JULY 19, 2022

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

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Purpose

- 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 and to share early findings, including themes from April's stakeholder engagement
- Gather feedback to support recommendations for both the CDM MTR and the Annual Acquisition Report (AAR) report back to the Minister, updates will be provided, and feedback will be sought on the following:
  - Customer needs, program needs, and competitive mechanisms
- Share an update on the Achievable Potential Study Refresh
- Outline next steps for reporting recommendations to the Minister of Energy

Recap from Stakeholder Engagement #1

- Engagement session in April included the following objectives:
  - Summary of system needs that will be used to support the MTR recommendations
  - Update on CDM Framework results and enhancements to date
  - Input on observations, program gaps and opportunities to inform recommendations for both the CDM MTR and the AAR report back
- Feedback was received from five stakeholders and is available on the engagement page. **Key themes included:** emerging system needs resulting from local needs and decarbonization efforts; emerging customer needs as a result of pandemic recovery and decarbonization goals; greater opportunities for collaboration and LDC involvement; program gaps for some sectors

Background

- Requirement to prepare MTR detailed in CDM Directive to IESO dated September 30, 2020
- The MTR will consider opportunities for changes to current and planned programs, as well as new CDM 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

Discussion Questions

- What conditions are needed to further enable innovation and market-based solutions? Are there success stories that can be shared from experiences in other jurisdictions?
- Are there additional program gaps that should be addressed?
- Are there additional enhancements for the income-qualified or First Nation programs that could be considered?
- Are there any implementation considerations you see with any of the program opportunities?
  - What enhancements would be desired for the Custom Retrofit initiative if it were to be re-instated?
  - For the greenhouse sector, are there any additional measures that should be considered?
  - Are there additional opportunities for the residential sector that should be considered?
- How can the IESO further support the energy transition for consumers in all sectors?

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

The Achievable Potential Study (APS) Refresh

The APS Refresh

- IESO is currently working with a consultant to update the joint IESO-OEB 2019 Achievable Potential Study (APS) to produce an updated estimate of the maximum achievable energy and peak demand savings available in the province from CDM in the 2023-2043 timeframe
- The Refresh leverages a sophisticated potential estimation model originally developed for the 2019 study with inputs from:

1. An advisory group of govt, LDCs, program delivery vendors, and stakeholders
2. A technical working group of CDM planning and forecasting experts
3. The public through a public engagement process

Note: specifically, the APS Refresh is producing an updated Maximum Achievable Scenario (Scenario B)

APS Refresh Approach (cont'd)

Leveraging the significant IESO, OEB, and stakeholder investment in the APS model, the Refresh is updating key inputs to reflect the best available information at this time

Inputs updated based on the 2021 Annual Planning Outlook	Inputs consistent with 2019 study
• Reference demand forecast	• Measure level assumptions (savings, cost, density, and saturation values)
• Avoided costs for energy and capacity	• Achievable adoption logic
• Retail electricity rates	

Sharing APS Refresh Results

- The IESO plans to share results of the APS Refresh later this year via a stakeholder engagement webinar
- The IESO also plans to post:

1. A summary of the approach for the Refresh exercise, how input assumptions have changed/remained consistent, the high-level results, and how they compare to the original study
2. Updated data table appendices (e.g. reference forecasts, potential by end-use and measure, total potential by transmission zone, etc.)

Competitive Mechanisms Review

Competitive Mechanisms Review

- The analysis of Competitive Mechanisms has focused on the following:
  - 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

Competitive Mechanisms Review – Key Findings

1) Strong competition has been observed for procurements of program delivery services under the 2021-2024 CDM Framework, where a minimum of 4 and up to a max of 12 unique proponents responded to 7 RFPs for program delivery services issued in 2021

   - A strong base of supplier capability exists in Ontario, based on the number of responses received for the range of program services pursued (e.g., direct-install, project assessment and building audits, technical review, outreach services, call center and customer support, program design services)

2) Regional program delivery with multiple vendors is important to drive equitable energy efficiency opportunities across Ontario and mitigate delivery risks

   - There is an optimal number of regions to maximize economies of scale; too many regions cause fragmented and inconsistent delivery that impair customer experience
   - Province-wide service standards and vendor collaboration is critical to ensure there is a positive program experience for customers and consistent delivery across the province

Competitive Mechanisms Review – Key Findings (cont'd)

3) Short runways from time-bound frameworks do not enable competitive mechanisms and delivery vendors to achieve the maximum potential benefits for rate-payers

- A significant amount of time is required to onboard, ramp-up and wind-down programs and vendor services – leaving less runway to improve programs and optimize results

4) Multiple approaches to procure energy efficiency allow diverse market actors to participate in program delivery, which supports long-term marketplace capability

- Aggregators and end users have applied to the Industrial Energy Efficiency Program and Energy Efficiency Auction Pilot

Competitive Mechanisms Review – Key Findings (cont'd)

5) Resources that cleared the Energy Efficiency Auction Pilot are cost-effective compared to other energy efficiency resources based on cleared prices, subject to the following:

- Cost-effectiveness analyses exclude admin costs to operate the auction, and cost-effectiveness is subject to change as resources have not yet demonstrated performance

6) Innovation through the following market-driven mechanisms has been limited:

- Energy Efficiency Auction Pilot: limited budget, one-time pilot, risk of not delivering savings may have been a deterrent from pursuing more innovative offerings
- Local Initiatives Program: requirements to be non-duplicative with province-wide programs limited possible program design options

