
APRIL 22, 2022

2021-2024 Conservation and Demand Management Framework Mid-Term Review

Purpose

- To provide stakeholders with an overview of the IESO's process and approach for delivering the Mid-Term Review (MTR) of the 2021-2024 Conservation and Demand Management (CDM) Framework
- Share a summary of system needs that will be used to support the MTR recommendations
- Provide an update on CDM Framework results and enhancements to date
- Seek input on observations, program gaps and opportunities to inform recommendation
- Outline next steps for reporting recommendations to the Minister of Energy

Discussion Questions

- Are there any emerging system needs or demand trends that IESO should be considering?
- How are customer needs changing? Are there emerging issues for your customer segment that should be considered?
- What program changes/new program opportunities might be beneficial to address emerging customer needs?
- How has COVID impacted your business? Do you foresee additional challenges as your business recovers from the impacts of the pandemic that may impact your ability to implement energy efficiency projects?
- Are there systemic barriers that your organization or community faces when undertaking energy efficiency projects?

Background

- Requirement to prepare MTR detailed in Directive to IESO dated September 30, 2020 to establish a 2021-2024 CDM Framework
- The MTR will consider opportunities for changes to current and planned programs, as well as new CDM Framework programs, to respond to increasing system needs. Based on current performance and market/customer feedback, the MTR will recommend opportunities for the IESO to enhance or adapt its approach to acquiring CDM during the remainder of the current Framework
 - The major focus of the review will be on current programs' enhancements but will also recommend high-level considerations for changes post-Framework



MTR Process & Approach

2021-2024 CDM Framework Directive – MTR Requirements

- **System Needs Review:** alignment of the demand reduction target, electricity target and the CDM Framework budget with the provincial, regional and/or local electricity system needs as identified by the IESO
- **Customer Needs Review:** alignment of the CDM program offerings with consumer needs in Ontario
- **Competitive Mechanism Review:** lessons learned and recommendations from competitive mechanisms for procuring energy efficiency resources, including results to date of the Energy Efficiency Auction Pilot
- **Program Review:** the progress and impact of CDM programs, including for low-income/income-eligible and First Nations consumers, and comparison against programs from other jurisdictions

Coordination With Other Planning Efforts and Projects

The MTR work is being conducted in tandem with other IESO initiatives:

- **Resource Adequacy Framework:**
 - **Annual Planning Outlook (APO):** to include a 20-year forecast for CDM program savings
 - **Annual Acquisition Report (AAR):** to highlight opportunities for CDM to address system needs in the near-term
- **Pathways to Decarbonization Study:** will seek to highlight the increasing opportunities for and value of CDM in Ontario
- **Regional Planning Process:** will discuss appropriate use of CDM programs to address regional needs and suitable cost allocation

AAR – Minister's Letter

- In response to the AAR, the IESO received a letter from the Minister of Energy requesting the IESO consider options for cost-effective additional or expanded CDM programming to meet system needs and to report back by July 2022; the Minister has also requested that the IESO look to accelerate the MTR
- In addition, the Minister requested the IESO provide advice on how to manage the interest in CDM programs from the growing agricultural greenhouse sector in Southwest Ontario
- To this end, the IESO will be considering options such as:
 - Non-wires alternatives, residential & small business demand response, and other CDM initiatives

System Needs Review

The MTR will assess the opportunity for CDM to contribute to meeting electricity system needs in Ontario. To do this, the following will be reviewed:

- System needs identified in APO and changes since September 2020 Directive
- Regional/local needs

The following outputs will be produced as a result of the System Needs Review:

- Updated avoided costs to signal the value of CDM energy and demand savings
- Refresh 2019 Achievable Potential Study to reassess the available amount of cost-effective CDM energy and demand savings potential

The above analysis will be used to guide any proposed changes to targets and budget for the remainder of the Framework and future considerations

Customer Needs Review

The Customer Needs Review will be informed through multiple activities:

- Identify consumer trends inside and outside Ontario
- Market research by analyzing data from primary IESO sources
- Direct outreach to consumers to understand customer experience with current programs, evolving customer needs and opportunities for program changes and/or additional support services

Competitive Mechanisms Review

- The analysis of Competitive Mechanisms will focus on the following tasks:
 - Identify expected benefits/outcomes via competitive mechanisms
 - Compare outcomes, relative to expected benefits, of mechanisms used by IESO to acquire CDM
 - Review competitive strategies used by CDM administrators in other jurisdictions
 - Recommend approaches to acquiring CDM for remaining period of the Framework (2023-2024)

