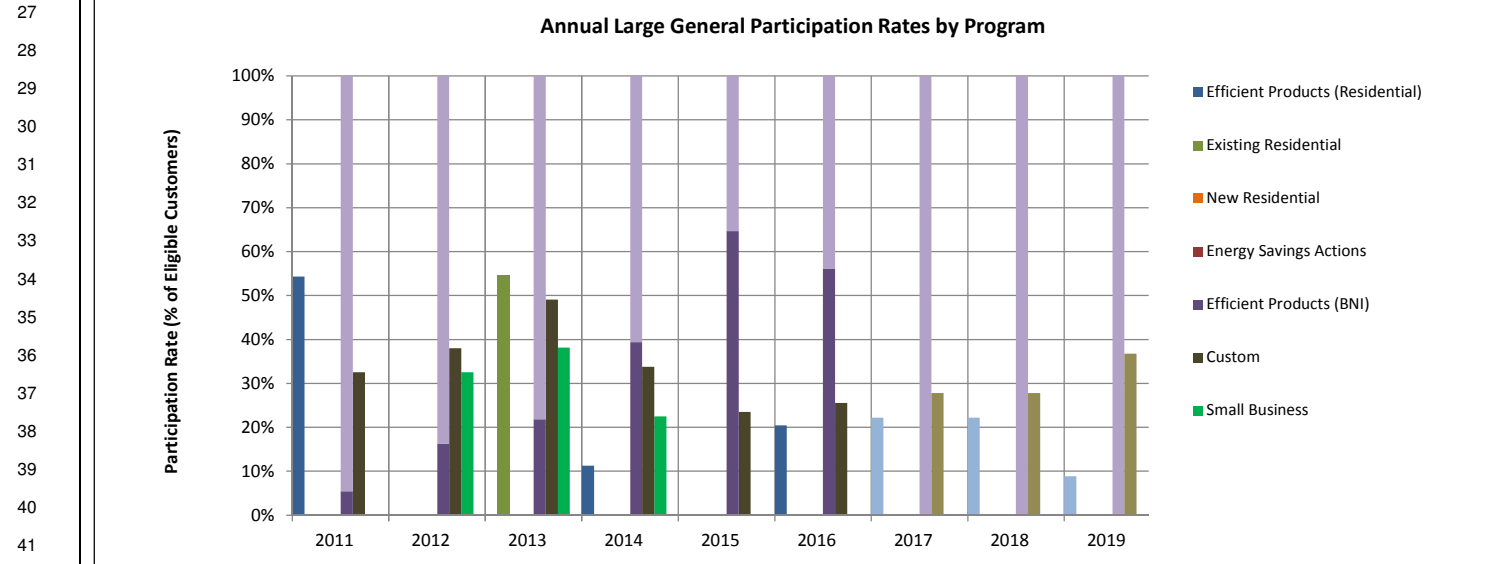
This graph shows estimated bill impacts of DSM as percentage differences relative to the no-DSM scenario. 'Participants' represents a customer with average energy use and average DSM savings. 'Non-Participants' represents a customer with average energy use and no DSM savings. 'Total Customers' is a hypothetical scenario where DSM savings are allocated equally to all customers in the class. In this class, all customers are assumed to have participated, so the Participants line matches the Total Customers line.



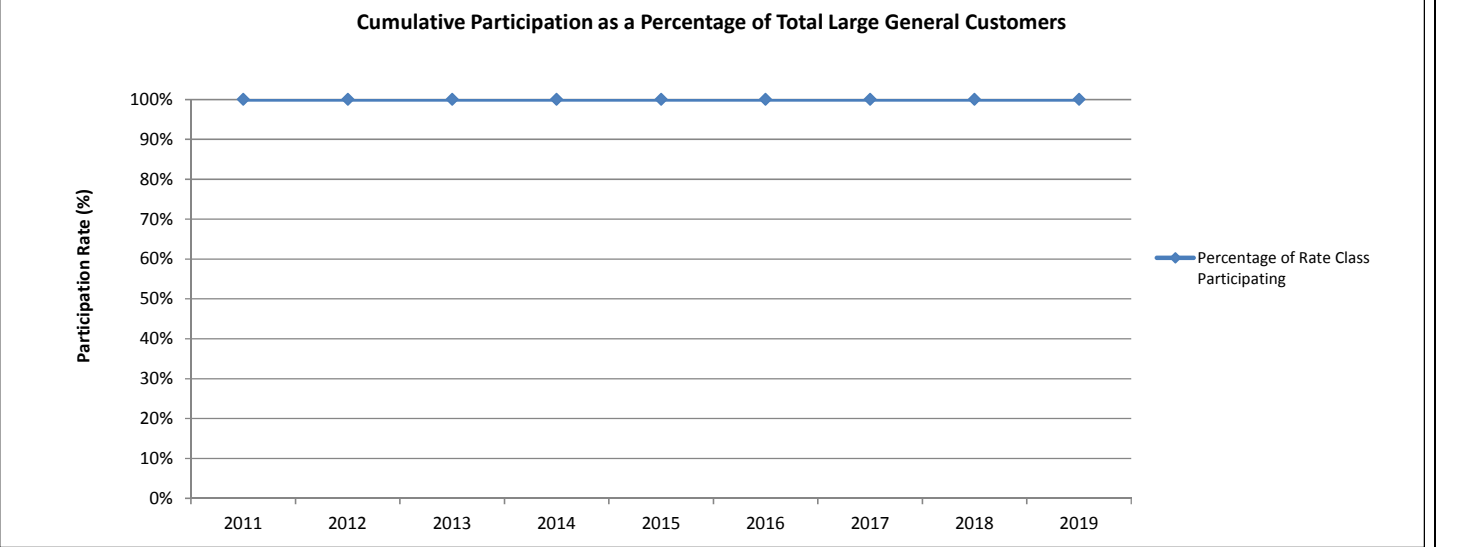
This graph shows monthly bill impacts relative to the no-DSM scenario in absolute terms, for the same groups of customers as the graph shown above it.

[illegible]

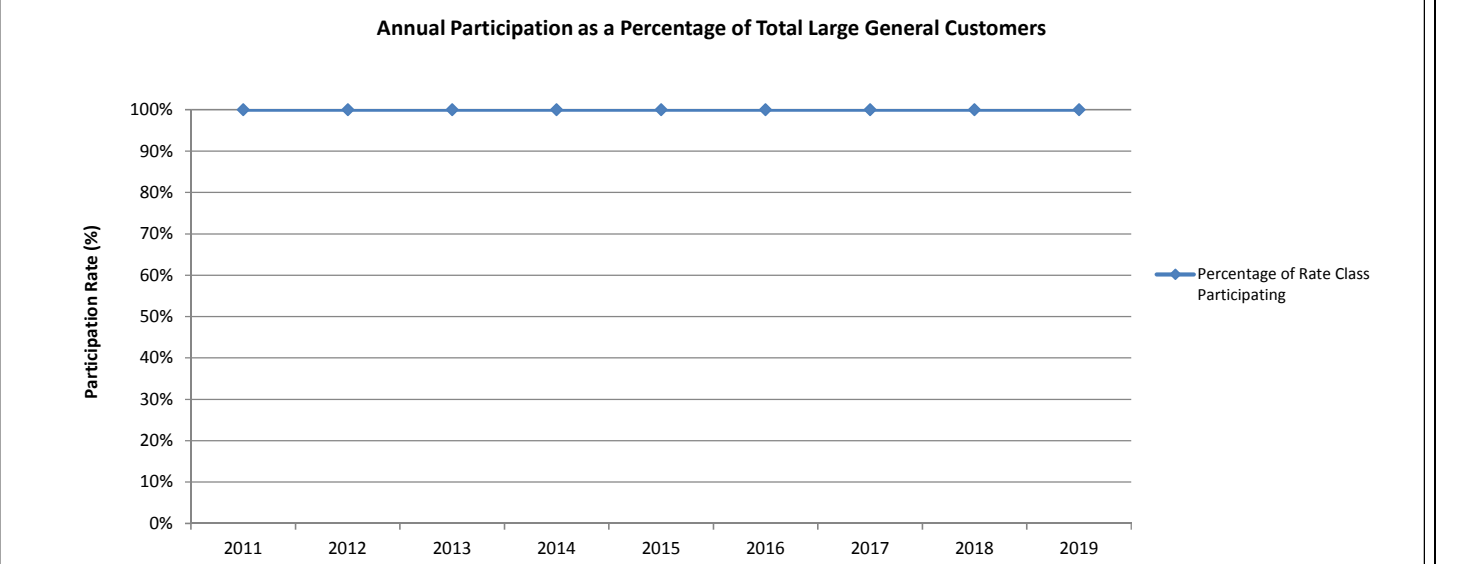
25 This graph shows cumulative program participation for the class, as a percentage of eligible participants for each program. Each participant is counted once for each program, in
26 the first year that they participate in the program. Darker bars show tracked participants; lighter bars show estimated participants for programs where individual customer
information is not obtained. All 2017-2019 participation is shown as "estimated".



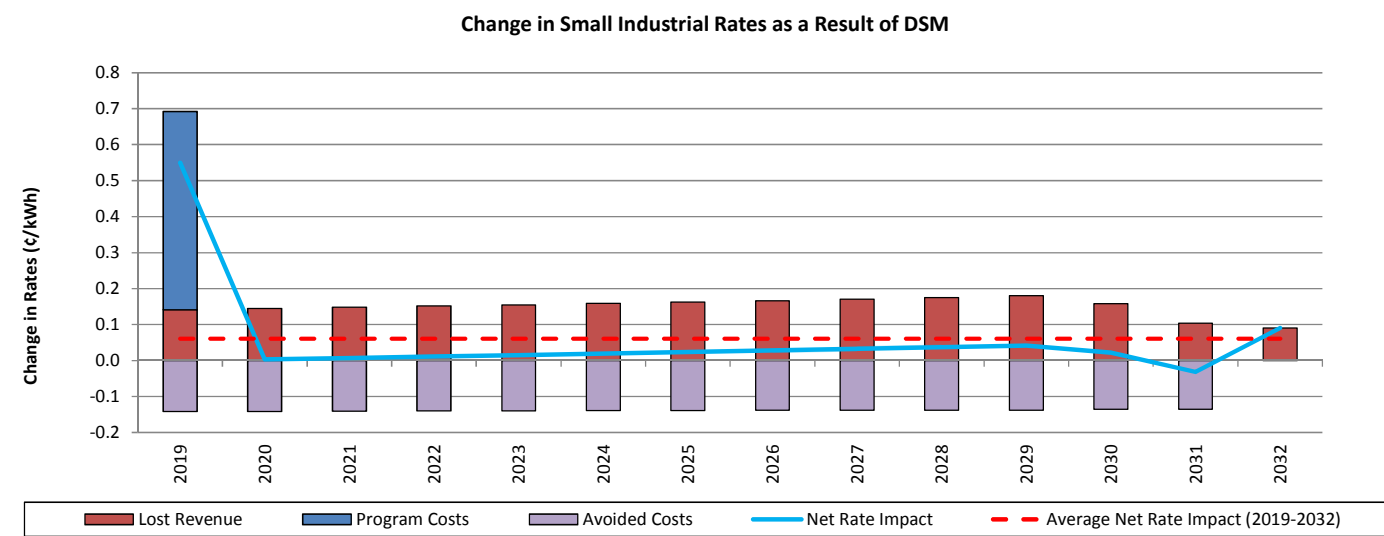
This graph shows annual program participation for the class, as a percentage of eligible participants for each program. Each participant is counted once in each year that they participate. Darker bars show tracked participants; lighter bars show estimated participants for programs where individual customer information is not obtained. All 2017-2019 participation is shown as "estimated".



