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Request IR-1:

Does ENSC expect the greater percentage of savings from the implementation of Enabling Strategies to occur in residential or in the commercial and institutional sectors?

Response IR-1:

ENSC has not attempted to quantify Enabling Strategies in terms of energy savings.

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Request IR-2:

Does ENSC expect any savings resulting from the implementation of Enabling Strategies to occur in the industrial sector?

Response IR-2:

Please refer to CA IR-1.

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Request IR-3:

In which sectors does ENSC expect major impacts on energy savings from codes and standards to occur in the next three years and from which codes and standards?

Response IR-3:

Please refer to Multeese IR-6.

NON-CONFIDENTIAL

Request IR-4:

Where does ENSC expect the majority of its investment in codes and standards to be directed during 2012?

Response IR-4:

It is premature for ENSC to speculate because it depends on a number of factors that are expected to evolve over 2011. For example, ENSC intends to monitor compliance with the new Nova Scotia building code requirements for new residential homes to determine its role. Similarly, ENSC expects the federal government to publish a draft revised Model National Energy Code for Buildings over the coming year, the specifics of which would help determine the level and nature of ENSC's role.

ENSC expects to be directly involved with the development of a Nova Scotia standard for four-foot commercial fluorescent tube lighting. Other products where new standards could be ready for adoption in Nova Scotia include air-to-air heat pumps, geo-thermal heat pumps, electric and gas-fired water heaters, and electronic thermostats.

Other opportunities, in both the residential and non-residential sectors, may also arise as standards continue to evolve in the United States.

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Request IR-5:

Please provide a budget breakdown for all eight of the areas of activity listed under Enabling Strategies?

Response IR-5:

The table below provides ENSC's budget breakdown.

Enabling Strategy	**Budget ($ million)**
Education and Outreach	2.0
Development and Research	1.5
Innovative Financing	0.3
Codes and Standards	0.4
Building Energy Labelling	0.2
Training and Quality Assurance	0.2
Renewable Heating	0.2
Local Government Assistance	0.2
Total	**5.0**

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Request IR-6:

In which sectors would you expect the majority of funding and activity for development and research, fuel substitution, and renewable heating to occur in 2012?

Response IR-6:

Opportunities exist in both residential and non-residential sectors within each of these components of the Enabling Strategy. ENSC has not estimated the extent of Enabling Strategy activity by sector.

NON-CONFIDENTIAL

Request IR-7:

Please describe any new efforts planned to attract participants to the low-income programs in the 2012 DSM Plan.

Response IR-7:

2012 efforts to attract participants to the low income program may include, but are not limited to, the following:

- residential marketing staff
- changes to the low income qualification chart to simplify and increase inclusion
- expansion of low-income programs to include MURBs
- appliance and lighting change-outs for tenants
- assessment of information gained through pilots
- public information sessions across the province

Past and current efforts include:

- working with the Department of Community Services and Service Nova Scotia and Municipal Relations
- putting up posters and leaving brochures in stores, community centres, food banks, government facilities, hospital and health clinic waiting rooms, mobile home parks, job search centres, libraries, post offices, laundromats, outdoor bulletin boards, shopping centres, convenience stores, gas stations and second hand and thrift stores
- advertising in town/county and community organization newsletters, including: District of St. Mary's, Northwood, The Coastline and Louisburg Seagull
- developing and delivering presentations to and marketing materials for non-governmental organizations, including: women's centres, family support centres,

community centres, senior's clubs, Dalhousie Legal Aid Society, North End Community Health Centre, St. Vincent de Paul Society, health boards, elderly/disabled care providers, Addictions Services, anger management programs, Native Council of Nova Scotia Assembly, local branches of financial institutions, day care centres, transition houses, parenting centres and women's institutes

- mailing out information packages to individuals and organizations, such as: Members of the Legislative Assembly of Nova Scotia, churches, Salvation Army, food banks, small and large municipal fire departments and brigades and electrical and/or structural repair contractors
- developing and delivering presentations to or materials for leadership of service clubs, such as: Lions and Lionesses Clubs, Rotary Clubs and ladies' clubs
- running province-wide radio advertisements
- conducting meetings with municipal councils
- delivering program materials to employers in the following sectors: retail, food service, hospitality, manufacturing, distribution and processing facilities
- partnering with the Salvation Army to identify potential participants from the Good Neighbour Energy Fund to the Program Manager/Outreach Agents
- delivering materials to MLA and MP's offices
- running paid ads in small publications
- providing more detailed information on website
- establishing a link to low-income program website on other websites (community organizations, towns, municipalities)
- actively distributing promotional materials (by program delivery agents)

In 2010, a second program Outreach Agent was hired to assist with the above mentioned activities. These and additional program promotional activities, not indicated above, may also be considered.

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Request IR-8:

Please provide an estimate of the anticipated number of low income participants in 2012 DSM Plan Programs, the expected number of measures each participant will take-up, the expected energy savings by low income participants and the anticipated program cost per low income participant in 2012 plan programs.

Response IR-8:

Please refer to CA IR-40. For the 2012 Existing Houses Program (which includes low-income houses), based on the share of investment in low-income (40 percent) vs. non-low-come houses (60 percent), ENSC estimates approximately 1,000 low-income houses are anticipated to participate in the 2012 DSM Plan.

Please refer to CA IR-40 regarding the expected energy savings by low-income participants in the Existing Houses Program.

Please refer to Synapse IR-1, Attachment 1 regarding the expected number of measures for low-income participants in the Existing Houses Program.