Program Review

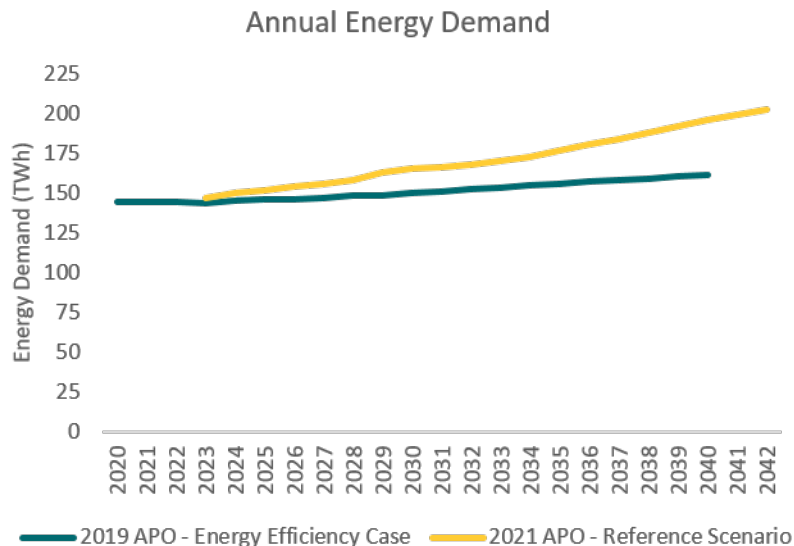
- The Program Review will consist of the following key tasks:
 - Assessment of performance of current IESO CDM programs, including those targeting on- and off-reserve Indigenous consumers
 - Update forecast, based on projected performance, for remaining period of the Framework (2023-2024)
 - Review programs outside of Ontario
 - Consideration of opportunities for enhancement of current and planned programs



Summary of System Needs

Forecasted electricity demand is increasing

- Energy demand forecasts have increased since the 2021-2024 CDM Framework was developed
- Near-term increases attributed to:
 - Faster economic recovery from the pandemic than previously forecasted due to government stimulus
 - Increased residential demand attributed to immigration and persistent work from home
 - Growth in the industrial sector specifically the mining sector in the northeast as well large industrial loads
- Increases in the latter years attributed to:
 - Transportation electrification supported by government policy and strong supply chain indicators
 - Strong industrial sector growth; mining growth in the northeast, Algoma steel electric arc furnace project

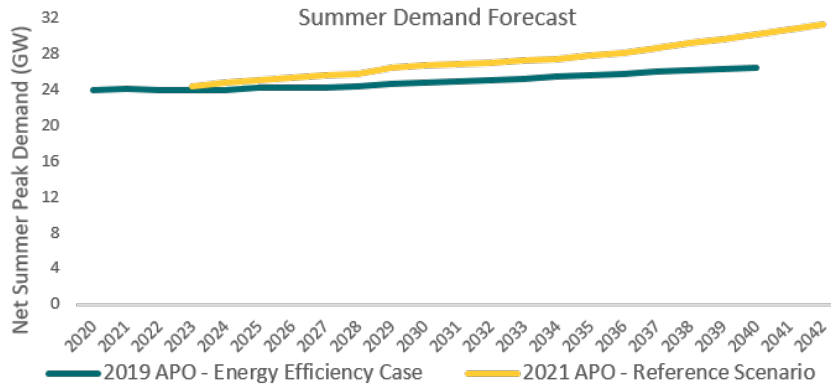


Ave Growth Rate	APO 2019	APO 2021
2023-2028	0.6%	1.5%
2028-2033	0.7%	1.5%

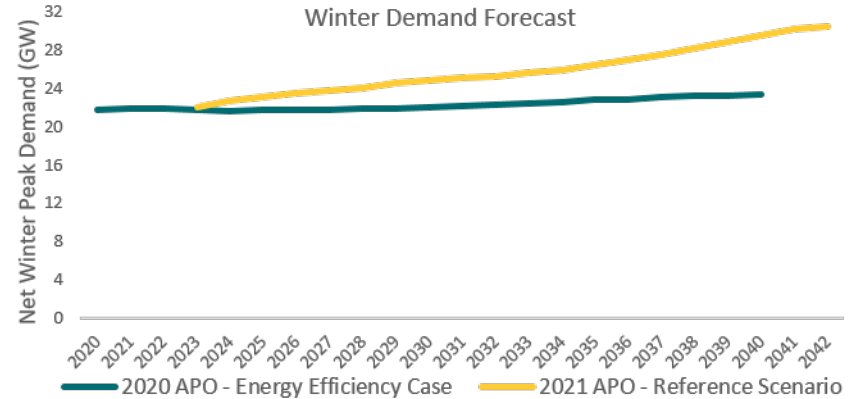
* See appendix for system needs by sector

Forecasted peak demand is increasing

- Drivers of summer and winter peak demand growth are similar to drivers of annual energy demand
- Summer peak demand growth is mitigated by the increased Industrial Conservation Initiative forecast
- Winter peak demand growth is faster than summer due to agricultural greenhouse demand growth