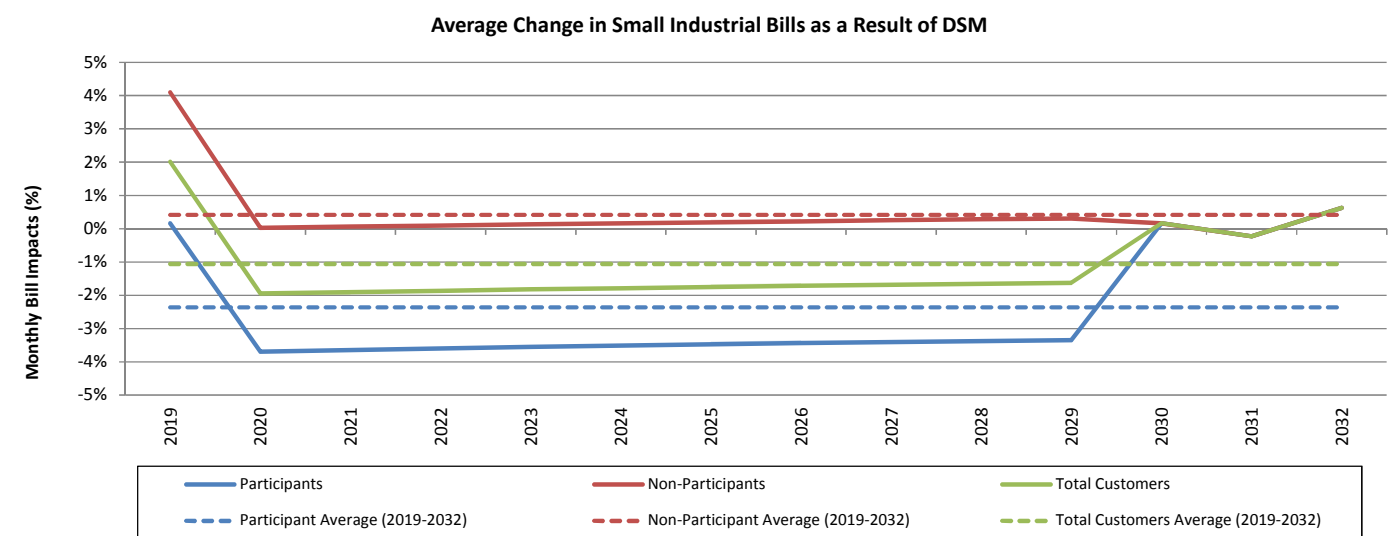
This graph shows cumulative program participation for the class, as a percentage of total customers in the class. Each participant is counted once, in the first that year they participate.



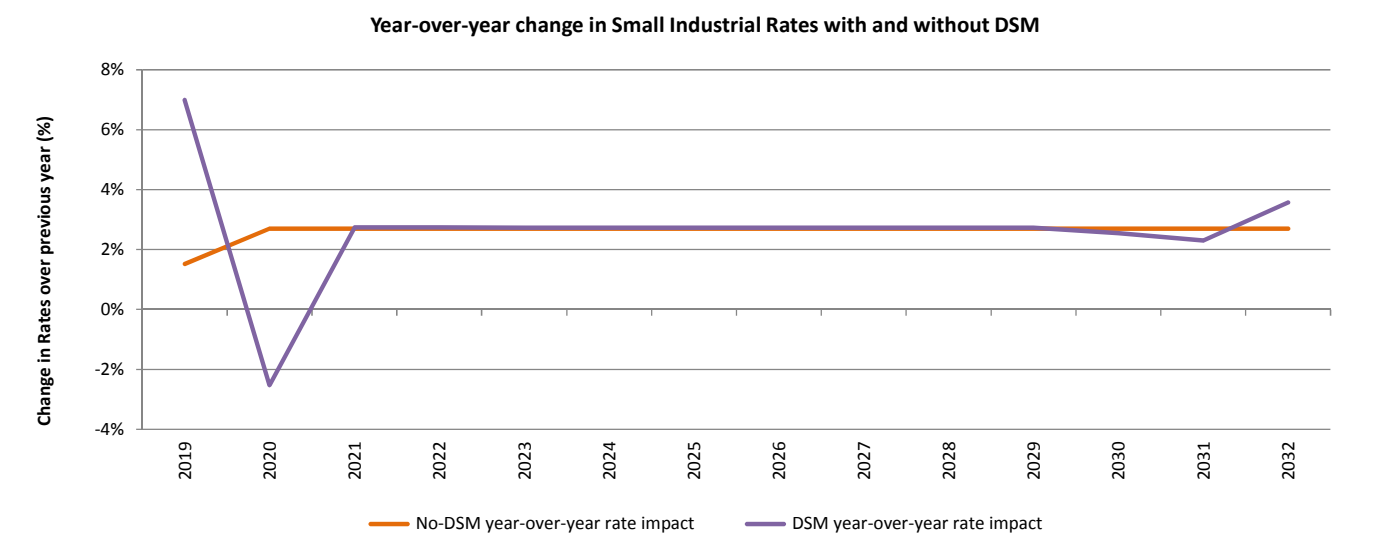
This graph shows annual program participation for the class, as a percentage of total customers in the class. Each customer is counted once for each year that they participate in any program.

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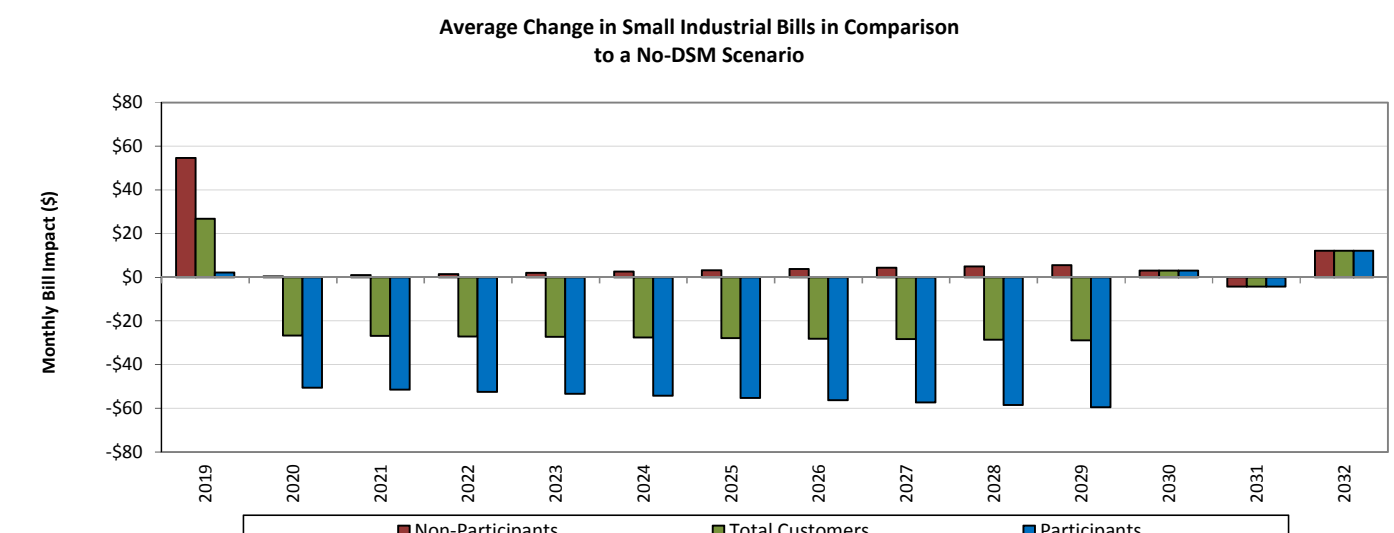
This graph shows estimated rate impacts of DSM, relative to the no-DSM scenario. Blue bars show the impact of program cost recovery. Red bars show the impact of lost revenues due to reduced sales. Purple bars show the impact of avoided utility costs. The blue line is the net rate effect (sum of positive and negative rate pressures), which accounts for recovery of fixed costs that are not avoided due to DSM. The dotted red line shows the average net rate impact of DSM over the study period.



This graph shows estimated bill impacts of DSM as percentage differences relative to the no-DSM scenario. 'Participants' represents a customer with average energy use and average DSM savings. 'Non-Participants' represents a customer with average energy use and no DSM savings. 'Total Customers' is a hypothetical scenario where DSM savings are allocated equally to all customers in the class.