In the Existing Houses Program, the expected program costs per low-income participant in the 2012 DSM Plan are estimated at $3,900.

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Request IR-9:

Please provide an estimate on the anticipated number of renters in 2012 DSM Plan Programs, the expected number of measures each renter will take-up, the expected energy savings by renters, and the anticipated program cost per renter in 2012 plan programs.

Response IR-9:

ENSC does not have projected participation data broken down to produce such a renter vs. non-renter analysis.

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Request IR-10:

Please describe the barriers to participation by renters in the 2012 DSM Plan and how the plan is designed to overcome these barriers?

Response IR-10:

The research paper, Low-Income-Renter Demand Side Management in Nova Scotia: Aligning Interests in Energy Conservation, prepared by the Affordable Energy Coalition (please refer to Multeese IR-13) identified the following barriers to participation by renters in demand side management:

- market barriers
- information barriers
- technology barriers
- behavioural barriers
- policy barriers

In addition to this report, a market survey of Low-Income Houses (LIH) program non-participants indicated the following barriers:

- lack of awareness about the program
- skepticism that the upgrades will be installed free of charge
- concerns about privacy
- reluctance to let contractors into their home to install the upgrades

Potential low-income rental pilots in 2011 may inform these issues. Adjustments to program design, with input from the PDWG and the low income sub-committee, will be explored in 2011 to help overcome barriers.

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Program promotional materials will continue to be deployed throughout the province and the program manager will continue to work with the Department of Community Services, Service Nova Scotia and Municipal Relations, and the two Outreach Agents to facilitate participation. Overcoming barriers faced by potential participants continues as the overarching duty of the program Outreach Agents. Outreach Agents also address privacy concerns by assuring potential participants that all information collected is maintained in confidence. The program will continue to emphasize the benefits of the program and the fact that there is no cost to the participant.

NON-CONFIDENTIAL

Request IR-11:

Please provide any working papers and studies with respect to the calculation of savings by Extra Large Industrials?

Response IR-11:

Please refer to Multeese IR-8.

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Request IR-12:

Please provide a breakdown of the savings attributed to past Codes and Standards by each relevant code or standard.

Response IR-12:

Please refer to Multeese IR-6.

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Request IR-13:

Please provide additional detail and any working papers on how the energy and demand savings from codes and standards were calculated, including any benchmarks that were used in the calculation of savings from codes and standards.

Response IR-13:

Please refer to Multeese IR-6.

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Request IR-14:

Are there any measures with a TRC approaching one included in any of the programs and, if so, how was the inclusion of a measure approaching one justified?

Response IR-14:

Yes. There are measures with a TRC approaching one included in some of the programs in the 2012 DSM Plan. Inclusion of a measure approaching one was done based on the following considerations:

- The TRC test does not capture all sources of value that participants realize from a given measure. These sources of value could include improved reliability or comfort. At this time, ENSC has not quantified these other sources of value, but recognizes that these can affect "value" that is not reflected in the TRC calculation.

- Some of the measures within bundles will have marginal administrative costs that are much lower than the allocated administration costs in the 2012 DSM Plan. Allocating administration costs will tend to overstate the program-related costs apportioned to some measures; thus, understating the actual measure-specific TRC.

ENSC will implement its 2012 DSM Plan to maximize savings opportunities; and in certain instances, may include a measure with a TRC less than 1.0 within a bundle of measures, when it is appropriate to do so, such as when the added administrative cost for a measure is low, compared to the other measure(s) in the bundle.

NON-CONFIDENTIAL

Request IR-15:

Did ENSC use a net to gross ratio of more or less than 1.0 to evaluate individual measures or programs with respect to Total Resource Cost of measures or programs?

Response IR-15:

Please refer to EAC IR-43.

NON-CONFIDENTIAL

Request IR-16:

Did ENSC amend the manner in which it evaluates free ridership and spill over in the design of the 2012 DSM Plan Programs and, if so, how has this been done.

Response IR-16:

ENSC has not proposed an amendment to free ridership and spillover evaluation methodology for 2012. ENSC plans to revisit free ridership and spillover methodologies in 2011. Please refer to Multeese IR-12c.

ENSC's consideration of free ridership and spillover in the design of the 2012 DSM Plan is provided in EAC IR-43 as the net-to-gross ratios that were incorporated to determine energy savings.

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Request IR-17:

What criteria were used to evaluate any trade-offs between ENSC's guiding principles of lowest cost and accessibility?

Response IR-17:

Please refer to Avon IR-1d.

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Request IR-18:

On what basis were choices made when establishing budgets for meeting specific targets as opposed to budgets for building capacity for long term success?

Response IR-18:

ENSC subscribes to the view that it is generally reasonable for an organization with a long-term perspective to allocate approximately 5-15% of its budgetary effort to dedicated activities that may not produce cost-effective benefits in the short-term, but that are geared toward generating longer-term value. The precise amount depends on a variety of factors specific to each region.

In ENSC's case, excluding Education & Outreach, which is geared toward supporting short-term savings as well as long-term goals, ENSC is proposing to allocate 6.8% of its budget to long-term purposes. This is the result of a "bottom-up" assessment, prepared by ENSC's consultants, of the minimum effort needed to develop each of the new Enabling Strategies in their first year. Please refer to CA IR-5 for the breakdown by component.

This budgetary effort compares with an estimated 6.3% allocated in 2010. Please refer to page 9 of 2012 DSM Plan Evidence.

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Request IR-19:

What barriers to participation in Commercial and Institutional Programs were identified and what steps were developed for the 2012 DSM Plan to increase participation by non participants?