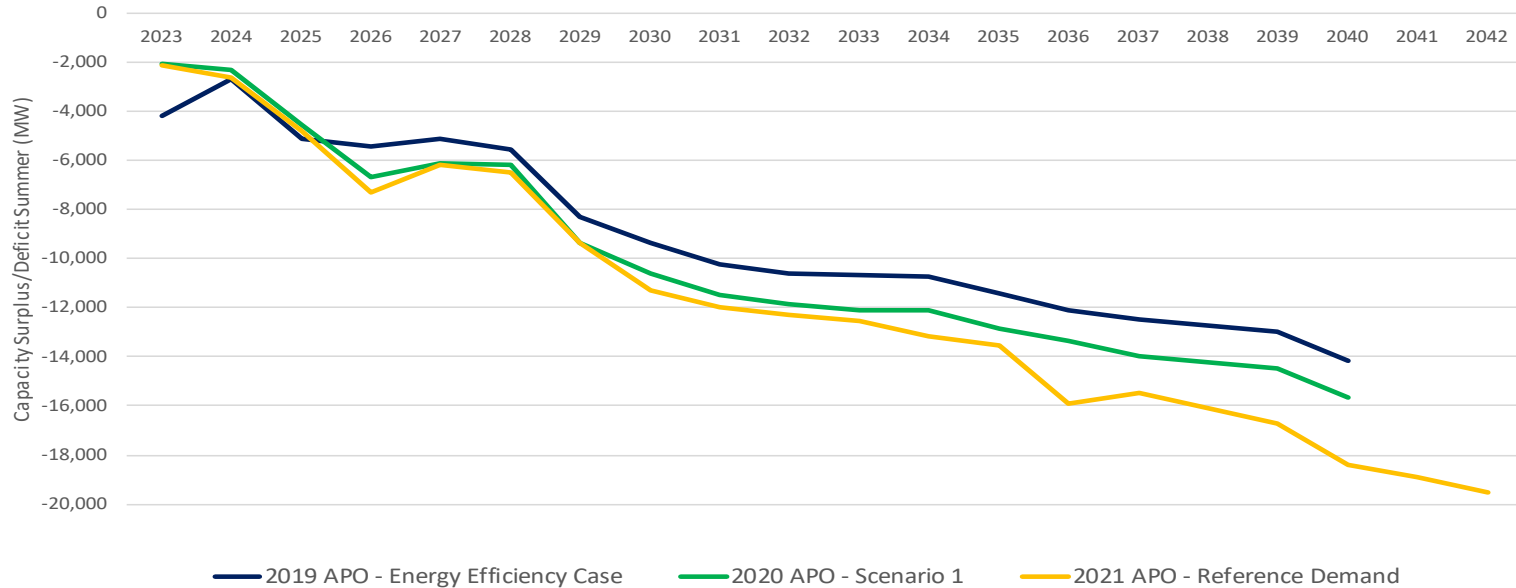
Ave Growth Rate	APO 2019	APO 2021
2023-2028	0.4%	1.1%
2028-2033	0.7%	1.1%



Ave Growth Rate	APO 2019	APO 2021
2023-2028	0.0%	0.5%
2028-2033	1.8%	1.2%

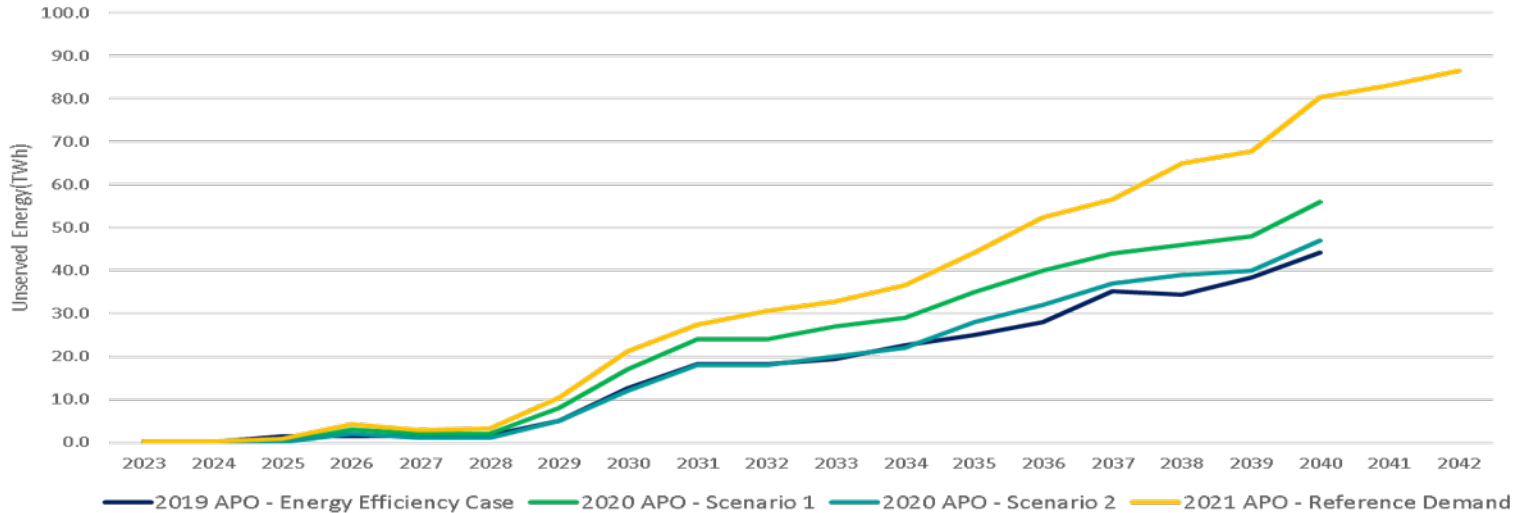
Summer Capacity Needs

- Ontario has entered a time of demand growth. **Capacity needs** emerge in 2025 and grow over the forecast horizon.