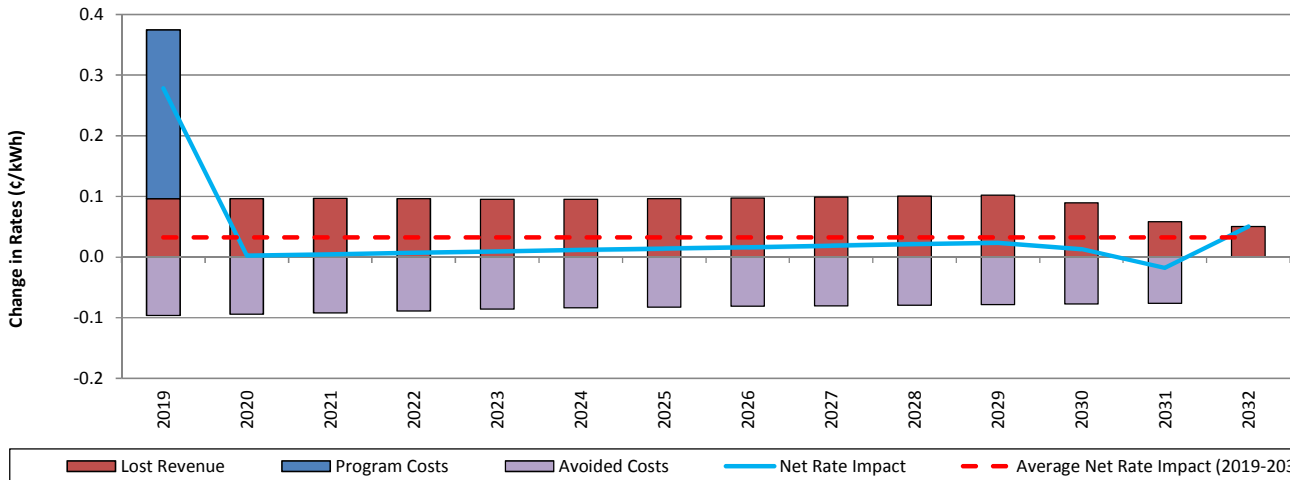
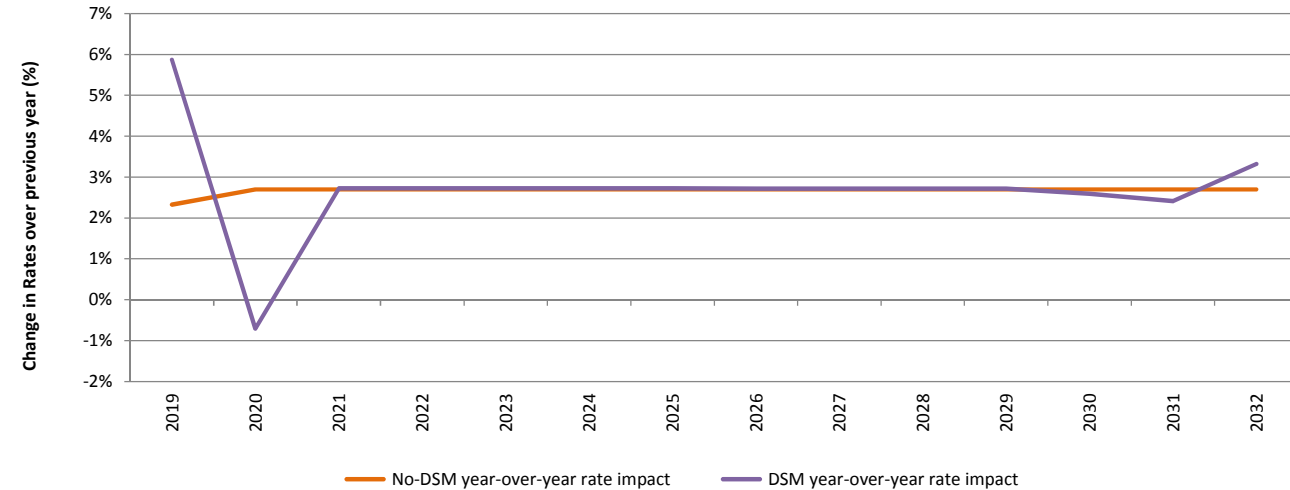
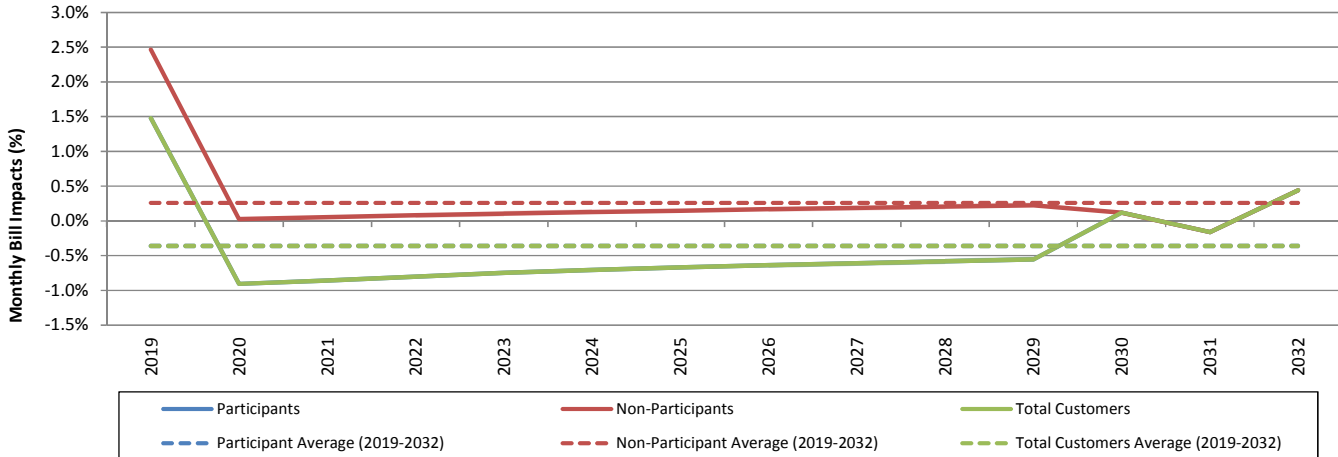
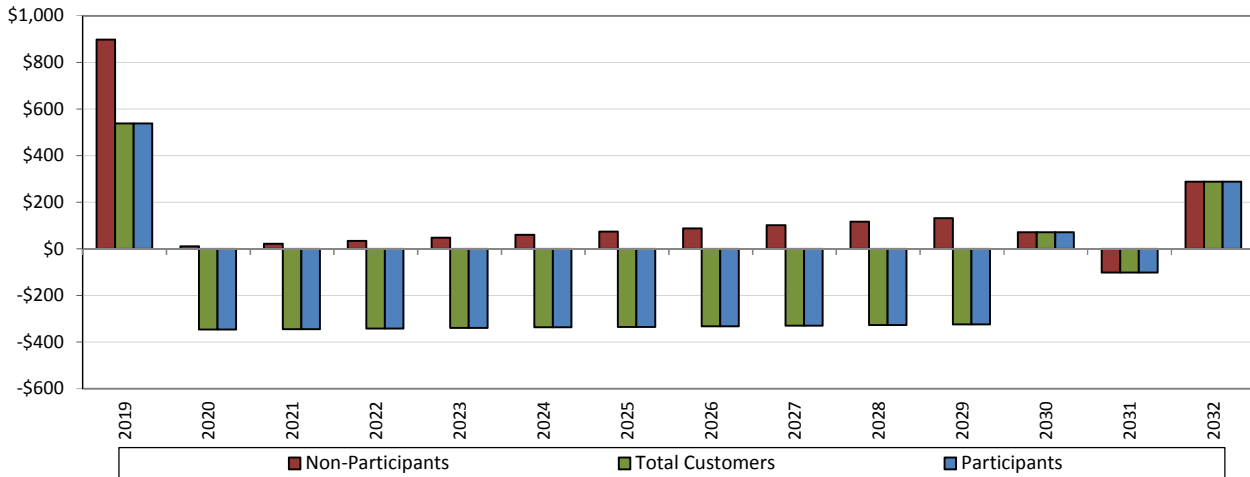


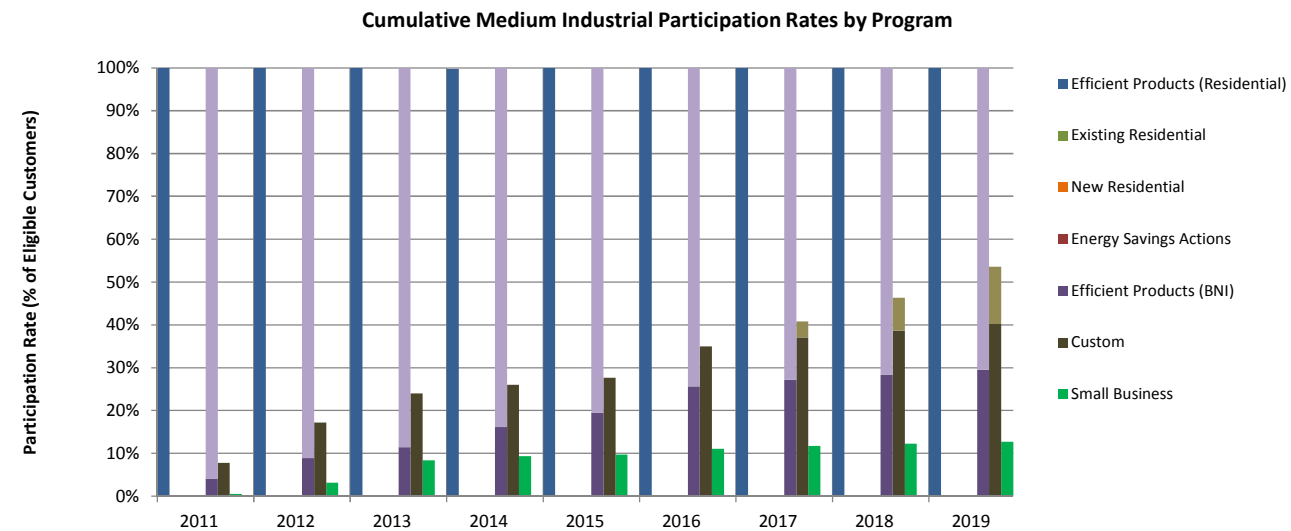
This graph shows the annual percentage change in rates over the previous year, for both the DSM and no-DSM scenarios.



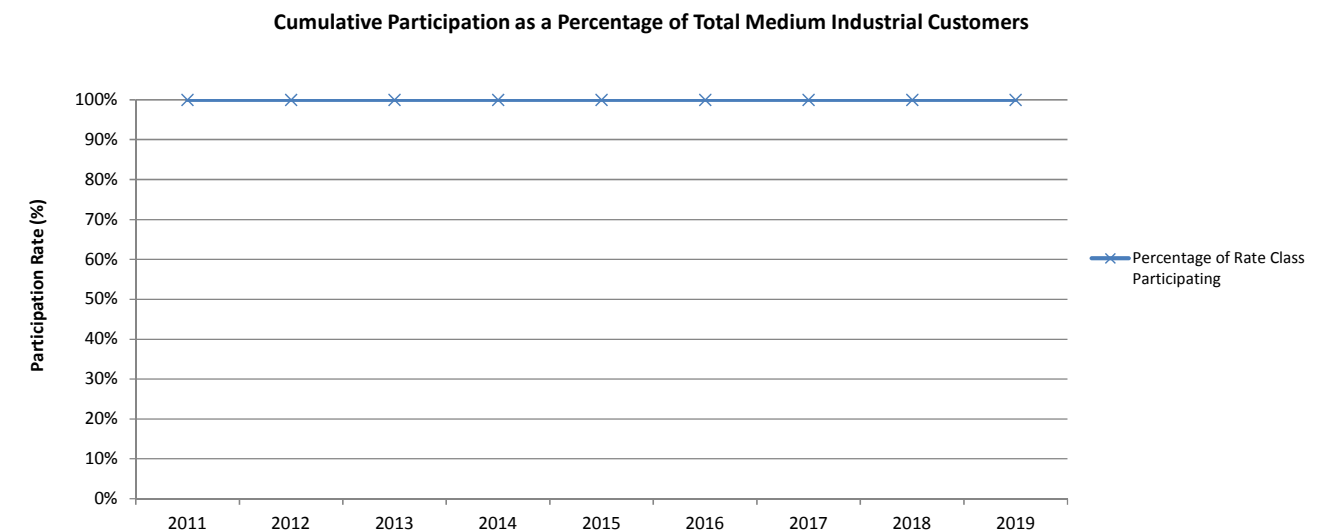
This graph shows monthly bill impacts relative to the no-DSM scenario in absolute terms, for the same groups of customers as the graph shown above it.