Response IR-19:

Please refer to CA IR-38.

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Request IR-20:

What is the purpose of including savings from non-administrator programs in the application and how were these savings used in determining administrator based programs and budgets for 2012?

Response IR-20:

Including savings from non-administrator activities is consistent with the 2009 IRP Update's basic assumption that DSM includes energy savings from sources outside of customer funded DSM Programs. Please refer to Avon IR-1a.

While the electricity savings from sources outside of customer funded DSM programs are not in ENSC's direct control, ENSC wants to ensure that expectations of actions to deliver these savings, and the resulting energy savings themselves, are not lost. DSM programs have a major role to play with electricity savings, but not an exclusive role. Codes and standards, for example, also have a role; and, it would not be effective or efficient to use customer funded incentive programs as a substitute for action on new codes and standards.

The reporting of GWh and MW savings from sources outside of customer funded DSM programs (in Figure 5.1 of ENSC's Evidence) contributes to the cumulative energy and demand targets of the IRP.

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Request IR-21:

What is the estimated life span of the savings associated with each of the programs proposed for 2012?

Response IR-21:

The following table lists the average measure effective useful life for each program proposed in the 2012 DSM Plan.

2012 DSM Program	Average Measure Effective Useful Life
Efficient Products	8.5
Existing Houses	16.5
New Houses	20.0
Home Energy Report	1.0
Prescriptive	11.4
Custom	14.0
Small Business Direct Install	12.6

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Request IR-22:

In Section 5.4 of its proposed 2012 Plan, ENSC recites that it has allocated DSM Program costs among rate classes on a preliminary basis according to the methodology approved by the UARB, in its 2010 DSM Plan Decision. Please explain what is meant by referring to this as a "preliminary" allocation.

Response IR-22:

For planning purposes, DSM costs are allocated among rate classes, using forecasts for DSM spending and class customer counts. Final DSM cost allocations are calculated after actual DSM spending and class customer counts are known.

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Request IR-23:

Please provide the spreadsheets contained in Appendix B in operable format, including all formulae, preferably in Excel.

Response IR-23:

Please refer to Attachment 1, filed electronically.

NON-CONFIDENTIAL

Request IR-24:

Please provide and explain each free-rider test or measure ENSC will use to separate out those participants and associated spending and saving that would have participated or occurred, as the case may be, without the DSM program.

Response: IR-24:

For the Commercial & Industrial (C&I) Custom program, free ridership is assessed on a case by case basis through direct customer interaction. By understanding each customer's investment criteria, decision-making processes and long term plans, key account managers have the ability to identify potential free riders early in the delivery cycle.

For C&I Prescriptive programs, ENSC works with customers and equipment distributors to identify measures with limited adoption due to barriers, such as high first cost or lack of familiarity with the technology.

Innovative financing strategies will enhance participation in all sectors by improving customer access to capital.

For programs with higher transaction volumes, free ridership is addressed through program design, eligibility requirements and incentive levels. Examples include:

- an increased EnerGuide rating eligibility threshold for the Residential New Houses program to reflect changes in building code requirements

- the inclusion of incentives for efficient lighting system design in C&I programs to stimulate system optimization in lieu of one-for-one fixture replacement

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- the addition of non-lighting measures in the Small Business Direct Install program to enhance the adoption of refrigeration and control technologies that customers may not otherwise install due to limited awareness and the absence of technical assistance

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Request IR-25:

At p. 14 of the Dunsky report, Appendix C, the consultant opines that "with any diversified business, different products can play different roles in a portfolio approach: some are 'profit centers', generating strong gains on their own at low cost; others may be loss leaders, whose primary purpose is to encourage uptake of higher-return products; and still others may be game-changers, sold at a short-term loss within a longer-term, market-positioning strategy."

a) Please define the terms "profit center," "loss leader," "short term" in the case of a game changer, "longer term" in the case of a market-positioning strategy, and "market-positioning strategy," all in the case of DSM.

b) To the extent a business sells an item at below its short run marginal cost of production, does that action ever satisfy the neo-classical definition of general welfare? Please explain.

c) What is the proper basis for determining the priority of spending by a program administrator on "profit centers," "loss leaders," and "game changers?"

Response IR-25:

a) These terms were used by way of analogy. Keeping with that analogy, in the case of DSM:

- A profit centre is a measure that is particularly cost-effective from the DSM program administrator’s perspective, i.e. a measure that is inexpensive to produce (low $/kWh first-year or lifetime) compared to the value (avoided costs) it produces.

- A loss leader is a measure that is not cost-effective on its own, but whose uptake may enable adoption of other, cost-effective measures. An example might be the direct installation, free of charge, of CFLs during a home energy evaluation, designed to facilitate more home energy evaluations and provide up-front value to participants to encourage follow-up efforts.

- The remaining terms are best defined together: a game-changing measure that could involve a short-term loss for longer-term gain might include, for example, promotion of solar hot water systems that may involve a high first-year cost of energy saved today, but that, within a structured market-positioning strategy, could both support and strengthen the industry in such a way as to enable higher-quality, lower-cost systems in the future.

b) Yes, provided that business is selling the product as part of a market-positioning strategy that accelerates the uptake of other products, leading to common good or "general welfare" through benefits such as economies of scale.

c) The program administrator must use professional judgment and knowledge of the market to apply these strategies with an objective of maximizing the long term benefit/cost ratio of the portfolio.