Unserved energy

- **Energy needs** also emerge in the mid-2020s, and grow sharply beginning in 2029
- With increased pressures of decarbonization, there is a high potential for demand to continue to increase, thereby putting further pressure on our growing needs.



Assuming no availability of existing resources post contract expiry

Emerging Trends

- Residential forecasts are increasing marginally and sector is underserved by current programs – opportunities for integration of CDM, DR and DERs in this sector
- Commercial and industrial forecasts are increasing largely due to decarbonization, with new growth being identified through the 2022 APO (in development) that is incremental to the demand growth identified in the 2021 APO – opportunity for CDM to support this transition
- Agricultural forecasts are rapidly increasing compared to previous outlooks – opportunity for CDM to help mitigate rate of demand growth and allow new customers to connect to the grid
- Energy efficiency is well positioned to mitigate increases in demand and help meet future energy and capacity needs

Emerging Needs and Regional Plans

- In addition to bulk system planning, there are six integrated regional plans currently underway in Ontario
- With rapidly changing forecasts, the IESO is in the process of reviewing active and recently completed regional plans to identify opportunities for CDM to help meet regional and local needs
- Outcomes of this review will be shared in a future engagement webinar



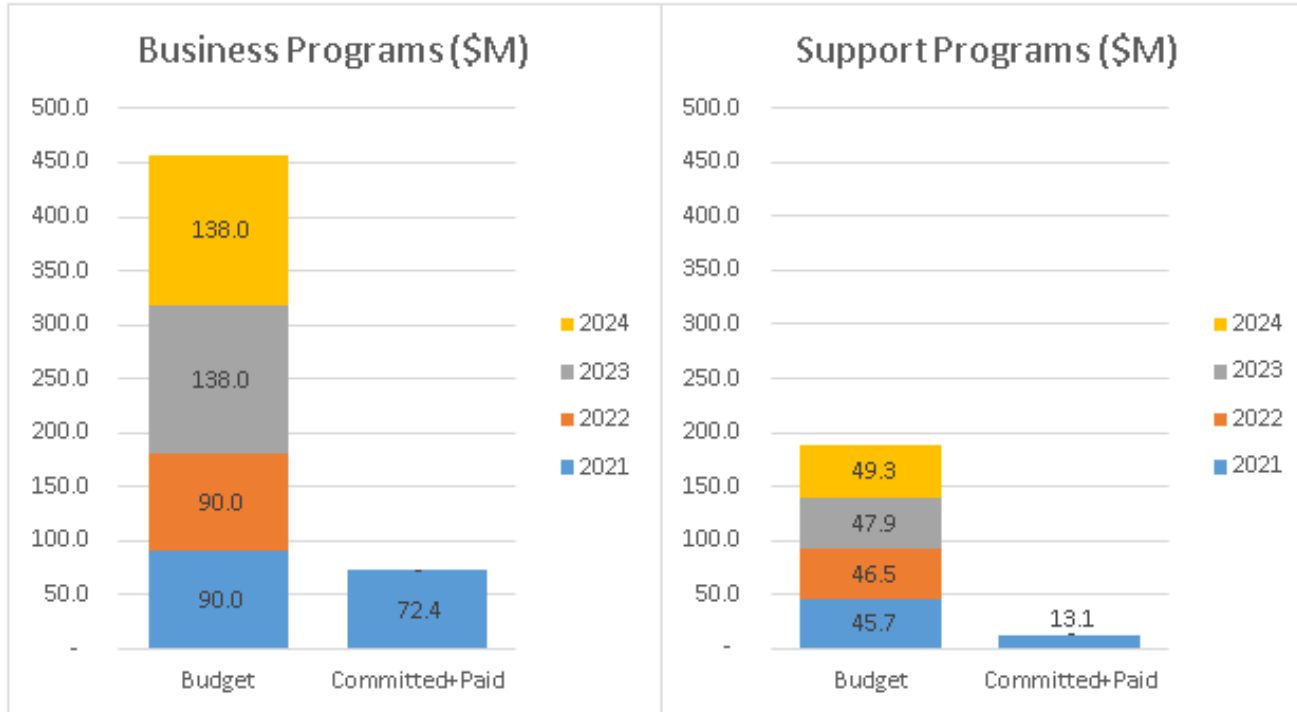
CDM Framework Results to Date

2021-2024 CDM Framework: Results to Date

- Overall progress is on track to achieve framework targets within budget; revised forecast expects increased business program activity in 2022 to offset performance challenges from 2021; Support programs expected to underspend in 2022 due to impacts of COVID-19
- Compared to the 4-year CDM Plan milestones, 13% (\$87.4M) of the overall framework budget has been committed or paid to achieve 14% (381.9 GWh) and 13% (57.9 MW) of the energy and demand targets
 - Retrofit accounts for 77% of committed and paid incentives for all programs (90% of business programs); 91% of energy and demand savings targets
- Business Programs have committed or paid 16% of the respective framework budget
- Support Programs have committed or paid 7% of the respective framework budget

