PY2021 EM&V Key Findings and Recommendations IF Home Assistance Program (HAP)

No.	KEY FINDINGS	2021 EM&V RECOMMENDATIONS	IMPACT	IESO RESPONSE
1.	HAP saw the lowest number of participants and the smallest amount of net verified savings but had the largest savings on a per-project basis when compared to previous program years. In 2021, HAP completed 2,234 projects in 2,234 homes. The decrease in participation may be attributed to the last year of the framework and the addition of a new program offering, EAP, which also targets income-eligible participants in IESO territory. In addition, the ongoing COVID-19 pandemic may have affected participation. The program achieved first year net verified energy savings of 3,047 (MWh) and 0.23 MW of first year net verified demand savings. Verified energy savings on a per-project basis increased in PY2021 by 33% from PY2020 and 58% from PY2019 levels (866 kWh in PY2019, 1,028 kWh in PY2020, and 1,364 kWh in PY2021) despite shrinking baselines, such as those associated with lighting end-uses which have historically contributed to the majority of HAP savings.	Continue to promote and deliver deeper savings measures (e.g., weatherization, appliances, and smart power bars) to income-eligible participants, especially in historically underserved areas. The NMR team understands that IESO conducted a limited geospatial analysis to help identify where the program has historically operated and to help increase participation. Monitoring the outcome of these efforts can inform whether additional geospatial analysis could help determine whether the program is effectively reaching historically underserved communities. Future iterations of this program could monitor both geographic reach and the extent to which measures with greater savings are delivered to underserved areas and how they are contributing to savings goals. The program could refine and expand geo-targeting efforts informed by the previous effort. This may help encourage targeted marketing and outreach campaigns that build community trust in IESO programs and result in increased participation in key areas. In addition, improvements in tracking data (refer to Recommendations 2a and 2b) can be used to determine whether certain geographic areas have higher concentrations of electric heating and water heating equipment.	High	The HAP program is winding down. The IESO will be addressing the recommendations in the Energy Affordability Program (EAP) where applicable. EAP is the low-income program for the 2021-2024 CDM Framework. The IESO is working to enhance the program marketing strategy with geo-targeting and developing tailored Indigenous outreach strategies.

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2.	HAP program tracking data includes a mixture of completed and incomplete projects including both installed measures and measures waiting to be installed, along with unique identifiers for each. However, the tracking data does not typically include key characteristics collected during audits such as building or equipment type. This information could be used to better estimate savings impacts and to provide insights for future program offerings. These data points are often collected and included in the data collection forms used during in-home audits. However, only in some cases is this information captured in the program tracking data. For example, 20% of HAP participant records were missing building type information and no mechanical equipment details are included in the data. If additional programming is offered in the future, additional measures such as cold-climate heat pumps or heat pump water heaters may be offered. These additional data points will be valuable for program staff, vendors, and the evaluation team to assess the impacts of any new measures. The program tracking data included a mix of completed and incomplete projects, as well as installed measures and those measures waiting to be officially installed. The tracking data included variables to identify unique projects and measures, and separate variables to determine the level of completion a project had obtained. These unique identifying variables are critical for impact accounting over multiple years in a framework. However, since the tracking data was not limited to completed projects, the IESO and NMR evaluation teams were required to piece together which measures and projects were completed during PY2021. The remaining projects and measures that were incomplete at the time of the PY2021 evaluation will be included in the PY2022 evaluation.	The following are recommended: In future versions of this program, continue to include variables that can be used to identify unique projects and measures within the tracking data. If possible, limit the annual program tracking data to projects that are fully completed. Work with program staff and implementation contractors to incorporate additional details into the tracking data such as building type and mechanical equipment (e.g., type and fuel) and any additional data collected on-site (e.g., efficiency, capacity). This could include revising the IESO's Field Audit Support Tool (FAST) program or supporting the development of a new uniform electronic data collection form for auditors to fill out on-site, which can then be uploaded directly into the tracking data.	High	Since HAP is winding down, the following changes will be addressed in EAP. The IESO can ask delivery vendors to make specific fields in the application mandatory requirements for EAP under the 2021-2024 CDM Framework. Training and reminders will need to be provided to the Delivery Vendors to ensure that the field data is being captured appropriately.