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Request IR-26:

With regard to market transformation efforts, what if any rules of thumb or other analytic tools are usable to decide whether a loss-leader investment in the short term will produce a positive net present value of efficiency savings over the long term?

Response IR-26:

Please refer to CA IR-25c.

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Request IR-27:

Please provide a copy of or an operational link to a complete copy of the DOE study referenced in footnote 8 of the Dunsky report, Appendix C, on p. 15.

Response IR-27:

Please refer to Multeese IR-27. Please note this is a study published by American Council for an Energy-Efficient Economy (ACEEE).

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Request IR-28:

Please provide a copy of or an operational link to a complete copy of each of the studies referenced at pp. 15-16 of the Dunsky report, Appendix C, regarding NEBs.

Response IR-28:

Please refer to Multeese IR-27.

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Request IR-29:

Regarding Appendix C, the Dunsky report, at p. 16, please explain why the Utility Cost (or Program Administrator) Test is superior to the TRC in providing a threshold for determining cost-effectiveness and/or a ranking of investment options according to cost-effectiveness.

Response IR-29:

Dunsky's report does not state that the Program Administrator Cost (PAC) test is superior to the TRC test. The report does however present the PAC test as an alternative that avoids an important TRC shortcoming.

The TRC often neglects the significant non-energy benefits (NEBs) of measures, including benefits that customers may value ("participant NEBs"), yet accounts for the full cost of those same measures, including all customer contributions. By failing to reflect the full value from the customer's perspective, but accounting for its full cost, the TRC may inadvertently prioritize measures that face greater barriers to entry, and, as a result, require a greater level of effort (e.g. higher incentives). In practice, this can lead to pursuit of more expensive energy savings opportunities and/or to the neglect of lower-cost ones. It is important to note that this problem arises from a technical difficulty in properly assessing measures with significant NEBs, not from a problem with the TRC itself.

The PAC test avoids this problem by taking into account only the public spending needed to implement the energy efficiency measures. In so doing, it implicitly considers participant NEBs. Indeed, measures with high NEBs will typically require less effort (e.g. incentives, marketing, others) per unit of energy savings, all else being equal – a benefit that is reflected in the cost component of the PAC. On the whole, this test adopts more of a "business perspective" in trying to maximize savings for a given level of ratepayer spending.

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Request IR-30:

Regarding Appendix C, the Dunsky report, given the Non-Energy Benefits discussed at pp. 15-16, please explain why the neither the report nor the ENSC filing propose to include Non- Energy Benefits in the TRC.

Response IR-30:

Non-energy benefits (NEBs) are an important factor in consumer decision-making (participant NEBs) and could, or should, be in societal decision-making (societal and utility NEBs). In an ideal world, such NEBs would be fully accounted for in benefit/cost analyses.

In practice, some NEBs can be far more difficult to measure than others, and methodologies to this end may be the subject of considerable debate. For example, the value of water savings that may arise from measures aimed at reducing hot water waste are relatively easy to measure and cost. On the other hand, the value of increased home owner comfort due to improved insulation or air sealing may be more difficult and/or costly to quantify.

Rather than recommending that substantial time and money be put into efforts aimed at quantifying NEBs, Dunsky's report advised ENSC to reconsider the role of the TRC test, notably by raising the level (from individual measures to the annual DSM Plan, as a whole) at which it is used to screen out opportunities, and by considering alternative tests such as the Program Administrator Cost (PAC) test.

ENSC is not opposed to efforts to account for NEBs, and indeed takes them into account when designing its programs. For purposes of its first plan, ENSC chose a prudent response to the Dunsky recommendations, specifically by requesting that the level at which the TRC is used to screen out opportunities be raised (from the measure to the program level), and by adding PAC results to the tables provided to the UARB and stakeholders. In the future, ENSC may consider other approaches to ensuring that NEBs are given appropriate consideration.

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Request IR-31:

Should DSM measures satisfy the requirements of Pareto optimality (no customer in a worse situation as a result of the expenditure, and at least one in a better situation)? If not, why not?

Response IR-31:

In developing its plan, ENSC seeks to strike a reasonable balance between the dual goals of efficiency and equity. ENSC defines efficiency as maximizing returns for Nova Scotia ratepayers and society as a whole, and defines equity as ensuring that individual ratepayers have access to program opportunities and benefits. A reasonable balance means addressing both goals, while recognizing that in practice, neither can be fully satisfied.

ENSC would not seek to meet the strict requirements of “Pareto optimality” if doing so would require sacrificing that balance, at the expense of the considerable economic, social and environmental benefits that lie at the core of ENSC’s mission.

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Request IR-32:

Please define "equity" as that term is used in program design and budget allocation by ENSC. Please include an explanation of whether the definition can be translated into an algorithm or other mathematical representation of factors, such as bill impacts, rate impacts, energy and demand savings, effects on avoided or marginal costs, and the like.

Response IR-32:

ENSC's perspective on equity comprises two considerations:

- appropriate cost allocation among ratepayer classes
- programs designed to facilitate access by a broad array of consumers.

ENSC has not attempted to translate this objective of equity into an algorithm or other mathematical representation.

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Request IR-33:

How should ratepayer money be spent to achieve equity in DSM programming?

Response IR-33:

To contribute to equity, the plan allocates a budget to a variety of programs and strategies designed to facilitate access to programs by a broad array of customers. For example, the Existing Houses program includes an important component designed exclusively to address the unique barriers of low-income consumers. While this component costs more than others on a per unit of energy saved basis, it is important from an equity perspective.