Line#	Rate and Bill Impacts of DSM on the Small Industrial Class																								
1	Impacts of DSM on the Small Industrial Rate Class	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	Units	
2	Incremental DSM Savings	6.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	GWh	
3	Cumulative DSM Savings	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	6.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	GWh	
4	DSM Costs for the Rate Class	1,347,916	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Dollars	
5	Cumulative Number of New Participants	1,926	1,926	1,926	1,926	1,926	1,926	1,926	1,926	1,926	1,926	1,926	1,926	1,926	1,926	1,926	1,926	1,926	1,926	1,926	1,926	1,926	1,926		
6	Annual Average Savings per Participant (Cumulative)	5,770	5,770	5,770	5,770	5,770	5,770	5,770	5,770	5,770	5,770	5,770	0	0	0	0	0	0	0	0	0	0	0	kWh	
7	Annual Number of Participants	1,106	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
8	Annual Average Savings per Participant (Current Year)	5,770	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	kWh	
9	Cumulative Cost per kWh Saved	21.122	21.122	21.122	21.122	21.122	21.122	21.122	21.122	21.122	21.122	21.122	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	cents	
10	Cumulative Small Industrial Participation Rates by Program Cumulative Participation as a Percentage of Total Small Industrial Customers This graph shows cumulative program participation for the class, as a percentage of eligible participants for each program. Each participant is counted once for each program, in the first year that they participate in the program. Darker bars show tracked participants; lighter bars show estimated participants for programs where individual customer information is not obtained. All 2017-2019 participation is shown as "estimated". This graph shows cumulative program participation for the class, as a percentage of total customers in the class. Each participant is counted once, in the first that year they participate.																								
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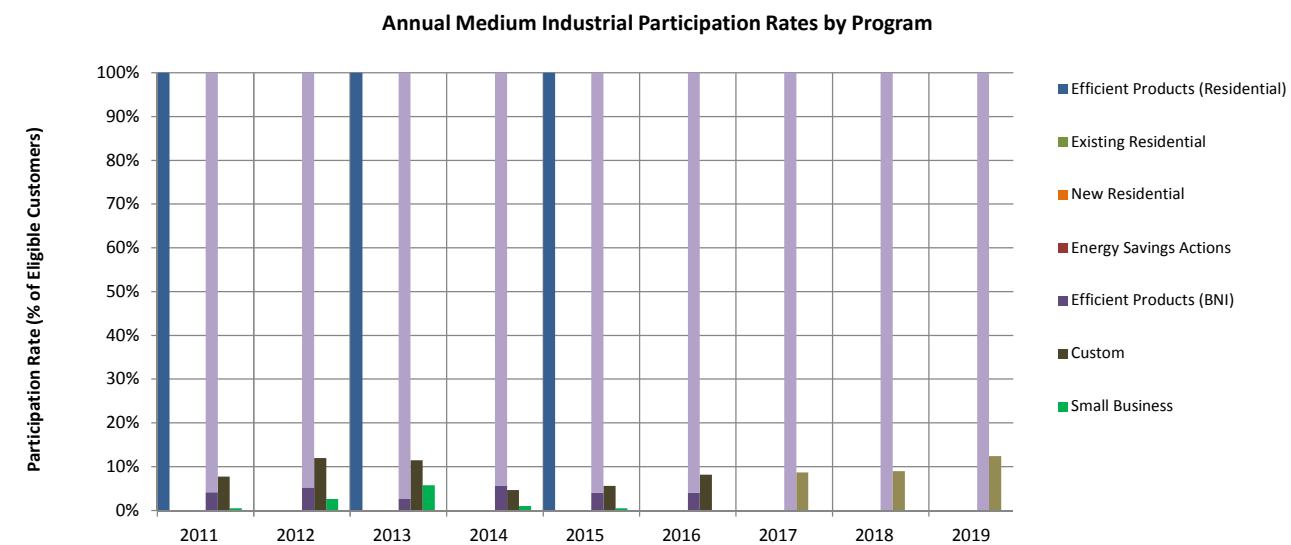
Line#	Rate and Bill Impacts of DSM on the Medium Industrial Class																							
1	Impacts of DSM on the Medium Industrial Rate Class	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	Units
2	Incremental DSM Savings	7.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	GWh
3	Cumulative DSM Savings	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	GWh
4	DSM Costs for the Rate Class	1,587,288	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Dollars
5	Cumulative Number of New Participants	337	337	337	337	337	337	337	337	337	337	337	337	337	337	337	337	337	337	337	337	337	337	
6	Annual Average Savings per Participant (Cumulative)	50,225	50,225	50,225	50,225	50,225	50,225	50,225	50,225	50,225	50,225	50,225	0	0	0	0	0	0	0	0	0	0	0	kWh
7	Annual Number of Participants	329	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
8	Annual Average Savings per Participant (Current Year)	22,777	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	kWh
9	Cumulative Cost per kWh Saved	21.195	21.195	21.195	21.195	21.195	21.195	21.195	21.195	21.195	21.195	21.195	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	cents
10	Change in Medium Industrial Rates as a Result of DSM 																							
25	This graph shows estimated rate impacts of DSM, relative to the no-DSM scenario. Blue bars show the impact of program cost recovery. Red bars show the impact of lost revenues due to reduced sales. Purple bars show the impact of avoided utility costs. The blue line is the net rate effect (sum of positive and negative rate pressures), which accounts for recovery of fixed costs that are not avoided due to DSM. The dotted red line shows the average net rate impact of DSM over the study period.																							
28	Year-over-year change in Medium Industrial Rates with and without DSM 																							
43	This graph shows the annual percentage change in rates over the previous year, for both the DSM and no-DSM scenarios.																							
11	Average Change in Medium Industrial Bills as a Result of DSM 																							
51	This graph shows estimated bill impacts of DSM as percentage differences relative to the no-DSM scenario. 'Participants' represents a customer with average energy use and average DSM savings. 'Non-Participants' represents a customer with average energy use and no DSM savings. 'Total Customers' is a hypothetical scenario where DSM savings are allocated equally to all customers in the class. In this class, all customers are assumed to have participated, so the Participants line matches the Total Customers line.																							
30	Average Change in Medium Industrial Bills in Comparison to a No-DSM Scenario 																							
52	This graph shows monthly bill impacts relative to the no-DSM scenario in absolute terms, for the same groups of customers as the graph shown above it.																							

[illegible]

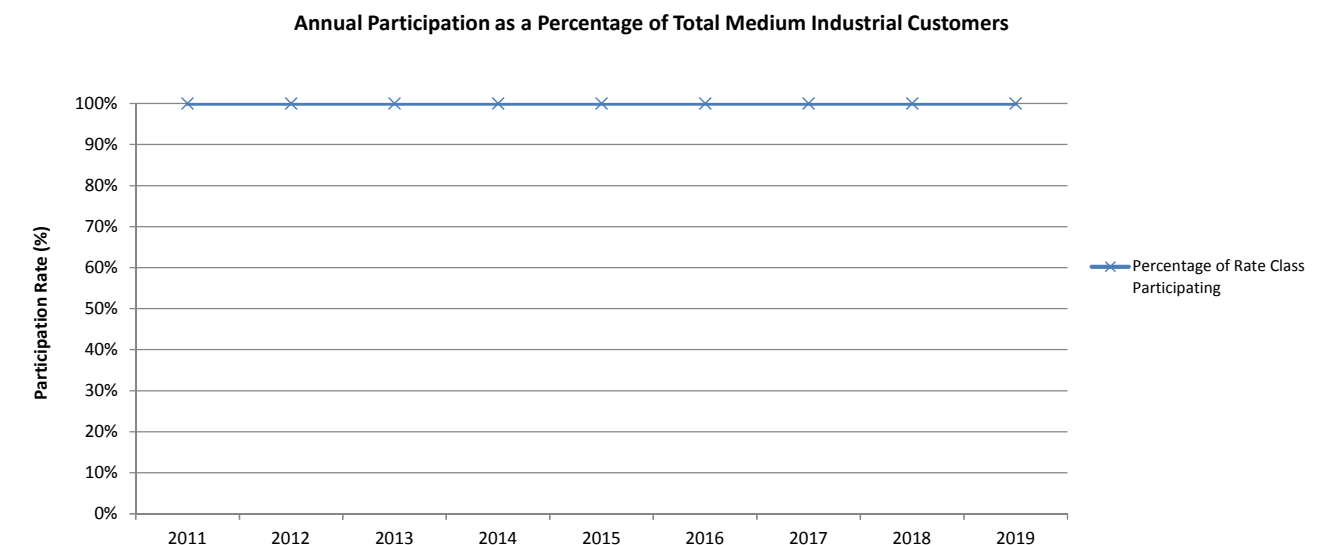
This graph shows cumulative program participation for the class, as a percentage of eligible participants for each program. Each participant is counted once for each program, in the first year that they participate in the program. Darker bars show tracked participants; lighter bars show estimated participants for programs where individual customer information is not obtained. All 2017-2019 participation is shown as "estimated".