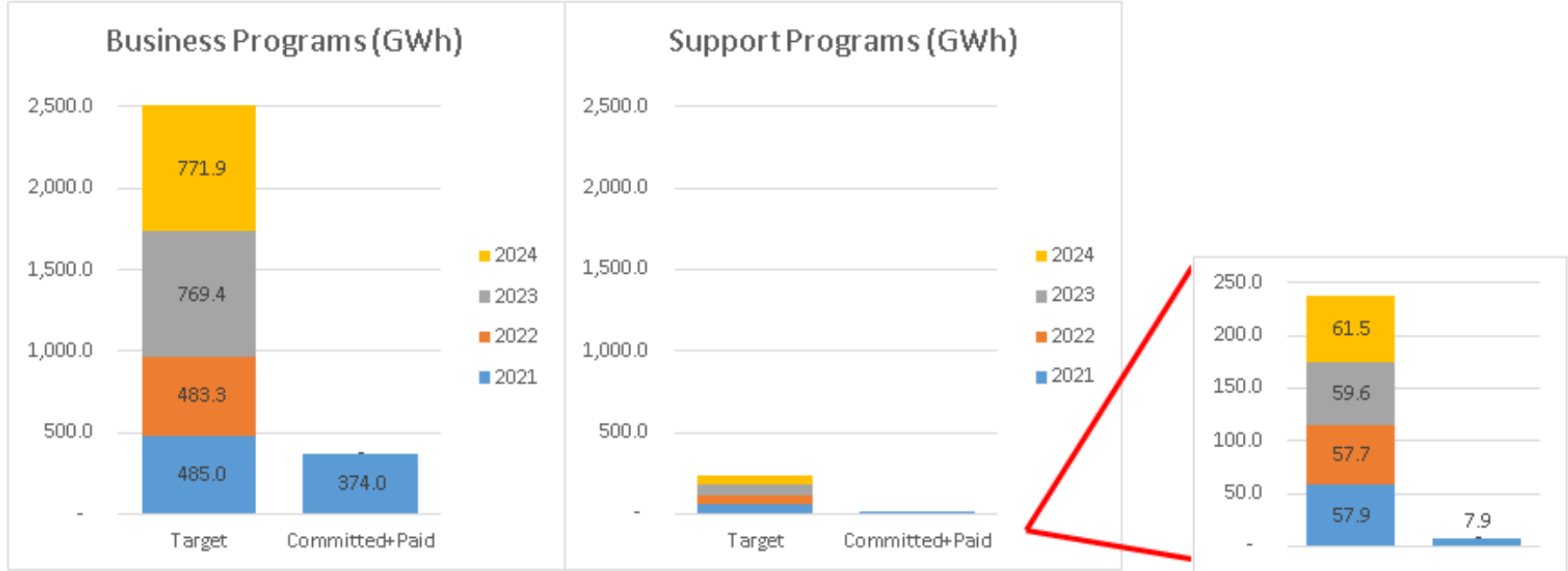
Note: Unless otherwise stated energy savings and demand reduction totals are based on net savings which account for program-level adjustment factors (realization rates and net-to-gross ratio) applied to unverified gross savings reported to IESO