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Request IR-34:

Please provide a copy of the contract between VEIC and the Vermont Public Service Board for performance-based DSM services, as well as any Board order or other documents establishing and applying the performance-based approach.

Response IR-34:

The information is not part of the Evidence being filed by ENSC at this time. Information may be found at the following websites:

- http://psb.vermont.gov/docketsandprojects/eeu/rfpsandcontracts/2009-2011/eeucontract
- http://psb.vermont.gov/docketsandprojects/eeu/7466/orders
- http://www.state.vt.us/psb/eeu.html

ENSC is proposing a stakeholder forum or workshop in the summer or fall of 2011 that would consider options for a performance-based approach. Please refer to Multeese IR-14.

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Request IR-35:

Please identify all other North American jurisdictions besides Vermont in which DSM is provided by a program administrator under a performance-based contract, describing the performance requirements, and referencing sources of documentation for the arrangements.

Response IR-35:

ENSC does not have such comprehensive information about all North American jurisdictions in which DSM is provided by a program administrator, under a performance-based contract. However, performance-based contracts, rules or arrangements are relatively commonplace. For example, as of 2009, the following regions used some form of performance-based approach:

- Arizona
- Colorado
- Connecticut
- Idaho
- Indiana
- Massachusetts
- Minnesota
- Nevada
- New Hampshire
- Ohio
- Oklahoma
- Ontario
- Quebec (gas)
- Rhode Island
- South Dakota

- Texas
- Vermont
- Washington State
- Washington, D.C.

ENSC anticipates that a good starting point for the discussion it proposes would include an assessment of performance-based models currently in use.

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Request IR-36:

In a performance-based approach, how would various "equity" concerns be defined and resolved?

Response IR-36:

ENSC anticipates that equity will be discussed in the process employed to develop a performance-based model in the coming year.

Please refer to Multeese IR-14.

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Request IR-37:

Aside from overall cost-effectiveness of the contractor's DSM energy and demand results at the end of a performance contract period, what if any other standards should a performance based contract contain as a condition of receipt of full payment, of incentives, or of further extensions of the contract?

Response IR-37:

ENSC anticipates these matters will be discussed in the process employed to develop a performance-based model in the coming year.

Please refer to Multeese IR-14.

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Request IR-38:

For each program in the proposed suite of 2012 programs, please list the market barriers or imperfections that impede customers from adopting the program's efficiency measures on their own, and explain how the proposed program overcomes each such barrier and imperfection. For pilots, please list the market barriers or imperfections that impede customers from adopting the program's efficiency measures on their own, and explain how the proposed pilot is intended to overcome each such barrier and imperfection.

Response IR-38:

Please refer to ENSC's Evidence, Section 9, and the 2012 DSM Plan, Appendix A, Section 4. Enabling Strategies serve two purposes: to support ENSC's DSM programs by encouraging increased participation and to promote the longer-term transformation of markets through the increased adoption of energy-efficiency practices.

For each 2012 DSM program, below is a list of potential market barriers and imperfections that may imped customers from adopting the program's efficiency measures.

Efficient Products

- lack of awareness of the program and of energy efficiency measures
- consumer perceptions of quality
- availability of measures
- cost of energy efficiency upgrades
- perception of energy efficiency measures as low quality
- insufficient incentives
- lack of confidence in energy savings
- consumer information
- retail sales force information

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- retail sales force motivation
- safe disposal of CFLs
- lack of awareness about operating costs for second refrigerators and freezers, as well as older units
- inconvenience of removing old units
- cost of disposal
- environmental impact of disposal

The 2012 DSM Plan, Appendix A, Section 2.1 addresses how the proposed program overcomes barriers and imperfections.

Existing Houses

- lack of awareness about the program and energy efficiency measures
- cost of energy efficiency upgrades
- feeling intimidated or overwhelmed with selecting a contractor
- perception of energy efficiency measures as low quality
- insufficient incentives
- lack of availability of measures
- lack of information or confidence in energy savings
- inadequate training of contractors
- perception that customers' homes are already energy efficient
- for renters, hesitancy to invest in products that may stay with the unit when they leave

Existing Houses – Low Income Households

- lack of awareness about the program
- skepticism that the upgrades will be installed free of charge

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- concerns about privacy
- reluctance or hassle to let contractors into their homes or buildings to install the upgrades
- lack of comprehensive participant pool
- potential program participants may be overlooked because they have not applied to the DCS for emergency house repairs, or to SNSMR for heating assistance, or have not been identified by the Outreach Agents
- split incentive for property owners and tenants

Section 8 of ENSC's Evidence and the 2012 DSM Plan, Appendix A, Sections 2.1 and 2.2 address how the proposed program overcomes barriers and imperfections.

New Houses

For builders:

- lack of awareness of the program and of energy efficiency measures
- lack of awareness among builders regarding the technology and building practices that result in a more efficient home
- reluctance to change building practices
- lack of participation by local business associations
- lack of incentive for the building community to participate in the program
- consumer perceptions of quality
- availability of measures
- inadequate or no training
- inability to market homes as energy efficient
- higher initial cost to meet the EnerGuide standard

For homeowners:

- lack of awareness of the program
- perception that new homes are energy efficient
- the incentives offered by the program are insufficient to influence upgrades
- lack of confidence among consumers that the higher initial investment will be recouped in the form of lower energy costs.
- lack of awareness among homeowners regarding energy and non-energy benefits
- lack of awareness among homeowners regarding the technology and building practices that result in a more efficient home

The 2012 DSM Plan, Appendix A, Section 2.3 addresses how the proposed program overcomes each such barrier and imperfection.

