

# PY2021 EM&V Key Findings and Recommendations 2021-2024 CDMF Retrofit Program

No.	KEY FINDINGS	2021 EM&V RECOMMENDATIONS	IMPACT	IESO RESPONSE
1.	<p>New horticultural lighting measures were installed in eight facilities and generated 30% of the total program verified net first year energy savings. The average energy savings per facility was 2,109 MWh. The average energy realization rate is 128% for the seven projects evaluated. While a sample of seven projects is not sufficient to support a finding, the verified annual hours of use were generally higher than the deemed values and the conservation case wattages were generally lower than the deemed values. Across the 7 sample projects the weighted average annual hours of use were found to be 106% of deemed values, base case wattages were found to be 99% of deemed base wattages and efficiency case wattages were found to be 83% of deemed values. The differences between deemed and verified annual hours of use and efficiency wattages are therefore the main drivers of the high realization rates.</p>	<p>Regularly review horticultural baseline case, conservation case and operational assumptions to determine if measure assumptions are appropriate.</p> <p>Continue research into the horticulture lighting market to assess the need for additional measures and what the current market baselines are for existing measures. This is particularly relevant to the Inter-Lighting LED Grow Light Fixture as it gains popularity.</p>	High	<p>The IESO is currently exploring options for providing dedicated support to the horticultural sector, including the addition of new measures. The IESO will re-evaluate measure assumptions, incentives and incentive caps on a bi-annual basis and will make changes if appropriate</p>
	<p>Furthermore, the deemed base case wattage used in the largest project is based on an assumption that ten T8 fluorescents "provides the equivalent brightness at the same distance away from the vertical growing surface as one EE fixture". This assumption 1) is difficult to verify and 2) creates a large amount of savings per unit which could be quickly adopted as the market baseline in the near future.</p>			
	<p>There are also currently only three available prescriptive horticultural measures which may limit applicants' ability to select suitable matches for the projects/measures they would like to implement.</p>			

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2.	<p>The evaluation team compared the average verified Hour of Use (HOU) estimates from the impact sample projects to the Measure and Assumption List (MAL) deemed HOU values. The deemed HOU for Other Commercial Buildings was the only value that fell outside of the error bounds of the verified HOU estimate. This lighting category was used for 51% of measures in the population. The average verified HOU values was found to be 4,000 hours whereas the deemed HOU value is 2,857 hours. The precision of the verified estimate is 12% at the 90% confidence level. The error bounds of the verified estimate range from 3,518 to 4,483 hours.</p>	<p>Consider updating the HOU assumption for the Other Commercial Buildings end use after discussions with the program team regarding the makeup of the PY2021 population and sample and how representative that may be of the future program populations. One possible update could be to create additional lighting end use categories so fewer projects use the "Other Commercial Buildings" category and instead use a category that is more aligned with the business type and assumed annual hours of use.</p>	Low	<p>The IESO is currently looking into the potential to break down the "Lighting Other Commercial Buildings" Load Profile. A decision has not been made on whether to change the deemed HOU or to break down the load profile further. We will explore both options to inform the decision.</p>
3.	<p>The evaluation team compared the average verified base case wattage estimates from the impact sample projects to the MAL deemed values. The deemed wattage for the "400W Probe Start Metal Halide" base case fell outside of the error bounds of the average verified wattage. This base case was used for 12% of measures in the population. The average verified base case wattage was found to be 353 watts whereas the deemed base case value is 458 watts. The precision of the verified estimate is 8% at the 90% confidence level. The error bounds of the verified estimate range from 326 watts to 379 watts.</p>	<p>Update the base case wattage assumption for the 400W Probe Start Metal Halide base case to 353 watts.</p>	Low	<p>The updated 2022 MAL has already addressed this recommendation. The baseline wattage has been updated to 367W to include a baseline mix of 400W HID and T8HO. Further updates as part of EM&amp;V's Lighting Baseline Study report will be incorporated into the 2023 MAL in Q1 of 2023.</p>
4.	<p>The evaluation team compared the average verified base case wattage estimates from the impact sample projects to the MAL deemed values. The deemed wattage for the 2' x 4' LED troffer / 4' LED linear ambient fixture (&gt;= 3000 Lumens) conservation case fell outside of the error bounds of the average verified wattage. This base case was used for 28% of measures in the population. The average verified efficient case wattage was found to be 44 watts whereas the deemed efficient case value is 55 watts. The precision of the verified estimate is 8% at the 90% confidence level. The error bounds of the verified estimate range from 41 watts to 47 watts.</p>	<p>Update the base case wattage assumption for the 2' x 4' LED troffer / 4' LED linear ambient fixture (&gt;= 3000 Lumens) conservation case to 44 watts.</p>	Low	<p>EE wattages will be reviewed during the next round of MAL updates based on the non-weighted average of all DLC troffers meeting the measure category requirements.</p>