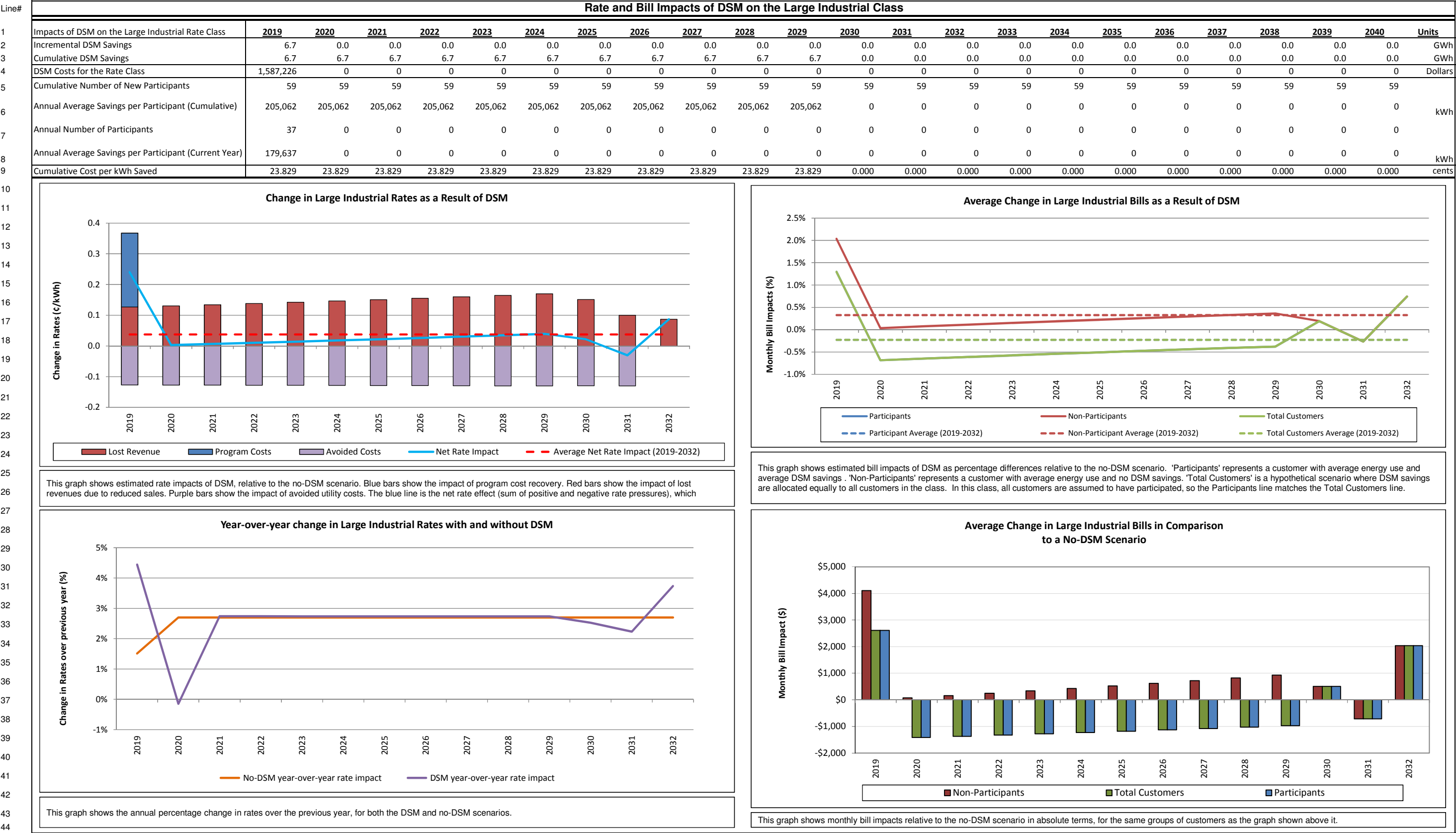
This graph shows cumulative program participation for the class, as a percentage of total customers in the class. Each participant is counted once, in the first that year they participate.

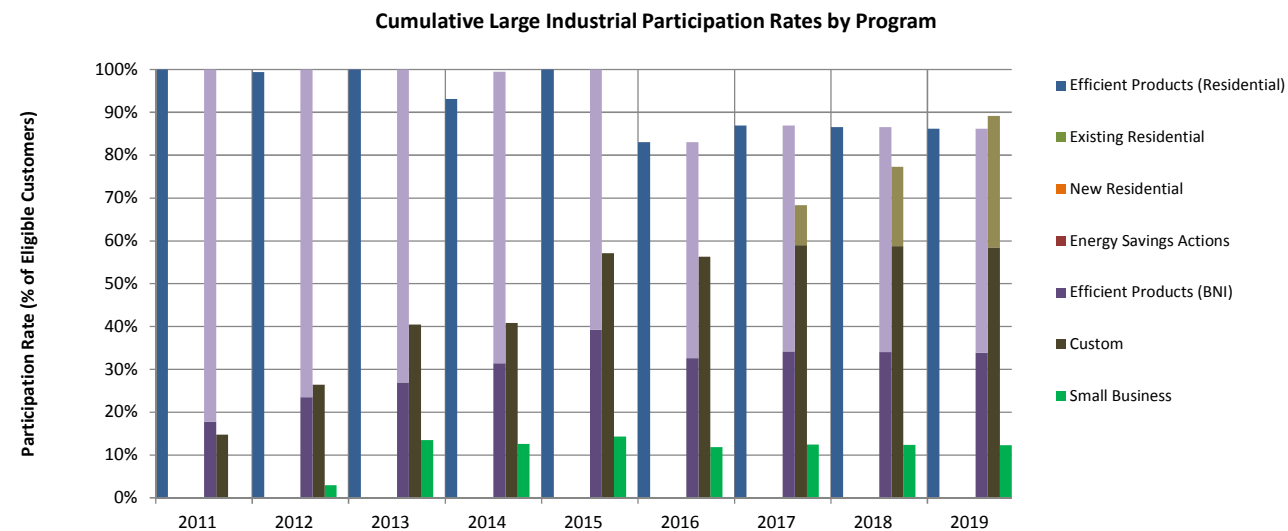


This graph shows annual program participation for the class, as a percentage of eligible participants for each program. Each participant is counted once in each year that they participate. Darker bars show tracked participants; lighter bars show estimated participants for programs where individual customer information is not obtained. All 2017-2019 participation is shown as "estimated".

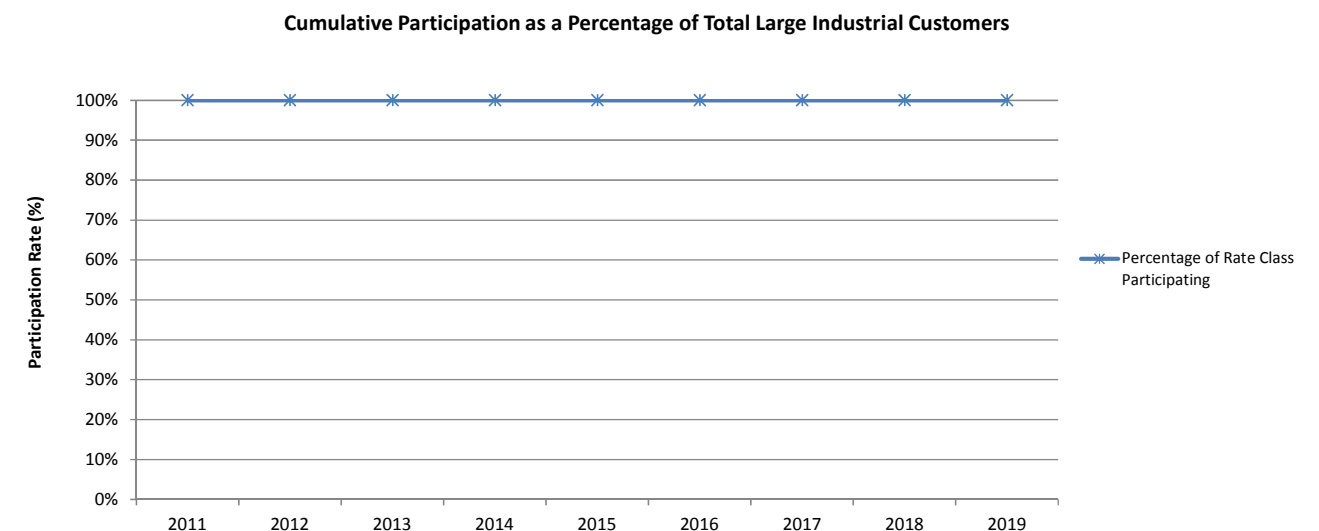


This graph shows annual program participation for the class, as a percentage of total customers in the class. Each customer is counted once for each year that they participate in any program.

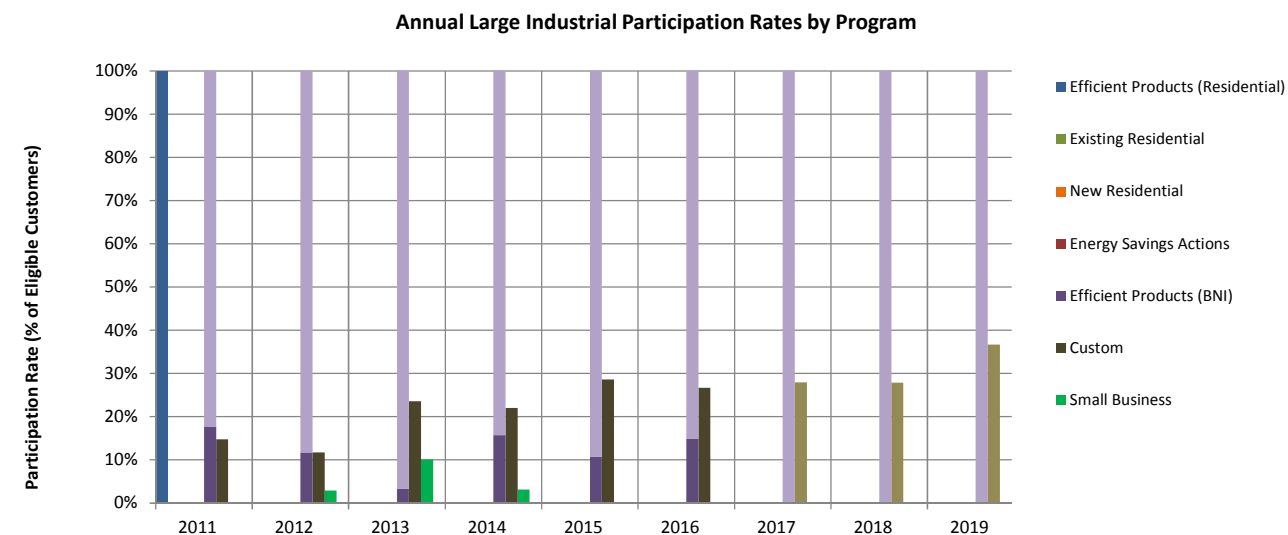


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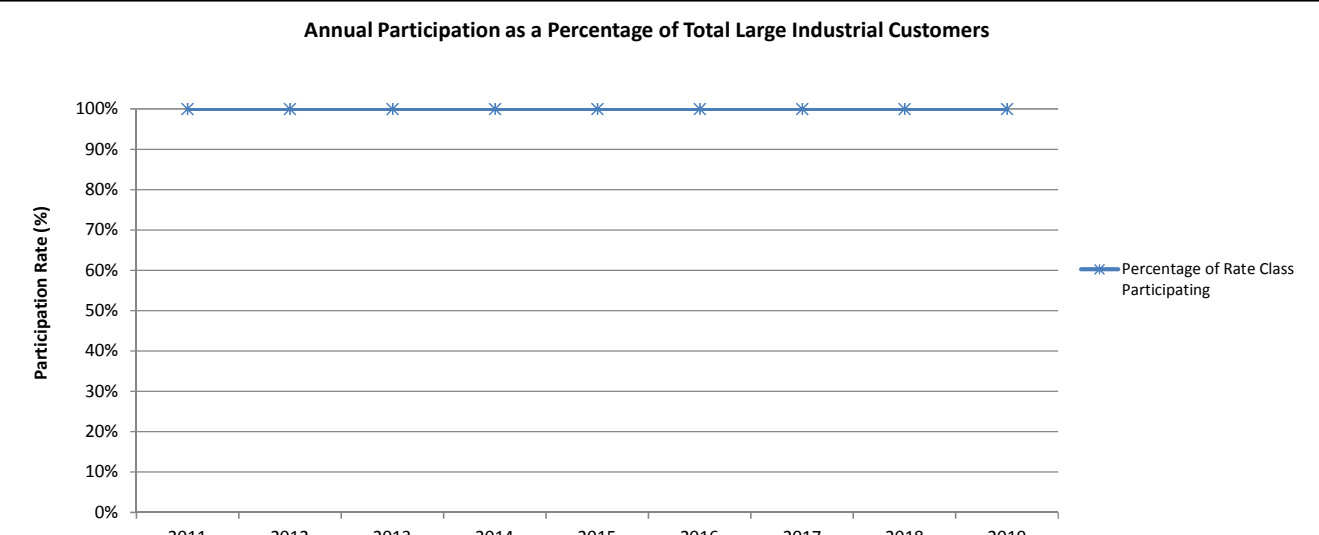
This graph shows cumulative program participation for the class, as a percentage of eligible participants for each program. Each participant is counted once for each program, in the first year that they participate in the program. Darker bars show tracked participants; lighter bars show estimated participants for programs where individual customer information is not obtained. All 2017-2019 participation is shown as "estimated".