Home Energy Report

- lack of awareness about the program and energy efficiency measures
- lack of information or confidence in energy savings
- perception that customers' homes are already energy efficient
- concerns about privacy
- lack of confidence in energy savings
- consumer information
- efficiency is invisible
- most people, when asked if they want to save energy, will say "yes"; often they think they are already doing what they can to be energy efficient
- not knowing what to do, or what to do first
- not knowing where to obtain energy efficient products and services
- perceptions of cost, financial constraints
- doubt regarding the ability to make a significant difference in energy use/cost

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- methodologies to measure savings through behavioural initiatives are not widely known

The 2012 DSM Plan, Appendix A, Section 2.4 addresses how the proposed program overcomes each such barrier and imperfection.

Commercial and Industrial (C&I) Programs

The targeting of C&I customers will be enhanced in two ways. First, key market segments will be identified and the existing financial incentives from relevant programs will be packaged together in bundles tailored to each segment, along with technical and other support services. Under this approach, C&I customers in these market segments will be offered a suite of products and services unique to their industries.

Prescriptive Rebate

- program eligibility requirements
- higher measure first-cost
- lack of time to pursue comprehensive energy analysis
- corporate purchase policies that emphasize first cost, rather than lifecycle cost
- lack of immediate availability of efficient products
- risk aversion to new technologies

The 2012 DSM Plan, Appendix A, Section 3.1 addresses how the proposed program overcomes barriers and imperfections.

Custom

- resistance to new practices and technologies
- reluctance by owners to accept increased first-year costs for efficient options

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- a tendency to overdesign individual systems for worst-case conditions rather than leveraging the efficiency of an integrated system for expected conditions
- risk aversion to new designs and technologies
- higher first cost
- lack of awareness regarding energy and non-energy benefits
- corporate purchase policies that emphasize first cost, rather than lifecycle cost

The 2012 DSM Plan, Appendix A, Section 3.2 addresses how the proposed program overcomes barriers and imperfections.

Small Business Direct Install

- lack of additional recommended measures
- lack of financing
- lack of information
- perceptions of quality
- lack of funds and cash flow to invest in energy efficiency improvements
- lack of time to pursue energy analysis
- lack of awareness regarding energy and non-energy benefits
- risk aversion to new technologies

The 2012 DSM Plan, Appendix A, Section 3.3 addresses how the proposed program overcomes barriers and imperfections.

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Request IR-39:

With regard to upcoming low-income programs, please explain why details "of owner contributions will be developed in 2012 or before." Appendix A, page 11. Why is the internal deadline for development of such pilots not in 2011?

Response IR-39:

Program development activities will begin in 2011 following approval of the 2012 DSM Plan.

Request IR-40:

Please provide a break-out of the information relevant to residential customers in Appendix A, Figure 5.1, between low-income and non-low-income participants.

Response IR-40:

Please refer to the table below.

The Efficient Products and Home Energy Report programs may include participation by low-income customers; however, no specific projection of participation by low-income customers is provided since that estimate was not made.

2012 DSM Plan Savings and Investment – Residential DSM Programs Only

	2012 Investment ($ million)	Lifetime Benefits ($ million)[a]	Incremental Annual Net Energy Savings at Generator (GWh)	Incremental Annual Net Demand Savings Generator (MW)	Total Resource Cost Test (TRC)[b]	Program Administrator Cost Test (PAC)[c]
RESIDENTIAL DSM PROGRAMS						
Efficient Products[d]	4.0	13.3	17.4	2.6	1.9	3.3
Existing Houses (non-low-income)	5.8	18.3	10.3	3.2	2.1	3.1
Existing Houses (low-income)	3.9	6.0	3.8	1.0	1.5	1.5
New Houses	4.3	10.0	5.6	1.5	1.5	2.3
Home Energy Report[d]	0.9	1.3	13.0	3.0	1.5	1.5

Currency is expressed in 2012 dollars. Numbers may not sum exactly due to rounding.

a) Lifetime benefits are expressed as the net present value of the avoided costs, including energy and capacity, over the life of the program measures.

b) TRC is a benefit/cost ratio comparing lifetime benefits to the sum of ENSC's and participants' costs.

c) PAC is a benefit/cost ratio comparing lifetime benefits to ENSC's costs.

d) This includes participation by low-income households.

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Request IR-41:

For the following types of measures and types of residential customers, please indicate all the market barriers or imperfections that impede such customers' investment in such measures:

a) **low-income tenants who pay the associated energy bills -- weatherization measures (beyond do-it-yourself weatherstripping or sealing), measures with greater than a 1 year payback.**

b) **low-income tenants who pay the associated energy bills -- lighting and small (or portable) appliance measures, do-it-yourself weatherization or sealing, measures with a 1 year payback or less.**

c) **low-income home-owners -- weatherization measures (beyond do-it-yourself weatherstripping or sealing), measures with greater than a 1 year payback.**

d) **low-income home-owners -- lighting and small (or portable) appliance measures, do-it-yourself weatherization or sealing, measures with a 1 year payback or less.**

e) **tenants with modest incomes (but above low--income) who pay the associated energy bills -- weatherization measures (beyond do-it-yourself weatherstripping or sealing), measures with greater than a 1 year payback.**

f) **tenants with modest incomes (but above low--income) who pay the associated energy bills -- lighting and small (or portable) appliance measures, do-it9 yourself weatherization or sealing, measures with a 1 year payback or less.**

g) **homeowners with modest incomes (above low-income) -- weatherization measures (beyond do-it-yourself weatherstripping or sealing), measures with**

greater than a 1 year payback.

h) **homeowners with modest incomes (above low-income) -- lighting and small (or portable) appliance measures, do-it-yourself weatherization or sealing, measures with a 1 year payback or less.**

Response IR-41:

The following is a list of possible market barriers or imperfections that may impede investment in either short-term or long-term measures by tenants or homeowners, whether low-income or modest income.