2021-2024 CDM Framework – Spending Progress

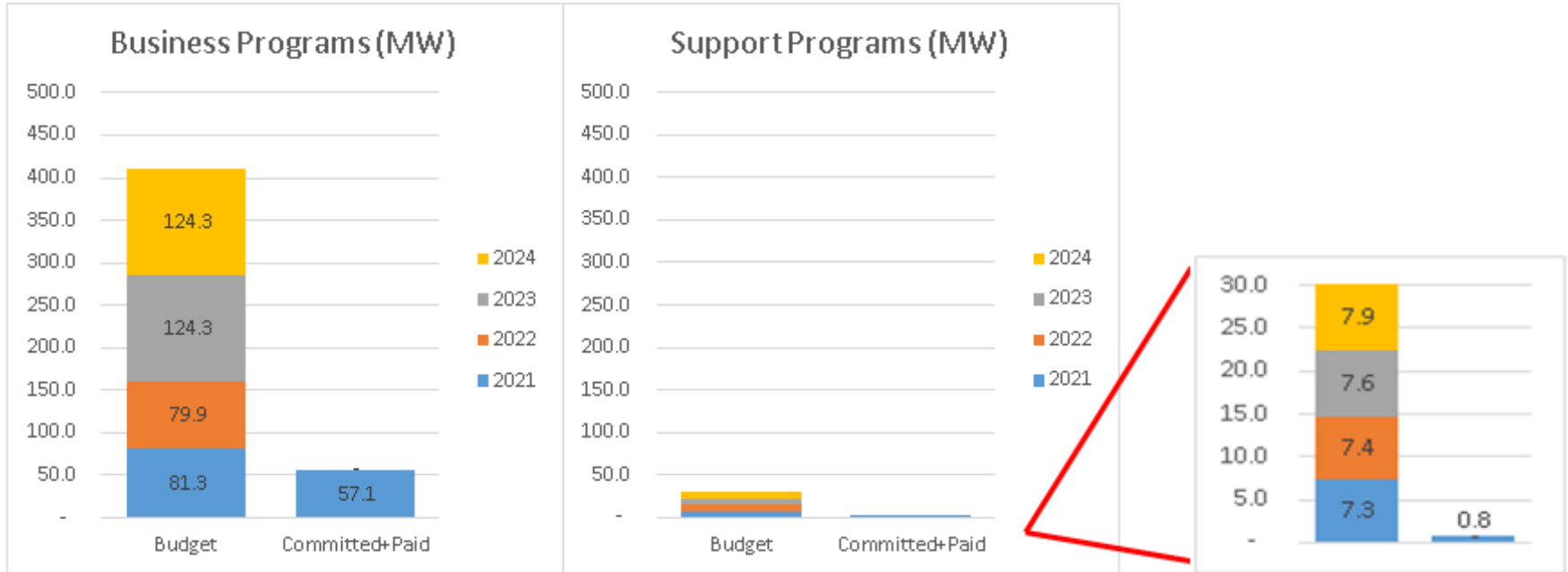


*Budget graphic representative of program spending inclusive of administration and incentive costs. Non-program specific spending (e.g. outreach, capacity building, EM&V, compliance) accounts for \$1.8M.

2021-2024 CDM Framework – Energy Savings Progress



2021-2024 CDM Framework – Demand Savings Progress





Observations, Program Gaps, Opportunities

Observations

- **COVID-19 Recovery**

- North American jurisdictional analysis shows EE investment by organizations dropped more than 10% in 2020-2021, with supply chain disruptions, cost increases due to inflation, and organizations focused on core business priorities; continued opportunity for EE to support economic recovery

- **Decarbonization**

- Policy-makers and consumers both placing high priority on meeting GHG reduction targets, pairing EE with electrification, with impacts and opportunities for customer and grid

- **Equity, Diversity & Inclusion**

- Focused EE spending based on energy burden and serving highest needs
 - Expanded investments and encouraging electrification in income-eligible and indigenous programs
- Leveraging community partnerships to reach customers more effectively
- Supporting EDI in EE procurements to promote a diverse workforce

Program/Framework Opportunities

- **Customer Based Solutions**

- Proposal-based funding for certain sectors, based on customer needs rather than widgets; tailored programs serving specific business/industry segments, and whole building pay-for-performance initiatives

- **Building Capacity & Going Deeper**

- Increased investment and dedicated capacity building/customer awareness initiatives for EE beyond lighting, including economics, design, and installation of deep retrofits, electrification projects, net zero approaches, and distributed energy resources (DERs); strategic energy management

- **Dual-Fuel Collaborations & Fuel-Switching**

- Increasing number of multi-fuel programs prioritizing ease of customer participation
- Proliferation of fuel-switching and beneficial electrification programs to support GHG targets

Program/Framework Opportunities (2)

- **Grid-Enabling Strategies**

- Increasing number of programs supporting deployment of EE solutions integrated with controls to provide flexibility to the grid and enhanced customer value; “non-wires alternative” EE initiatives targeting local constraints to defer wires investments

- **Moving Incentives Upstream**

- Leveraging distribution channels for greater market impact by providing financial incentives to distributors for holding EE inventory and offering point of sale discounts to customers

- **Mass Market Offerings**

- Many jurisdictions offering residential opportunities through prescriptive equipment and smart/whole home rebates, direct install HVAC and envelope solutions, virtual audits, and education and awareness

- **Longer-term Funding Commitments**

- Examining barriers and opportunities to avoid stop/start of programs and provide continuity for customer planning

Next Steps

Timing	Engagement Activity
May 12	Stakeholder feedback due
Feb – June (Ongoing Topic-Based Meetings)	Targeted discussions with customers and sector leaders to seek feedback on current needs; summaries of findings to be shared during report back on stakeholder feedback
Mid-Late May	IESO to publish stakeholder feedback
July Engagement Days (July 19-21, date TBD)	Stakeholder Engagement Webinar Purpose: <ul style="list-style-type: none"> • Share summary of customer feedback received through outreach channels, analysis of competitive mechanisms, results of program review • Seek written feedback
December, 2022	Share recommendations with the Minister of Energy Report back to Stakeholders