This graph shows cumulative program participation for the class, as a percentage of total customers in the class. Each participant is counted once, in the first that year they participate.



This graph shows annual program participation for the class, as a percentage of eligible participants for each program. Each participant is counted once in each year that they participate. Darker bars show tracked participants; lighter bars show estimated participants for programs where individual customer information is not obtained. All 2017-2019 participation is shown as "estimated".



This graph shows annual program participation for the class, as a percentage of total customers in the class. Each customer is counted once for each year that they participate in any program.

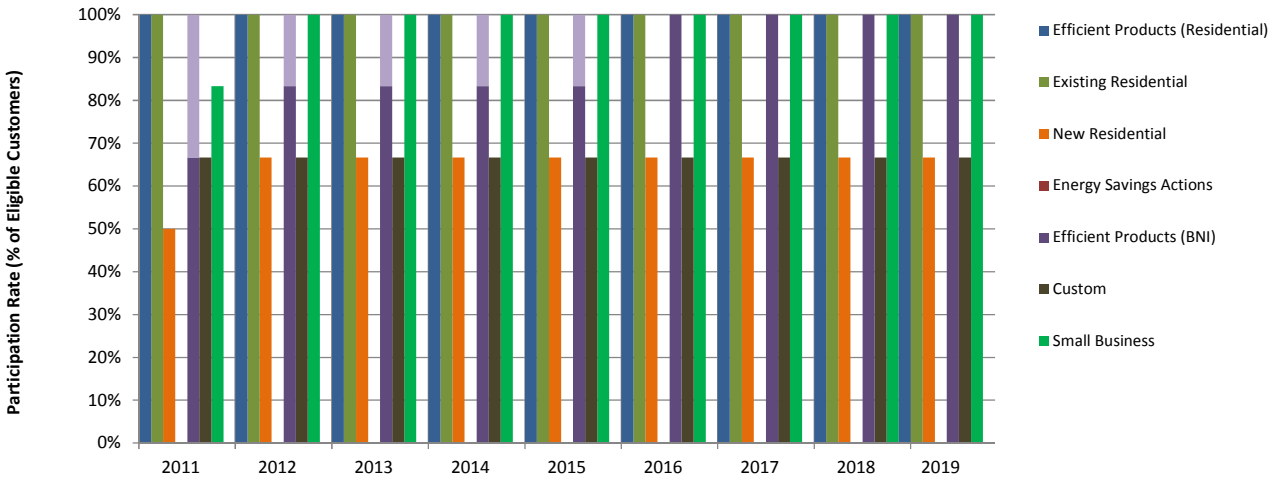
Line#	Rate and Bill Impacts of DSM on the Municipal Utility Class																							
1	Impacts of DSM on the Municipal Utility Rate Class	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	Units
2	Incremental DSM Savings	3.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	GWh
3	Cumulative DSM Savings	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	GWh
4	DSM Costs for the Rate Class	603,582	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Dollars
5	Cumulative Number of New Participants	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	
6	Annual Average Savings per Participant (Cumulative)	586,888	586,888	586,888	586,888	586,888	586,888	586,888	586,888	586,888	586,888	586,888	586,888	586,888	0	0	0	0	0	0	0	0	0	kWh
7	Annual Number of Participants	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
8	Annual Average Savings per Participant (Current Year)	293,444	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	kWh
9	Cumulative Cost per kWh Saved	17.141	17.141	17.141	17.141	17.141	17.141	17.141	17.141	17.141	17.141	17.141	17.141	17.141	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	cents
10	Change in Municipal Utility Rates as a Result of DSM Change in Rates (c/kWh) 2019 2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030 2031 2032 Lost Revenue Program Costs Avoided Costs Net Rate Impact Average Net Rate Impact (2019-2032)																							
11	This graph shows estimated rate impacts of DSM, relative to the no-DSM scenario. Blue bars show the impact of program cost recovery. Red bars show the impact of lost revenues due to reduced sales. Purple bars show the impact of avoided utility costs. The blue line is the net rate effect (sum of positive and negative rate pressures), which accounts for recovery of fixed costs that are not avoided due to DSM. The dotted red line shows the average net rate impact of DSM over the study period.																							
12	Year-over-year change in Municipal Utility Rates with and without DSM Change in Rates over previous year (%) 2019 2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030 2031 2032 No-DSM year-over-year rate impact DSM year-over-year rate impact																							
13	This graph shows the annual percentage change in rates over the previous year, for both the DSM and no-DSM scenarios.																							
14																								
15	Average Change in Municipal Utility Bills as a Result of DSM Monthly Bill Impacts (%) 2019 2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030 2031 2032 Participants Non-Participants Total Customers Participant Average (2019-2032) Non-Participant Average (2019-2032) Total Customers Average (2019-2032)																							
16	This graph shows estimated bill impacts of DSM as percentage differences relative to the no-DSM scenario. 'Participants' represents a customer with average energy use and average DSM savings. 'Non-Participants' represents a customer with average energy use and no DSM savings. 'Total Customers' is a hypothetical scenario where DSM savings are allocated equally to all customers in the class. In this class, all customers are assumed to have participated, so the Participants line matches the Total Customers line.																							
17																								
18	Average Change in Municipal Utility Bills in Comparison to a No-DSM Scenario Monthly Bill Impact (\$) 2019 2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030 2031 2032 Non-Participants Total Customers Participants																							
19	This graph shows monthly bill impacts relative to the no-DSM scenario in absolute terms, for the same groups of customers as the graph shown above it.																							
20																								
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Line#

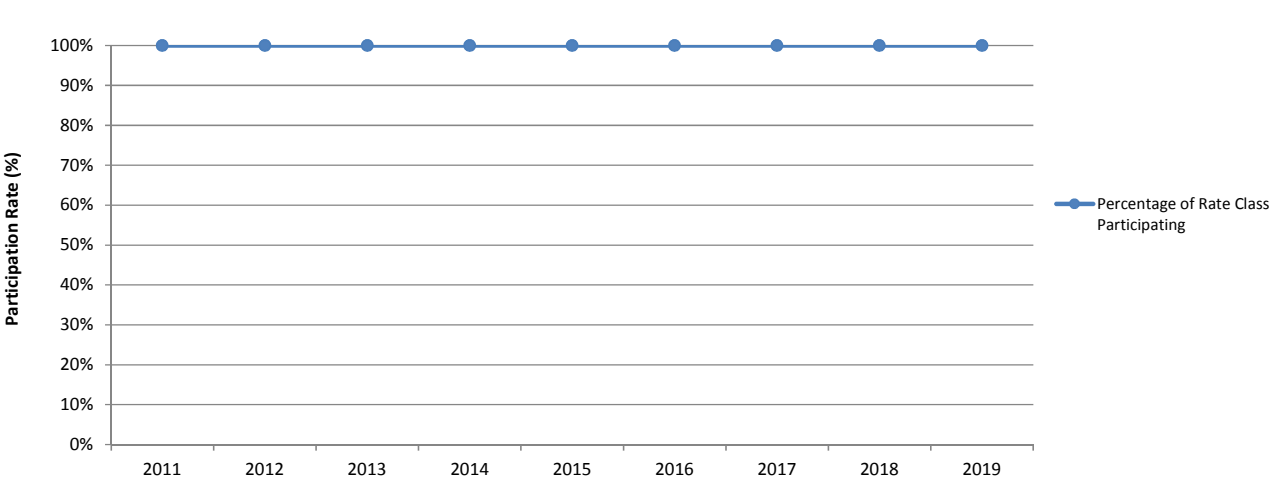
Rate and Bill Impacts of DSM on the Municipal Utility Class

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	Units
Impacts of DSM on the Municipal Utility Rate Class																							
Incremental DSM Savings	3.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	GWh
Cumulative DSM Savings	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	GWh
DSM Costs for the Rate Class	603,582	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Dollars
Cumulative Number of New Participants	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	
Annual Average Savings per Participant (Cumulative)	586,888	586,888	586,888	586,888	586,888	586,888	586,888	586,888	586,888	586,888	586,888	586,888	586,888	0	0	0	0	0	0	0	0	0	kWh
Annual Number of Participants	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Annual Average Savings per Participant (Current Year)	293,444	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	kWh
Cumulative Cost per kWh Saved	17.141	17.141	17.141	17.141	17.141	17.141	17.141	17.141	17.141	17.141	17.141	17.141	17.141	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	cents