Measure > 1 or < 1 year payback	Low-income tenants who pay energy bills	Low-income homeowners	Tenants with modest incomes	Homeowners with modest incomes
lack of program awareness	✓	✓	✓	✓
skepticism about free upgrades	✓	✓	✓	✓
privacy concerns	✓	✓	✓	✓
reluctance to let contractors into home	✓	✓	✓	✓
split incentive for property owners and tenants	✓		✓	

Please refer to CA IR-38.

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Request IR-42:

Please provide a breakout of the participants in the 2009 and 2010 programs by

a) at least three bands of income,

b) whether tenant or homeowner who pays the relevant energy bills, and

c) those unable to take on additional debt to pay for efficiency measures.

Response IR-42:

a) By design, the Administrator did not obtain household income data because of confidentiality reasons. A third party assesses household income and identifies qualified participants.

b) This data was not obtained.

c) Please refer to part a.

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Request IR-43:

With respect to Appendix A, Section 4.3, is it fair to say that objective of the innovative financing strategy is not merely to develop innovative financing that will increase participation in DSM programs, but also to develop innovative financing that will increase customer choice of energy efficiency measures they do not now choose in existing markets?

Response IR-43:

Yes.

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Request IR-44:

With regard to Appendix C, the Dunsky report, please provide the spreadsheet data used to develop the chart of illustrative alternative funding paths, 1.N.S., at p. 4.

Response IR-44:

Illustrative Alternative Funding Paths

Year	Incremental Achievable Potential Energy Savings (GWh)	Total Demand (NSR GWh)	Non-ELI Demand (GWh)	Savings (% eligible demand)
2008	21	12,539	10,186	0.21
2009	50	12,478	10,137	0.49
2010	83	12,547	10,193	0.81
2011	146	12,615	10,248	1.42
2012	205	12,725	10,338	1.98
2013	305	12,821	10,415	2.93
2014	276	12,918	10,494	2.63
2015	276	13,008	10,567	2.61
2016	276	13,082	10,628	2.60
2017	268	13,156	10,688	2.51
2018	261	13,241	10,757	2.43
2019	255	13,326	10,826	2.36
2020	249	13,400	10,886	2.29
2021	243	13,468	10,941	2.22
2022	238	13,545	11,004	2.16
2023	233	13,617	11,062	2.11
2024	229	13,686	11,118	2.06
2025	225	13,748	11,169	2.01
2026	221	13,814	11,222	1.97
2027	217	13,879	11,275	1.92
2028	214	13,944	11,328	1.89
2029	211	14,008	11,380	1.85
2030	209	14,072	11,432	1.83
2031	206	14,136	11,484	1.79

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ELI Current Share (kWh)	
Total	11,420,749,965
ELI 2P-RTP	1,946,892,480
Mersey System	178,920,000
GRLF	16,976,046
ELI Total	13,563,538,491
ELI current % of total	**18.76%**

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Request IR-45:

Please provide a list of all on-bill-financing programs considered by Dunsky in the development of its report, Appendix C, with references or links to information about them to the extent available.

Response IR-45:

Dunsky's report considered a number of programs that make use of on-bill financing solutions for the purposes of promoting end-use efficiency, including those listed below:

- Manitoba Hydro: http://www.hydro.mb.ca/your_home/residential_loan.shtml
- Efficiency New Brunswick: http://www.efficiencynb.ca/residential/existinghomes.html
- Many U.S. towns and cities: Property-Assessed Clean Energy programs, including: notably, those in Berkeley, Palm Desert, Sonoma County and Boulder, Colorado

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Request IR-46:

With regard to Appendix C, the Dunsky report, p. 44, please explain all factors that have limited low-income retrofit program participation to the percentages of eligible customers noted, i.e. 1%-3% of the eligible population per year, and as many as 4%-8% of eligible households/year in leading jurisdictions.

Response IR-46:

Factors that may limit participation in the low-income program include:

- difficulty obtaining eligible participants
- challenges in raising market awareness
- reluctance of some (such as the elderly) to participate
- reluctance to let contractors into their homes to install upgrades
- split landlord/tenant incentives
- skepticism around free upgrades
- concerns about privacy

This list indicates of the types of factors that may limit participation and should not be construed as representing "all" such factors.

Please refer to Multeese IR-13.

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Request IR-47:

Please provide a list of all transferable financing programs considered by Dunsky in the development of its report, Appendix C, with references or links to information about them to the extent available.

Response IR-47:

Please refer to CA IR-45.

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Request IR-48:

With regard to the fuel substitution pilot, described at Appendix D, p. 12, would installation of furnaces in electric-baseboard-heated homes be a potential candidate for transferable financing? Why?

Response IR-48:

The installation of natural gas or wood/pellet furnaces and boilers is included in the fuel substitution pilot. ENSC is currently in the process of developing its financing strategy. Financing solutions at the program or measure level are yet to be determined.

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Request IR-49:

With regard to the fuel substitution pilot, described at Appendix D, p. 21, please provide the basis for the assumptions that 80% of those who responded that they would definitely convert their heating system away from electricity would do so, and that 20% of those who responded that they would probably convert their systems would in fact do so.

