

DSM INCENTIVE, PAYBACK & NET PRESENT VALUE CALCULATIONS

DSM initiatives range from simple bulb replacements, appliance removals, rebates on new appliances to complicated residential, commercial and institutional retrofits, as well as programs to reduce energy for newly constructed structures, to name only some of the programs.

Different DSM initiatives have differing capital costs, program administration costs, and widely diverging life expectancies.

The below chart summarizes some of the items that could be considered for building level DSM programs :

Expected Lifespan of Investment - DSM initiatives	
Typical Examples	
Item	Years
Building Envelope	
Exterior Wall Insulation	50-80
Windows	50
Mechanical Equipment	
High efficiency Pumps	5 to 10
Insulated electric resistance hot water heater tank	5 to 7
Geothermal system - well system	100+ ?
Geothermal heat pump	15 to 30
Heat Pumps - exterior type condenser units	10 to 15
ERV/HRV Units - heat / energy recovery	20-30+ years
Lighting	
LED Bulb – 10,000 hour rated life, 24/7 operation	approx 1.5
LED Bulb – 50,000 hour rated life – 24/7 operation	approx 5
Other Electrical	
PV Solar Panel – Guaranteed 85% output at year 25	30 to 40+
Major appliance - washer, dishwasher, refrigerator	6
<i>stated design life of major appliance manufacturers</i>	

1. Should a DSM initiative that can be shown to have a longer term life be awarded an incentive that is proportionate to its anticipated lifespan? For example, should a LED bulb put in service with a lifespan of one to two years receive the same incentive as a better insulated wall with greater thermal resistance to heat loss that is expected to last 80 years ?
2. Please comment on the pros and cons of using a lifecycle approach to DSM benefits and incentive calculations. As part of this, please comment on using a multi-year savings approach that reflects the anticipated lifespan of the initiative versus Year 1 anticipated savings method.

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2 **ENERGY SAVING VS. SELF GENERATION - DISTINCTIONS**

- 3 1. Is a program distinction made between energy saving and energy self-generation pertaining to
4 the installation of renewable energy equipment ? As both efforts serve to assist DSM efforts,
5 please provide the rationale for the distinction.
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7 2. If so, is there a sub distinction made between different types of renewable energy sources and
8 equipment such as air source heat pump vs. ground source vs. solar PV. All extract energy from
9 the surrounding environment – be it air, ground or sun.
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11 3. If there are distinctions made between these different types of renewable energy sources for
12 DSM calculations and incentives, please provide an explanation for the rationale.
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2 **BASELINES USED FOR DSM BENEFITS, SAVINGS & INCENTIVES**

- 3 1. Regarding new construction projects, given that building code and energy code requirements
4 continue to improve almost annually, what is the normal baseline used for modelling new
5 construction incentives?
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7 2. Does the baseline vary from the applicable National Building Code and/or National Energy Code
8 and/or Nova Scotia Building Code requirements? If so, why is the baseline higher than the code
9 threshold imposed on the project by the Authority Having Jurisdiction ["AHJ"]?
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11 3. Regarding #2 above, if there is a spread between the permitting requirement by the AHJ and the
12 baseline, why does the project proponent not receive an incentive for this amount? Does this
13 not underestimate DSM benefits achieved by Efficiency NS ? As well, would it not shortchange
14 proponents, actually causing a disincentive for project proponents to pursue DSM initiatives ?
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2 **ENERGY STORAGE :**

3 To what degree have energy load shifting technologies been investigated and analyzed as an alternative
4 method of limiting Nova Scotia's peak energy load as a demand side management strategy to create
5 systemwide annual savings as compared to the instantaneous energy use approach regarding creation
6 and calculation of demand side management incentives ?

- 7 1. Please differentiate between energy storage technology approaches that could be used as
8 alternatives using the following three general categories, developed with a simplistic breakdown
9 based on the technology's maturity of development :

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11 i. High technology – e.g., Battery energy storage
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13 ii. Medium technology – e.g., Phase Change Materials, underground borehole thermal energy
14 storage [BTES] etc
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16 iii. Low Technology – e.g., Simple mass and volume based thermal storage – concrete floor
17 radiant floor heating, hot and cold water storage in tanks, thermal brick energy storage, etc.
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- 20 2. Please comment on costs and benefits of both diurnal [i.e., daily] and seasonal energy storage
21 systems and compare to the current instantaneous energy load DSM approach.
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- 23 3. Is there an argument to be made that DSM incentives should or must be developed to support
24 diurnal and seasonal load shifting method and technologies as a DSM approach ?
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DSM PROGRAMS FOR AFFORDABLE HOUSING & LOW INCOME HOUSING PROVIDERS :

The requirements of the Affordable Multiple Family Housing programs could be said to be very onerous relating to allowable rental levels, and the commitment for essentially a contractual self imposed rent control. This is in an inflationary period not seen for the last 50 years in Canada. Whilst other non-electricity costs such as water, property taxes, insurance, etc. continue to skyrocket, rental housing providers must commit to lower than CPI increases. Even with the Nova Scotia Rental Cap program in place, residential landlords are allowed to roll new leases to market rates to soften the blow of other non-electric operating costs that are often increasing at rates of that are multiple factors of the program restriction levels.

1. Please provide the rationale and justification for the existing program requirements regarding rent increase restrictions in today's hyper inflationary environment.
2. Could the program eligibility be expanded to use an alternative criteria such as "participation in a CMHC National Housing Strategy affordable housing program and/or participation in a Housing Nova Scotia affordable housing program" as prerequisites as an alternative to the existing prerequisites to broaden eligibility while still serving to encourage energy efficiency measures for affordable housing, albeit with a broader definition of affordable housing ?
3. With the Province having intervened heavily to limit rental increases in the last two years, what is the rationale and the benefit for the program wading into rent control measures in any event, given that energy costs still only represent a small fraction of total property operating costs?
4. Using the CMHC definition of affordable housing, is the additional level of rent control required under the program limiting program uptake amongst affordable housing providers ?
5. Has an analysis been done to determine if the drastic restrictions in rental rates required by the AMH program will only serve to cause a further deterioration in the quality of Nova Scotia's rental housing stock, as rental housing providers simply cannot afford to properly maintain the properties given the following :
 - i. The highest CPI figures in Canada and Nova Scotia for approximately fifty years;
 - ii. Restrictions on rent increases at well below CPI;
 - iii. Operating cost increase well over CPI