Cumulative Municipal Utility Participation Rates by Program



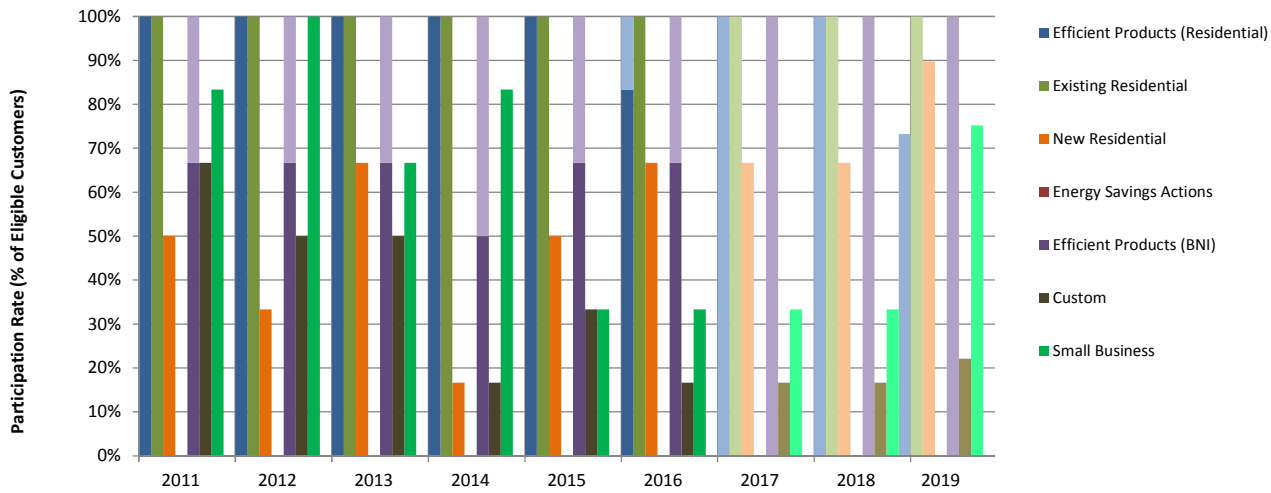
Cumulative Participation as a Percentage of Total Municipal Utility Customers



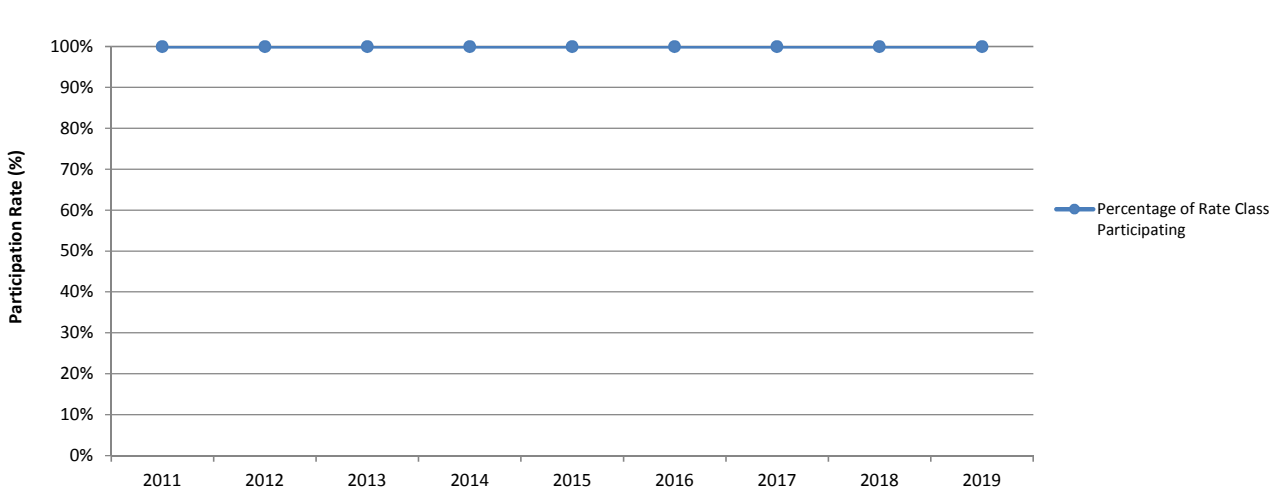
This graph shows cumulative program participation for the class, as a percentage of eligible participants for each program. Each participant is counted once for each program, in the first year that they participate in the program. Darker bars show tracked participants; lighter bars show estimated participants for programs where individual customer information is not obtained. All 2017-2019 participation is shown as "estimated".

This graph shows cumulative program participation for the class, as a percentage of total customers in the class. Each participant is counted once, in the first that year they participate.

Annual Municipal Utility Participation Rates by Program



Annual Participation as a Percentage of Total Municipal Utility Customers



This graph shows annual program participation for the class, as a percentage of eligible participants for each program. Each participant is counted once in each year that they participate. Darker bars show tracked participants; lighter bars show estimated participants for programs where individual customer information is not obtained. All 2017-2019 participation is shown as "estimated".

This graph shows annual program participation for the class, as a percentage of total customers in the class. Each customer is counted once for each year that they participate in any program.

Appendix C - Attachment 2:

2019 Plan Rate and Bill Impact Analysis Assumptions

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1 **2019 DSM Plan Rate and Bill Impact Analysis Assumptions**

2 This document is intended to provide an overview of the assumptions used in ENS's rate and bill impact analysis.

3 These assumptions are for rate and bill impact analysis purposes only and do not impact ENS's calculation of energy savings.

Item	Description
General approach	ENS has used the "snapshot" approach recommended by Synapse, in which the impacts of specific program years are analyzed rather than incorporating an assessment of DSM over the long term.
Scenarios	The model compares two scenarios: a DSM scenario and a no-new-DSM scenario. Both scenarios include the load and residual rate impacts of DSM programs operated in 2011-2018 programs. The DSM scenario includes the costs and benefits of DSM programs that are proposed to run in 2019, and the no-new-DSM scenario does not include any DSM costs or benefits from 2019 programs. Neither scenario includes any DSM after 2019. The results of the analysis (comparison of the two scenarios) thereby isolate the impacts of DSM costs and benefits resulting from proposed 2019 programs.
Rate classes included	Synapse has indicated that providing results for a few representative rate classes is sufficient to meet the intent of the rate and bill impact analysis. ENS has gone beyond this minimum to provide impacts for the following classes: • Residential (rate codes 2, 3, 4, 5 and 6) • Small General (rate code 10) • General (rate code 11) • Large General (rate code 12) • Small Industrial (rate code 21) • Medium Industrial (rate code 22) • Large Industrial (rate codes 23 and 25, and customers under the 'One part high voltage real time pricing' tariff) • Municipal (rate code 24) The Unmetered, Generation Replacement and Load Following (GRLF) and Shore Power rate classes are not included in the analysis. ENS does not offer programs for the GRLF and Shore Power classes, and ENS does not have participant-specific data on unmetered accounts in order to calculate impacts. Because not all rate classes are analyzed, the sum total of all represented classes may not equal ENS's total filed expenditures or verified energy and demand savings in any given year.

Energy and demand savings; participation counts	First-year energy, lifetime energy, and demand savings for the 2019 Plan have been calculated at the program component level. These savings, within each program component, were apportioned to rate classes based on the 2016 distribution of savings between rate classes (as used in the 2017 RBIA). Participation rates for each program, within each rate class, were estimated by multiplying the 2016 participation rates (by program within rate class) by the ratio of expected 2019 program savings to actual 2016 program savings (as used in the 2017 RBIA). Weighted-average measure lives for each rate class were developed based on the ratio of expected lifetime energy savings to expected first-year energy saving for each class.
Point-of-sale program component participation counts	All forecasted 2019 participation, including point-of-sale program participation, was estimated based on 2016 results, using the methodology described above. The 2011-2016 results for point-of-sale program participation were estimated using the methods described in this section. In estimating participation rates for point-of-sale discount program components, ENS assumes a value for re-participation rates (customers who participate in a point-of-sale program in more than one year) and for cross-participation rates (customers who participate in both a point-of-sale program and another program in the same year) for each of two point-of-sale programs, in each year. In the calculation of cumulative participation rates, ENS has applied both the re-participation rate and cross-participation rate for rate class totals, but only the re-participation rate for point-of-sale program totals. In the calculation of annual participation rates, ENS has applied only the cross-participation rate for rate class totals, and neither the re-participation rate or cross-participation rate for point-of-sale program totals. Residential Instant Savings: • Assume that all customers are purchasing items for Residential use (i.e., that all customers are in the Residential and Municipal rate classes). • To determine the number of participants in Instant Savings each year, ENS has used information from studies commissioned by ENS. In 2011 and 2012 the study indicated participation levels were 6% of the general population, in 2013 it indicated 7%, and in 2014 it indicated 13%. The study was not conducted in 2015, so participation was assumed to remain at 13%. In 2016 the study indicated a participation level of 25%. • Assume that historical re-participation of customers each year is 10%. This assumption is based on an initial proposal from Rhode Island's 2013 rate and bill assumptions, which is, to ENS's knowledge, the only other jurisdiction making these estimations. Note: Rhode Island ended up using program-specific data for which ENS

	does not have comparable research. ENS reduced the number of unique participants by 10% in the first year of duplication (2012) in 2013 accounted for 10% duplication in the remaining population. In 2014, ENSC engaged Corporate Research Associates to determine the number of re-participants in their quarterly omnibus survey. Of those who purchased products in 2014, 71% also purchased products in 2013. The study was not conducted in 2015 or 2016, so re-participation was assumed to remain at 71%. • Assume that participation in Instant Savings does not affect the probability that a customer will participate in another ENS program (i.e. estimate the cross-participation rate by dividing the number of tracked Residential rate class program participants by the total number of customers in the class) • For the Municipal Utility class, assume that each municipal utility participates in every year. Business, Non-Profit and Institutional Upstream Business Energy Rebates (UBER): • For large rate classes (Large General, Medium Industrial, Large Industrial, and Municipal), assume that each account participates in every year. • For small rate classes (Small General, General, Small Industrial), research was conducted in 2016 to determine current and historical participation. To assist with recall over such a long time period, respondents were asked to group their memory of participation within the 2011-2014 period instead of providing answers for each individual year. ○ For Small General, <u>participation</u> was 46% over 2011-2014, and 29% in 2015 and 2016. For General, it was 73% over 2011-2014, 62% in 2015 and 68% in 2016. For Small Industrial, it was 55% over 2011-2014, 50% in 2015 and 52% in 2016. ○ For Small General, <u>re-participation</u> was 75% in 2015 and 79% in 2016. For General, it was 92% in 2015 and 96% in 2016. For Small Industrial, it was 88% in 2015 and 92% in 2016. ○ For Small General, <u>cross-participation</u> was 13% in 2016. For General and Small Industrial it was 15% in 2016. Cross-participation was not research for previous years, so these rates were applied to each year in the 2011-2015 period. • As research indicated the total number of unique participants over the 2011-2014 period, but not the distribution of participants in each year therein, these figures were estimated using shape factor based on total program activity in each year (i.e. within 2011-2014, more participants were allocated to years with high savings than years with low savings, with the sum total over 2011-2014 held constant to the values obtained from research). • A small number of BER-IR participants are assumed to come from the Residential class. Their rates of re-participation and cross-participation are assumed to match those determined for the Small General class. Participation rates were determined by assuming each BER-IR transaction was for a single participant, and that the rate class allocation of participants matched that which is used to allocate savings.
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Energy Savings Actions (Home Energy Report) participation	Customers receiving the Home Energy Report were modeled as new participants in 2013. The same cross-participation rates used for Residential Instant Savings are used for the Home Energy Report, based on the assumption that participation in this program does not affect the probability that a customer will participate in another ENS program (i.e. estimate the cross-participation rate by dividing the number of tracked annual Residential rate class program participants by the total number of customers in the class). The Home Energy Report program formally ended in 2015, however some participants continued to access the web portal until it was shut down in 2016.		
Energy and demand rates	NS Power has provided historical rates for 2019 by class, including block 1, block 2, FAM, and demand charges where applicable. Transformer credits are not included in rates. Customer base charges are assumed to remain flat after 2019. Beyond 2019, energy and demand rates are assumed to grow at 2.7% per year, as per NS Power's 2014 IRP DSM assumptions.		
Energy and demand sales	Sales forecasts for 2019-2040 were taken from relevant 2014 IRP assumptions. The ratio of block 1 to total energy sales is assumed to remain constant after 2019, within each class, where applicable.		
Avoided costs	Avoided costs are calculated at the system level using evaluated DSM savings and levelized avoided cost rates in four categories: generation, transmission, distribution, and fuel. Avoided cost estimates for capacity and energy were provided by NS Power for the 2014 IRP. In 2016, NS Power provided levelized estimates of avoided Transmission and Distribution costs on a \$/kW basis. These estimates have been used for all years of the analysis.		
	Avoided Cost Category	Unit	Value
	Capacity (2019-2031)	\$/MW	195,355
	Transmission (2019-2031)	\$/MW	8,365
	Distribution (2019-2031)	\$/MW	3,524
	Energy (2019-2031)	\$/MWh	107
Source			
2014 IRP, Base DSM scenario (levelized over 2015-2039)			
Provided by NS Power in 2016 (based on load-related transmission upgrades between 2008-2015)			
Provided by NS Power in 2016 (based on load-related distribution upgrades between 2008-2015)			
2014 IRP, Base DSM scenario (levelized over 2015-2039)			

