# RE: Energy Savings Cost Avoidance

**From:** "Drabinova, Lucie (MOI)" <"/o=govon/ou=exchange administrative group (fydibohf23spdlt)/cn=recipients/cn=user4935213c">
**To:** "Ue, Allison (TBS)" <allison.ue@ontario.ca>
**Cc:** "Allan, Maggie (MOI)" <maggie.allan@ontario.ca>, "Miu, Gladys (TBS)" <gladys.miu@ontario.ca>, "Devereux, Clare (TBS)" <clare.devereux@ontario.ca>, "Flanagan, Graham (TBS)" <graham.flanagan@ontario.ca>, "Weinert, Bruce (MOI)" <bruce.weinert@ontario.ca>
**Date:** Thu, 30 Mar 2017 18:24:09 -0400

Hi Allison,
Here are responses to your questions:

The historical savings seems to be constant, even though electricity prices have gone up over the last 4 years. What is the reason for this?
Historical average 'all-in' electricity rates were taken into account when estimating savings. In the graphic, the increase in rates is blended with the incremental consumption savings, so the individual effects of increase rates upwards and discrete savings downwards are less visible and dampened in the graph.

For years 2012 - 16, the straight line utility savings are illustrative only. The graphic is designed to only show that cost avoidance continues beyond 2012.

- What is the electricity price assumption built into the savings projection? In 2004, all-in electricity rates started at 7 ¢/kWh and increased to 11¢/kWh by 2012. Because MOI has large and small electricity consumer accounts (on different rates), and reside in over 50 distribution utilities all with differing rate structures, an estimated, blended provincial rate was applied.

- Does that align with what MOECC/Energy is tracking? Estimated rates were used based on actual provincial building invoices – i.e. using the total electricity costs and dividing by total electricity consumption. IO also sourced rates available from Ministry of Energy, IESO, and Toronto Hydro to validate IO's calculations/estimates.

- How many years are we looking at for the cost reduction for energy and repair and maintenance? The lifecycle assessment was based on blending individual lifecycles of each piece of equipment in both the $110M and $300M analyses. The $110M in project funding would be invested over 2 years and would create savings that persist until 2042 (24 years), and the $300M in project funding, invested over 10 years, would create savings that persist until 2050 (32 years).

- What are some key energy investments that helped achieve the estimated cost avoidance of $56M on slide 2?
Cost avoidance came from both:
1. capital repair replacements (end-of-life) and
2. energy funded projects

With end-of-life replacements, minimum energy efficient standards were drafted for every replacement. IO was able to target specific end-of-life projects from the capital repair fund to ensure standards were met. E.g. chillers must use 0.7 kW/ton (vs. 1 kW/ton).

Energy specific projects were of a variety of types. The majority of energy retrofits were from

these replacements or initiatives

- lighting (fixtures and automation),
- chillers,
- Air Handling Units,
- Variable speed pumps, fans, drives
- Building Automation System upgrades
- Cogeneration (Combined Heat and Power)

- Are there other scalable options for the GHG investments on slide 3? It would be good to show different investment options and associated cost reductions for energy and repairs and maintenance. Is there an optimal level of investment to achieve a good return (in this case, cost reductions)?
  The original objective was to determine the capital investment necessary to provide GHG savings though building operations that IO believes will secure 2020 (110M) and 2030 (300M) GHG target achievement for MOI. The capital investments were to be from pending building component replacements slated to occur in the next 10 years.

  As a result of this due diligence, IO, with CBRE and WSP (third party verifier), identified 2,000 projects planned for the next 10-years, carrying an estimated total capital investment opportunity of approximately $900M with an estimated GHG reduction potential of 78,600 tonnes of carbon dioxide equivalent (tCO2e) per year. All 2,000 projects were then ranked for their GHG saving potential, cost reduction potential, and for their potential impact on our FCI average for the portfolio. This multi-variable ranking exercise was designed to develop customizable project lists that would help achieve multiple government objectives Each of these three project aspects were given a weighting factor, with GHG savings being 60% of the weighting, cost reduction representing 20%, and FCI effect the final 20%. Based on these weightings, IO has identified $110M or $300M in capital need to deliver projects with adequate GHG savings potential to meet the 2020 and 2030 GHG targets, respectably.

  IO's tool is set up to allow for the weightings to be adjusted. So in response to the above question, if cost reduction is to take on a higher weighting and either GHG savings or FCI effects were to take on a lower weighting, then corresponding recalibration can be carried out quickly to generate a new ranked project list that would put more (or all) emphasis on cost reductions (currently just a 20% weighting factor) and/or then in turn determine an optimal cut off from an investment ROI perspective. There would be a corresponding decrease in potential GHG savings for an equivalent investment, however, if the GHG potential weighting were to be decreased.

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**From:** Ue, Allison (TBS)
**Sent:** March-17-17 6:04 PM
**To:** Weinert, Bruce (MOI)
**Cc:** Allan, Maggie (MOI); Drabinova, Lucie (MOI); Miu, Gladys (TBS); Devereux, Clare (TBS); Flanagan, Graham (TBS)
**Subject:** RE: Energy Savings Cost Avoidance

Hi Bruce

Thanks for sharing this! The data on historical energy investments is quite interesting. We wanted to make sure that we understood the slides, so we wanted to ask a few questions.

- The historical savings seems to be constant, even though electricity prices have gone up over the last 4 years. What is the reason for this?
- What is the electricity price assumption built into the savings projection? Does that align with what MOECC/Energy is tracking?

- How many years are we looking at for the cost reduction for energy and repair and maintenance?
- What are some key energy investments that helped achieve the estimated cost avoidance of $56M on slide 2?
- Are there other scalable options for the GHG investments on slide 3? It would be good to show different investment options and associated cost reductions for energy and repairs and maintenance. Is there an optimal level of investment to achieve a good return (in this case, cost reductions)?

Have a good weekend.

Allison

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**From:** Weinert, Bruce (MOI)
**Sent:** March-10-17 4:58 PM
**To:** Miu, Gladys (TBS); Ue, Allison (TBS)
**Cc:** Allan, Maggie (MOI); Drabinova, Lucie (MOI)
**Subject:** Energy Savings Cost Avoidance

Gladys and Allison

We had be requested by our MO to work up some material in reference to utility cost avoidance (and some additional figures) achieved by previous funds spent in the portfolio. It has come to our attention that our MO spoke with and shared the attached with your MO. There is additional asks from that meeting which we are working on now for end of next week. However wanted you to have copy in case you were asked.

Have a good weekend.

Bruce J Weinert
Manager, Portfolio Performance
Realty Division, MOI