Response IR-49:

The assumption that roughly 80 percent of "definite" respondents and 20 percent of "probable" respondents will complete the action is an industry estimate that is commonly used by market research firms to assist in interpreting survey results.

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Request IR-50:

With respect to the fuel substitution pilot, described in Appendix D, charts 13 and 14 (incentive levels), the report appears to show that all but three of the measures are proposed to have incentives of 20% or greater (one of the three would have an incentive of 19%), and that except for one measure, the customer's simple payback after application of the incentive at least 4 years, and ranges from 4 years to 18 years. To what extent will the 4 plus years before payback create a market barrier that will prevent customers from participating? What factors would tend to mitigate that market barrier for some residential customers (e.g. high environmental motivation, high income, etc.)?

Response IR-50:

A wide array of factors may affect participation, including: capital cost; payback period; lifetime savings; non-energy benefits, such as increased comfort, health and safety or environmental motivations; perceptions about technological risk, risk of future fuel price fluctuations and market valuation; and others. An objective of the pilot is to gain a greater understanding of barriers to participation.

Factors such as comfort, anticipated rising energy costs, available incentives, environmental benefits and anticipated long system life may tend to mitigate barriers.

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Request IR-51:

What is the average maximum payback period for residential customers to invest in energy efficiency measures?

Response IR-51:

ESNC has not determined the average maximum payback period for residential customers to invest in energy efficiency measures.

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Request IR-52:

Does ENSC agree that success in achieving energy efficiency is not the defined by the level of the budget of ENSC? What constitutes success for ENSC in its electric DSM programming?

Response IR-52:

Yes. Success for ENSC is to effectively fulfill its mandate as the administrator of electricity DSM programming in Nova Scotia. The mandate, as set out in legislation, requires ENSC to design and administer electricity demand-side management programs with a view to restraining future electricity demand and use in the province.

The view to restraining future electricity demand and use in the province is designed into ENSC's DSM Plan and is guided by Nova Scotia's electricity Integrated Resource Plan (IRP). Success, in design, is the development of a DSM Plan that is supported by stakeholders and approved by the UARB. Success, in administration, is the implementation of the approved DSM Plan that results in evaluated and verified savings that meet the overall targets of the DSM Plan, at or below the budget approved by the UARB.

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Request IR-53:

Please identify any recommendation made by Dunsky in its report, Appendix B, that has not been adopted by ENSC, and explain why such recommendation has not been adopted.

Response IR-53:

ENSC is generally supportive of the recommendations put forward in Dunsky's report, Appendix C, entitled "Electricity Demand Side Management (DSM) Review". Several of the recommendations concern broad subjects, such as the application of TRC, advancement toward a performance-based model and the role of program and non-program activities in meeting provincial DSM targets. ENSC has put forward its position on these recommendations in the 2012 DSM Plan filing.

Other recommendations aimed at near-term (2011-2013) program modifications are currently under consideration.

Longer term (2014-2030) program recommendations will be the subject of future considerations.

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Request IR-54:

Please provide the Non-participants' or Rate Impact Measure results for all programs proposed for the 2012 program year.

Response IR-54:

The following figure shows the Rate Impact Measure test for the 2012 DSM Plan.

2012 DSM Plan	**Rate Impact Measure Test (RIM)**
Efficient Products	0.65
Existing Houses	0.67
New Houses	0.79
Home Energy Report	0.55
Residential Subtotal	*0.68*
Prescriptive	1.22
Custom	1.52
Small Business Direct Install	0.94
Commercial & Industrial Subtotal	*1.28*
Total	**0.94**

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Request IR-55:

Please describe (in absolute or relevant terms) the different cost or savings impacts of DSM programming in the short term and in the long term on three types of residential customers:

a) those who can and do participate and achieve a high level of savings (e.g. whole house treatment, including insulation, lighting, and appliances, etc.),

b) those who can and do participate and can only achieve a low level of savings (e.g., efficient products only), and

c) those who cannot or do not participate in any DSM program and achieve no direct savings from program participation.

For the short term, please choose the period of time comfortably before the customer achieves simple payback. For the long term, please choose a period comfortably beyond the achievement of simple payback, up to the typical useful life of the measures. Please describe and explain the term or period chosen. Please distinguish the impacts in these scenarios with as much specificity as possible, and describe the considerations that would require adjustment in the absolute or relative values described, given variances in customer savings opportunities, copayments, and rates within the more general categories identified in this question.

Response IR-55:

ENSC does not have the data required to quantify these scenarios. A qualitative discussion is provided below:

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a) High-savings participants: These participants may incur upfront capital costs to finance some of the adopted measures (unless financing solutions are offered), and would be expected to recover those costs over time (recovery periods vary greatly by measure and, indeed, each participant's usage patterns). These participants may receive non-energy benefits, such as increased comfort. Given the portfolio of programs, high-savings participants will come from all economic classes, including low-income (who would not incur upfront capital costs, given the program design is tailored to their needs).

b) Moderate-savings participants: These participants may incur costs for the purchase of certain products or appliances, and would also expect to recover those costs through reduced energy bills over time. These participants may also receive non-energy benefits. Given the portfolio of programs, moderate-savings participants will also cut across all economic classes, including low-income.

c) Non-participants: These consumers would not benefit from direct energy savings, but would benefit, in the short- and long-term, from societal benefits, such as reduced emissions from electricity generation and macro-economic benefits, including net job creation and the electric utility's avoided costs. In the long run, all customers will benefit from environmental and macro-economic benefits.