'Lost' fixed cost adjustments	'Lost' fixed cost adjustments assume that NS Power must recover through rates all lost revenues, including energy revenues, but also that NS Power need not recover any of the avoided costs, including avoided energy costs. Using both of these assumptions together, the net rate effects are adjusted for the reallocation of 'lost' fixed costs, and may be positive or negative depending on the relative magnitudes of lost revenues (which are based on rates) and avoided costs (which are based on costs avoided relative to a theoretical no-new-DSM scenario).
Eligible participants	As part of the rate and bill impact analysis, overall participation and participation rates for each rate class are presented. In order to calculate this result, ENS has used the number of NS Power customer accounts in each rate class as the overall potential market. Because some customers have multiple account numbers, the total number of available accounts may be greater than that the actual number of customers in a rate class. To determine the number of eligible participants for each DSM program, ENS determined the percentage of customers in the rate class who the program was being marketed to. This assumption was made based on feedback from the DSM Advisory Group on February 4, 2015. The only exception to using the number of accounts per rate class is for the Municipal Utility rate class. NS Power currently has six utility customers but eight accounts, because the Antigonish Electric Utility has three accounts. ENS does not track which Antigonish account is being served through particular programs or participants, so the rate and bill impacts include the number of customers rather than the number of accounts for the Municipal Utility rate class only.
Calculation of rate impacts	Rates for the DSM scenario are calculated by taking the no-new-DSM rates, adding a program cost recovery component, a lost revenue recovery component, and an avoided cost component. The program cost recovery is determined through ENS tracking of expenditures within each rate class, and converted to a \$/kWh rate by dividing by class energy sales. Lost revenues are calculated by class, by multiplying energy and demand savings by no-DSM rates. Lost revenues are then summed to the portfolio level. Avoided costs are calculated at the system level by multiplying energy and demand savings by the four categories of avoided costs. Avoided costs and lost revenues are then each allocated back to rate classes based on each rate class' share of the total revenue requirement. For rate classes without demand charges, the balance is divided by kWh sales within the class to form a \$/kWh component of energy rates. For rate classes with demand rates, it is assumed that energy and demand rates in the DSM scenario change by the same percentage, and so the balance is allocated to both a \$/kWh energy component and a \$/kW demand component for the DSM scenario.

Lost revenue from peak demand reductions	For each rate class, it is assumed that the ratio between annual system coincident peak demand contribution and total billed demand is the same as the ratio between annual system coincident peak demand savings and total billed demand savings.
Calculation of bill impacts	Bill impacts are calculated in three categories: participants, non-participants, and total customers. Non-participants are assumed to use the same amount of energy and demand in the DSM scenario as they do in the no-DSM scenario. In each year, total cumulative savings are divided by total cumulative participants and subtracted from the average customers' no-DSM energy and demand consumption to determine savings for participants. In the total customers case, total cumulative savings are divided by all customers in the class to produce the ideal allocation of savings from an intra-class customer equity perspective and a clear view of overall rate class effects.

Appendix C - Attachment 3

2019 Plan Rate and Bill Impact Analysis Equations

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2019 DSM Plan Rate and Bill Impact Analysis Equations

The following set of equations describes the modeling approach to calculating lost revenues and avoided costs, and their allocation to rate classes. Lost fixed revenues are not calculated directly; instead it is assumed that NS Power must ‘recover’ the difference between revenues that were lost and costs that were avoided (which can be positive or negative).

$$LR_j = \sum_{i=1}^8 (E_{ij}x_{ij} + P_{Bij}y_{ij})$$

LR_j System total Lost Revenue in year j

E_{ij} DSM total annual energy savings for class i in year j

x_{ij} Average energy rate for class i in year j

P_{Bij} DSM total annual billed demand savings for class i in year j

y_{ij} Average billed demand rate for class i in year j

$$AC_j = [E_j a_j + P_{Pj}(b_j + c_j + d_j)]$$

AC_j System total Avoided Costs in year j

E_j System total DSM total annual energy savings for year j

a_j Avoided fuel cost rate in year j

P_{Pj} System total DSM total annual system-coincident peak demand savings for year j

b_j Avoided generation capacity cost rate in year j

c_j Avoided transmission capacity cost rate in year j

d_j Avoided distribution capacity cost rate in year j

$$LR_{ij} = LR_j \alpha_i$$

LR_{ij} Lost Revenues for class i in year j

α_i Attribution factor for class i

$$AC_{ij} = AC_j \alpha_i$$

AC_{ij} Avoided Costs for class i in year j

1 Description of the indices:

Parameter (Index)	Index Value	Description
Rate class (i)	1	Residential
	2	Small General
	3	General
	4	Large General
	5	Small Industrial
	6	Medium Industrial
	7	Large Industrial
	8	Municipal
	9	Unmetered/Other
Year (j)	1 to 30	Years 2011 (j=1) to 2040 (j=30)

2

3 Attribution factors by class:

4 Source: Class proportion of rate revenue as per 2013 GRA SR-01 Attachment 1 page 51 of 130
 5 (Exhibit 7)

Index (i=)	Rate Class	Value
1	Residential	53%
2	Small General	3%
3	General	25%
4	Large General	3%
5	Small Industrial	3%
6	Medium Industrial	4%
7	Large Industrial	7%
8	Municipal	2%

Appendix D

2019 Planned Expenditures by Rate Class

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Table 1: Preliminary 2019 DSM Expenditures by Program by Rate Class

COLUMN	A	B	C	D	E	F	G	H	I	J
	Σ col A to I									
	Preliminary Program Expenditures by Participating Rate Classes									
Program	Efficient Products (Residential)	Existing Houses	New Houses	Efficient Products (BNI)	Custom Incentives	Direct Installation (BNI)	Education & Outreach	Development & Research	Other Enabling Strategies	All Programs Combined
Rate Class										
Residential	\$3,428,014	\$8,405,666	\$2,028,954	\$354,858	\$32,871	\$526,482	\$812,902	\$1,104,488	\$332,619	\$17,026,853
Small General	\$5,825	\$8,313	\$0	\$357,080	\$0	\$496,883	\$47,756	\$64,886	\$19,540	\$1,000,283
General Demand	\$7,703	\$11,926	\$0	\$2,978,774	\$2,132,668	\$2,863,979	\$439,823	\$597,586	\$179,964	\$9,212,424
Large General	\$310	\$0	\$0	\$369,290	\$855,129	\$0	\$67,375	\$91,542	\$27,568	\$1,411,213
Small Industrial	\$621	\$0	\$0	\$417,532	\$613,242	\$128,463	\$63,806	\$86,693	\$26,108	\$1,336,465
Medium Industrial	\$502	\$0	\$0	\$231,994	\$1,139,302	\$0	\$75,465	\$102,534	\$30,878	\$1,580,676
Large Industrial	\$311	\$0	\$0	\$304,609	\$1,098,690	\$0	\$77,215	\$104,912	\$31,595	\$1,617,333
Municipal	\$57,214	\$124,096	\$121,046	\$185,862	\$172,562	\$84,193	\$40,982	\$55,683	\$16,769	\$858,408
Unmetered	\$0	\$0	\$0	\$0	\$5,535	\$0	\$305	\$414	\$125	\$6,378
Planned Expenditures Total	\$3,500,500	\$8,550,000	\$2,150,000	\$5,200,000	\$6,050,000	\$4,100,000	\$1,625,629	\$2,208,737	\$665,166	\$34,050,032
Planned Expenditures Total	\$3,500,500	\$8,550,000	\$2,150,000	\$5,200,000	\$6,050,000	\$4,100,000	\$1,625,629	\$2,208,737	\$665,166	\$34,050,032

Numbers may not sum due to rounding

Table 2: Preliminary 2019 DSM Program Participation by Rate Class (Relative Shares)

COLUMN	A	B	C	D	E	F	G	H	I
	Program costs incurred by participating rate classes								
Program	Efficient Products (RES)	Existing Houses	New Houses	Efficient Products (BNI)	Custom Incentives	Direct Installation (BNI)	Education & Outreach	Development & Research	Other Enabling Strategies
Rate Class									
Residential	97.9%	98.3%	94.4%	6.8%	0.5%	12.8%	50.0%	50.0%	50.0%
Small General	0.2%	0.1%	0.0%	6.9%	0.0%	12.1%	2.9%	2.9%	2.9%
General Demand	0.2%	0.1%	0.0%	57.3%	35.3%	69.9%	27.1%	27.1%	27.1%
Large General	0.0%	0.0%	0.0%	7.1%	14.1%	0.0%	4.1%	4.1%	4.1%
Small Industrial	0.0%	0.0%	0.0%	8.0%	10.1%	3.1%	3.9%	3.9%	3.9%
Medium Industrial	0.0%	0.0%	0.0%	4.5%	18.8%	0.0%	4.6%	4.6%	4.6%
Large Industrial	0.0%	0.0%	0.0%	5.9%	18.2%	0.0%	4.7%	4.7%	4.7%
Municipal	1.6%	1.5%	5.6%	3.6%	2.9%	2.1%	2.5%	2.5%	2.5%
Unmetered	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Numbers may not sum due to rounding

Table 2 - Preliminary 2019 Program Participation
EfficiencyOne 2019 DSM Plan Filing - Appendix D

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