Discussion Questions

Discussion Questions

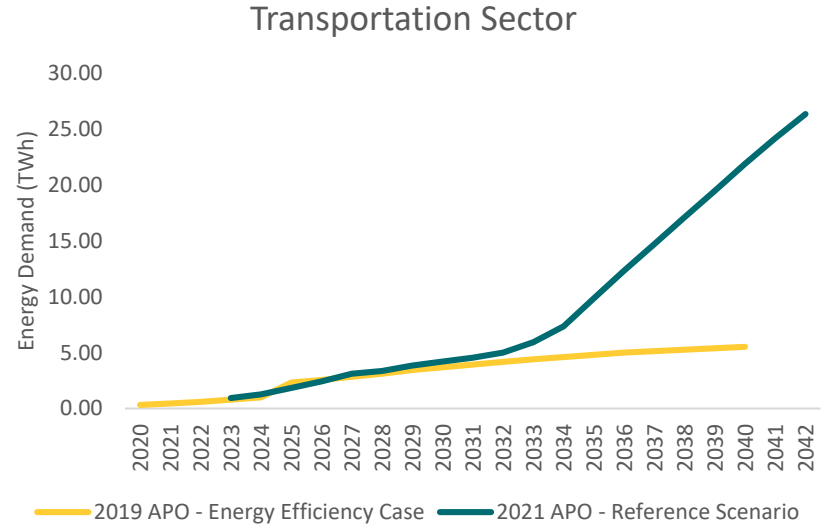
- Are there any emerging system needs or demand trends that IESO should be considering?
- How are customer needs changing? Are there emerging issues for your customer segment that should be considered?
- What program changes/new program opportunities might be beneficial to address emerging customer needs?
- How has COVID impacted your business? Do you foresee additional challenges as your business recovers from the impacts of the pandemic that may impact your ability to implement energy efficiency projects?
- Are there systemic barriers that your organization or community faces when undertaking energy efficiency projects?



Appendix

System Needs: Transportation Sector Growth

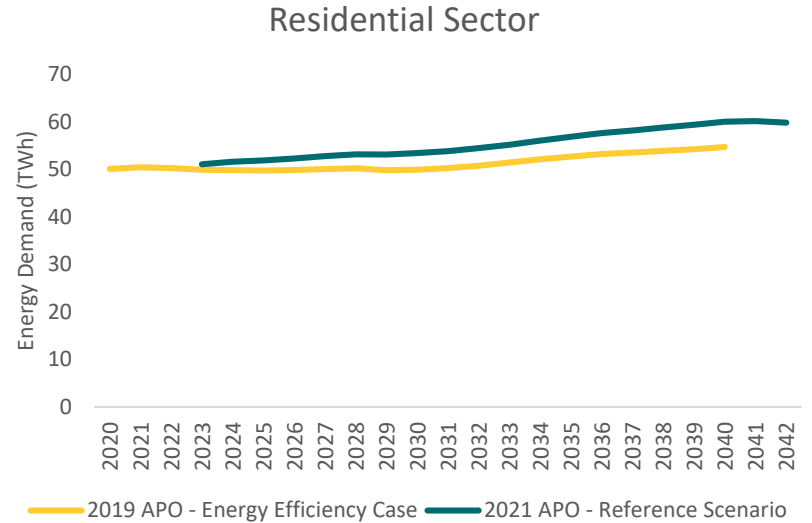
- Forecasted demand increasing rapidly, driven by light duty vehicle forecast and government policy of 100% new sales in 2035 to be zero emissions vehicles
- The 2021 APO transportation forecast has increased by 0.9 TWh between 2023-2028 compared to the 2019 APO, and 16 TWh between 2028-2040



Ave Annual Growth Rate	APO 2019	APO 2021
2023-2028	38%	30%
2028-2033	7%	12%

System Needs: Residential Sectoral Growth

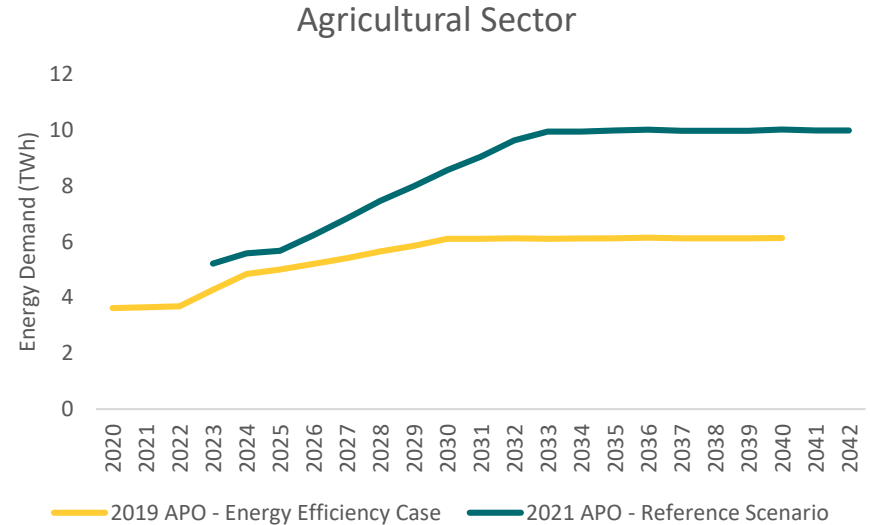
- Incrementally higher growth than previous APOs
- The 2021 APO residential forecast has increased by 1.8 TWh between 2023-2028 compared to the 2019 APO, and 2.0 TWh between 2028-2040
- In the upcoming P2D forecast residential demands are anticipated to increase due to changes in heating and cooling
- **Key Zonal Impacted**
 - Increase in in Ottawa, Southwest, Toronto and West
 - Flat in Bruce, East, Essa, Niagara and Northwest