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3.	**In PY2021, there were 220 weatherization projects completed and savings deepened on a per-project basis compared to PY2020.** Gross verified savings for weatherization measures were higher on a per-unit basis in PY2021 compared to PY2020 and PY2019 (1,939 kWh in PY2019, 2,400 kWh in PY2020, and 2,458 kWh in PY2021). This is in part due to increased savings associated with weatherization measures on a per-project basis (4,333 kWh in PY2021 compared to 3,669 kWh in PY2020 and 3,240 kWh in PY2019). The total savings from weatherization measures decreased by 7% from PY2020, but the proportion of program savings attributed to weatherization measures increased in 2021 (from 9% to 31%).	Weatherization upgrades can provide important savings opportunities and health upgrades for participants. It will be important for future iterations of the program to emphasize and implement weatherization upgrades to participants as savings from lighting measures continue to diminish over time. The program could consider pushing shell insulation, especially attic insulation, to increased levels of efficiency to further deepen savings and increase occupant comfort and health benefits. Furthermore, with weatherization measures yielding measure-level total resource cost (TRC) ratios between 0.83 and 0.98, as compared to 0.40 for the total program, increasing weatherization measure implementation would lead to higher program-level cost effectiveness.	High	Since HAP is the in process of winding down, the IESO is reviewing together with EAP vendors the current weatherization offerings and barriers to improve the uptake of attic insulation and draftproofing measures.
4.	**Participants, auditors, contractors, and delivery vendor staff recommended offering additional equipment through the program.** Over one-half (54%) of surveyed participants provided recommendations for additional energy-efficiency equipment or services for inclusion in HAP. These participants most often recommended weatherization measures (53% of respondents) including windows and doors. Over three-fourths (77%) of auditors and contractors recommended additional equipment or services, including heat pumps (29%), kitchen equipment such as dishwashers and stoves (29%), washers and dryers (21%), insulation and air sealing (17%), and heating equipment (13%). Delivery vendor staff also recommended that the program consider the feasibility of offering heat pumps and generally revisit eligible measure offerings more frequently.	The following are recommended: Consider offering additional types of equipment, such as kitchen equipment, washers and dryers, windows, doors, additional insulation and air sealing, heating and cooling equipment (such as heat pumps), and water heating equipment. As mentioned in the previous recommendation, additional weatherization measures would likely increase program-level cost effectiveness. Space heating and cooling measures yielded TRC ratios at or below the program-level TRC ratio in PY2021. Therefore, adding more space heating and cooling measures would likely negatively impact program cost effectiveness. Similarly, kitchen equipment already included in HAP (i.e., freezers and refrigerators) have generally delivered the lowest measure-level TRC test ratios, so adding similar measures to HAP would likely negatively impact program-level cost effectiveness. Revisit eligible measure offerings more frequently.	High	The IESO is currently reviewing the appliance replacement criteria to enhance the low-income program offerings in EAP (since HAP is winding down).

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5.	**Participants recommended ensuring that auditors and contractors are properly trained.** Close to one-fifth of participants (17%) offered recommendations for improving the program. Of those, close to one-fifth (19%) based their recommendations on a negative experience with an auditor or contractor, the most common of which was a rushed or incomplete audit.	Reinforce audit protocols in training materials and communications with auditors. Consider providing a one-page visual or checklist of audit steps.	High	The IESO will work with the EAP Program Delivery Vendors (since HAP is winding down) to ensure that auditors and contractors are reminded on the appropriate process for conducting audits.
6.	Project costs remained generally well below the program cap, but increased weatherization measures have pushed project cost upwards in PY2021. Approximately two-thirds of projects in PY2019 and PY2020 had an incentive of less than $1,000, compared to 44% of projects in PY2021. Similarly, approximately 90% of projects in PY2019 and PY2020 had an incentive of less than $2,000, compared to 80% of projects in PY2021.These higher project costs are due to the increased quantity of weatherization measures in 2021. This trend is encouraging, since as indicated in this and previous HAP evaluations, weatherization measures offer deeper savings along with added comfort benefits to customers. However, project costs are still well below the program cap. Since the program provides all eligible measures that each participant will accept, this finding suggests that there may be additional savings opportunities for measures not currently offered by the program.	Continue to drive deeper savings with weatherization measures. Consider expanding the measures offered by the program, as this may provide deeper savings per home. Recommendations 1, 3 and 4 provide insight on new measures or services to consider adding to the program.	High	The HAP program is winding down. The IESO will be addressing the following recommendations in EAP where applicable. As part of the measure review cycle under EAP, stakeholders will be given the opportunity to suggest additional measures. Furthermore, it will require a regular jurisdictional review of measures in other low income programs across North America.

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7.	**Additional program promotion opportunities exist.** Common program barriers identified by IESO program staff and delivery vendor staff were the relatively minimal marketing and a lack of awareness that the program exists among customers. Auditors and contractors reported that the greatest barriers to program participation were lack of awareness (mentioned by 71% of respondents) and concerns among customers about whether the programs is real (mentioned by 61% of respondents). Improvement suggestions identified by IESO program staff and delivery vendor staff included continuing collaborations with the roundtable of sector experts and community-based groups, identifying partnership opportunities with gas utilities, and addressing gaps in marketing.	The following are recommended: Consider additional ways to market and promote the program, such as through potential collaborations with gas utilities or increased province-wide marketing (e.g., social media campaigns, targeted advertisements). Continue collaborations with sector roundtable and community-based organizations to help promote the program and address concerns about the program's legitimacy.	Medium	In EAP, the IESO continues to market and promote the program leveraging the EAP Roundtable participants and community-based organizations. The IESO will also give consideration on how to increase consumer education.
8.	**Energy-efficiency education activities are likely resulting in savings.** Just over one-half (53%) of respondents said their energy auditor discussed additional ways to save energy at the time of the audit. Of these respondents, over four-fifths (83%) had tried at least one of them since having the audit performed.	Consider ways to analyze and quantify the energy savings resulting from the program's energy education activities.	Medium	The IESO will consider ways to measure success of the program's energy education activities through Customer Satisfaction (CSAT) scores in EAP (as the HAP program is winding down).
9.	**Power bar measures had extremely high Realization Rates (RRs).** The NMR team found discrepancies with smart power bar savings values. The reported energy savings for smart power bars applied a savings value associated with the power bar with timer measure, which is no longer delivered by HAP. In addition, there were no demand savings reported for smart power bars, which prevented a demand RR from being calculated for smart power bars. These discrepancies were also observed in PY2019 and PY2020.	Ensure that auditors are installing the Tier-2 smart power bars with audiovisual (AV) equipment, or include installation location in the data collection form. Verify that the correct energy savings values are applied to the correct measure.	Low	The IESO will confirm with the Delivery Vendor that in 2021 they were only using the Tier 2 Power Bar. The Delivery Vendor will confirm the accuracy of the reporting. This is a HAP specific issue and does not affect EAP.