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5.	<p><b>There is an opportunity to assist some participants in completing additional work through the program.</b> Only about one-tenth (13%) of participants reported installing additional efficient equipment following their participation in the program. Of these participants, only 10% stated that it was recommended to them by a Save on Energy representative at the time of their participation in the program. When asked why they made these additional upgrades without the assistance of the program, participants most frequently mentioned that the energy or monetary savings justified the additional cost (35%). This suggests an opportunity for contractors to help customers maximize the work that can be completed at the time of participation where it is feasible for them to do so.</p>	<p>Provide training and support to contractors to ensure they raise customer awareness of all relevant program-eligible equipment and help them complete as much work as possible at the time of their participation in the program.</p>	High	<p>The IESO will continue to support contractors in order to promote the program and other offerings.</p>

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6.	<p><b>A desire for additional training exists among applicant representatives and contractors.</b> The most-requested training and education topics mentioned by applicant representatives and contractors were program rules and application process (mentioned by 34% of applicant representatives and contractors), direction on receiving application support (34%), program offerings (33%). IESO program staff and delivery vendor staff indicated that the training webinars about program processes and changes were well-received by attendees, which included applicant representatives, contractors, and customers.</p>	<p>Ensure that trainings cover topics that are of most interest to the applicant representatives and contractors and that provide them with the knowledge they need to effectively support the program. Key training topics to consider include the program rules and application process, direction on receiving application support, and program offerings.</p> <p>Expand promotion of training and education events to raise awareness and ensure as many applicant representatives and contractors participate in them as possible.</p>	Medium	<p>In June 2022, our Retrofit Support Services vendor delivered two province-wide webinars, one concerning the pre-project submission and the other about post-submission. Both demonstrated how to complete these processes in the portal. These webinars were recorded and are available on our YouTube channel via the <a href="#">Retrofit Resources</a> page, and have been shared via the SOE Business newsletter. Examples of project documents have also been added to this Resources page. In addition, the IESO currently offers capability building initiatives through the Save on Energy website under the Training and Support section.</p> <p>Regional providers have organized events in 2022 as well; for example, a webinar on IF and 2021-2024 post-processes, and another on the Spring changes. In addition, one regional provider is hosting a closed interactive post-project workshop in August. This will be a detailed walk-through of the process, and attendees can choose to submit their work in real-time.</p> <p>Our vendors provide us regular market feedback and we use that to develop training and resources. As an aside, we have received feedback from the market via RSPs that it would be valuable to hold M&amp;V-related webinars as the IF winds down and projects are completed.</p>

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7.	<p><b>Expanding measure offerings would likely increase satisfaction with the shift to prescriptive-only approach.</b></p> <p>Over one-half of participants (52%) said that the shift to the prescriptive-only approach did not have an impact on their participation. However, IESO program staff and delivery vendor staff indicated that customer satisfaction with the available equipment could be improved, noting that industrial customers and those with more complex projects have been most impacted by the shift. Applicant representatives and contractors demonstrated relatively low satisfaction with the number and types of equipment offered through the program (53% were satisfied or very satisfied) and most often recommended additional lighting types, building automation, and heat pumps. Participants most commonly recommend additional HVAC measures, lighting controls, building envelope materials, and lighting. Delivery vendor staff indicated that the new process that allows for measure recommendations to be submitted online has been well-received but that it can be onerous or confusing for some customers and contractors to fill out.</p>	<p>Gather feedback on measure suggestions and support needs specifically from customer segments that may have been most impacted by the shift to the prescriptive-only approach to better understand market needs.</p> <p>Further promote the availability of the online form to submit new program measure recommendations and identify ways in which to simplify the form to make it easier to fill out.</p>	Medium	<p>The IESO will continue to refine the process for submitting measure recommendations online, and will explore options to further promote this process.</p> <p>The team will also explore additional ways to address the needs of impacted customer segments and support complex projects, through program enhancements planned for 2023.</p>

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8.	<p><b>More marketing and outreach opportunities exist.</b> IESO staff and delivery vendor staff reported using a wide array of marketing and outreach activities in support of the program in PY2021 including webinars where information was shared about the program, the Save on Energy website, program announcements (e.g., e-blasts and newsletters), IESO social media posts, and direct engagement by the program delivery vendors with customers and program partners. Program marketing and outreach, however, was the program aspect that applicant representatives and contractors provided the lowest rating for (16% of applicant representatives and contractors were dissatisfied or very dissatisfied with it) and increased marketing was one of the main suggestions they provided for overcoming customer barriers to participation (recommended by 15% of applicant representatives and contractors). While participants were not surveyed on their satisfaction with program marketing and outreach, between one-tenth and one-fourth (7% to 25%) indicated that various types of program marketing and outreach (e.g., program materials, the program website, program social media) were influential in their decision to complete their projects.</p>	<p>Increase the frequency of marketing and outreach activities to further expand the program’s reach (e.g., more frequent webinars or e-blasts informing stakeholders of program changes, further social media engagement, more in-person events as is feasible given the ongoing pandemic).</p>	Medium	<p>The IESO is currently working to restructure the Retrofit section of the Save on Energy website, with a view to enhance the participant experience. The IESO is continuously reviewing participant feedback and seeking ways to enhance our marketing, education and outreach.</p> <p>The IESO is also evaluating opportunities to improve outreach to communicate changes to the Retrofit program planned for Fall 2022 and Spring 2023.</p>