Ave Annual Growth Rate	APO 2019	APO 2021
2023-2028	0.1%	0.8%
2028-2033	0.5%	0.7%

System Needs: Agricultural Sector Growth

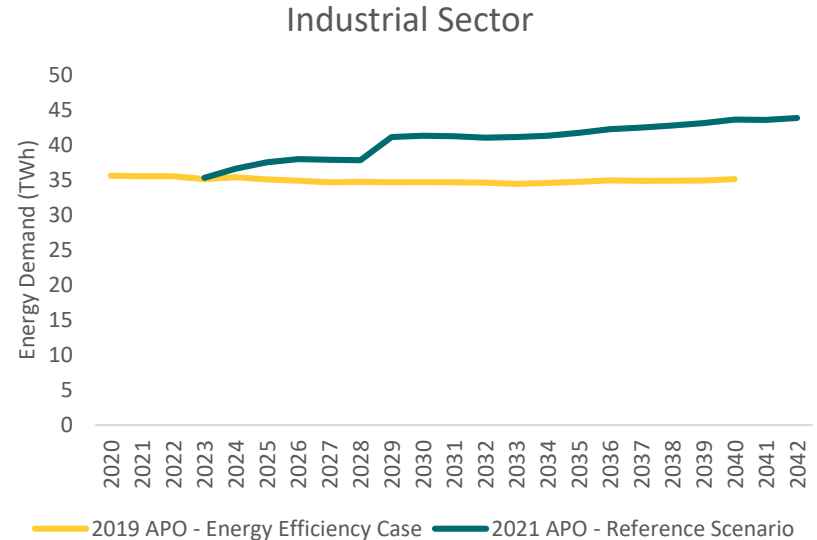
- Growth in the agriculture sector is focused in Southern Ontario – West Zone
- The 2021 APO agricultural forecast has increased by 0.9 TWh between 2023-2028 compared to the 2019 APO, and 1.8 TWh between 2028-2040
- This is a significant increase from previous outlooks



Ave Annual Growth Rate	APO 2019	APO 2021
2023-2028	5.8%	7.5%
2028-2033	1.6%	5.9%

System Needs: Industrial Sector Growth

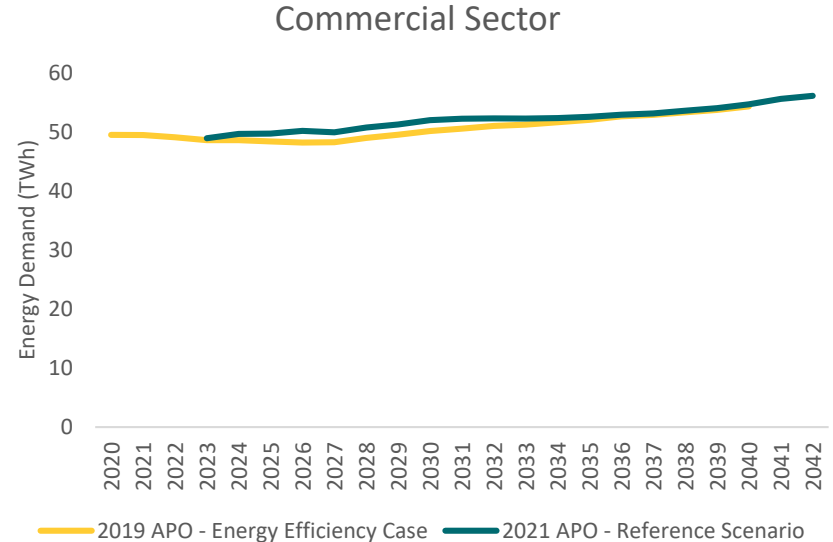
- Industrial growth is being driven by the emerging vehicle battery manufacturing sector, a rapidly recovering economy and significant government stimulus
- The auto sector in Ontario is repositioning to meet increasing demand for electric vehicles. Some investments may be located in Ontario given current auto sector capability and support
- The 2021 APO industrial forecast has increased by 2.9 TWh between 2023-2028 compared to the 2019 APO, and 2.0 TWh between 2028-2040



Ave Annual Growth Rate	APO 2019	APO 2021
2023-2028	-0.2%	1.4%
2028-2033	-0.2%	1.8%

System Needs: Commercial Sector Growth

- Stronger and earlier recovery than previously forecasted, demand growth flattens in medium and long terms
- The 2021 APO commercial forecast has increased by 1.4 TWh between 2023-2028 compared to the 2019 APO, and decreased by 1.4 TWh between 2028-2040
- **Zonal Electricity Demand Forecast**
 - Increase in Essa and Southwest
 - Flat in Bruce, East and West
 - Slight decrease in Northeast and Northwest
- **Drivers & Assumptions**
 - Strong growth in Essa in particular (office, restaurant, schools and warehouses)



Ave Annual Growth Rate	APO 2019	APO 2021
2023-2028	0.2%	0.7%
2028-2033	0.9%	0.6%