Competitive Mechanisms in Other Jurisdictions

Utilities and program administrators in other jurisdictions outsource varying levels of program services to meet their CDM targets and objectives:

	Minimal Outsourcing	Project or Activity Outsourcing	Integrated Program Outsourcing	Integrated Portfolio Outsourcing	Arm's Length Resource Acquisition
Description	Utility or administrator completes most program functions	Specific or well-defined program activities outsourced	All or most activities for a program outsourced under single contract, with significant utility or administrator oversight	Outsourcing of portfolio of programs; utility or administrator manages portfolio with greater collaboration for design, but has final approval	Utility or administrator manages contract with minimal involvement in design and program operations
Example	Outsourcing limited to short-term needs, support staffing with peak load	Outsourcing of evaluations, outreach, market research activities	Single contractor proposes design, conducts marketing, delivery activities with utility oversight	Contractor proposes portfolio design and composition and implements most or all activities for portfolio	Contractor designs and implements program activities

Table based on report and research conducted by DNV-GL (Taxonomy of Utility Outsourcing Models, March 5, 2017)

Competitive Mechanisms in Other Jurisdictions

Figure 1 maps utilities in other jurisdictions based on their outsourcing level, where + denotes utilities moving towards a higher outsourcing level and - denotes utilities moving towards a lower outsourcing level. The IESO currently outsources specific program services and is exploring the benefits of outsourcing integrated program services.

Figure 1. Spectrum of Utility Outsourcing Models

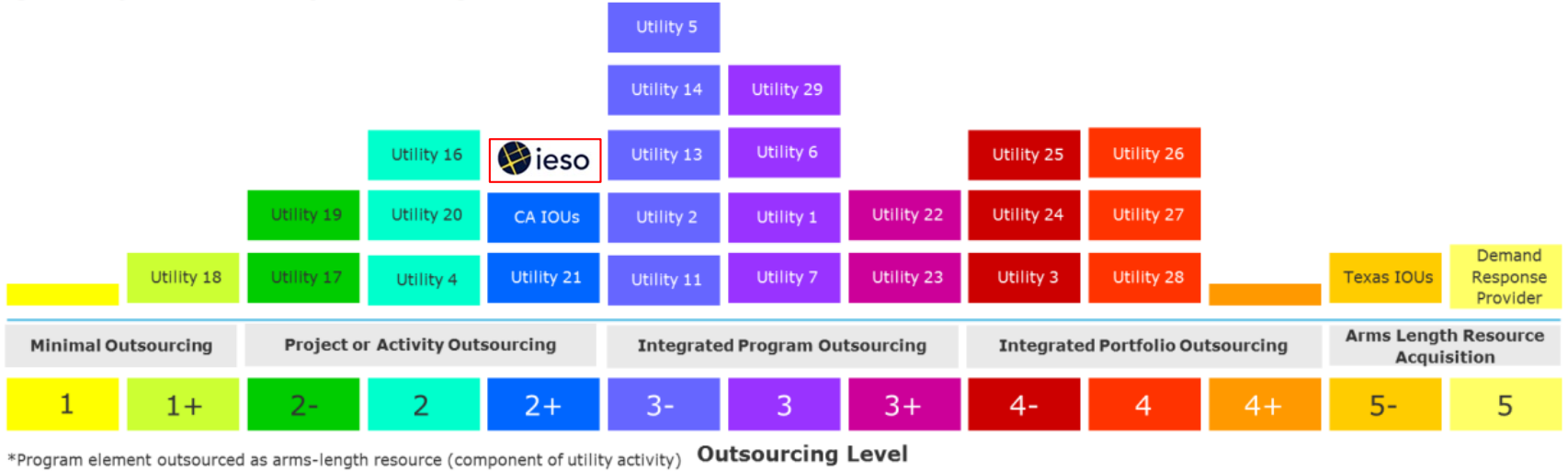

Figure 1 from report by and based on research conducted by DNV-GL (Taxonomy of Utility Outsourcing Models, March 5, 2017)

Customer Needs Review

Customer Needs Review

The Customer Needs Review was informed through multiple activities:

- Identifying consumer trends inside and outside Ontario through jurisdictional research
- Analyzing data and market research 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

Direct Marketplace Outreach & Stakeholder Engagement

- Consistent feedback was provided by the marketplace during the following outreach activities, resulting in several themes (see summary slides):

  - April 22 Stakeholder Engagement session: participation from over 50 organizations, with written feedback from five stakeholders (e.g., Electricity Distributors Association, Hydro One Networks Inc., Hydro Ottawa, Ontario Energy Association and Green Integration)

  - Direct marketplace outreach: engaged over 100 organizations (e.g., customers, stakeholders, program delivery partners, Energy Affordability Program Roundtable) across all customer segments with outreach wrapping up end of July

What We Heard

- **Decarbonization**
  - Consumers are placing high priority on meeting greenhouse gas reduction targets, pairing energy efficiency with electrification, with impacts and opportunities for customer and grid
- **COVID-19 Recovery and Supply Chain Issues**
  - COVID-19 continues to have an impact on energy efficiency projects - with supply chain disruptions, cost increases due to inflation, and organizations focused on core business priorities
- **Equity, Diversity and Inclusion**
  - Considerations for EDI should be included both in program design and in delivery to ensure equitable access to programs and to promote a diverse workforce

What We Heard (cont'd)

- **Local Needs and Customer Based Solutions**
  - Consumers are seeking program flexibility to meet local needs, as well as tailored programs for specific business/industry segments, and whole building pay-for-performance initiatives
- **Longer-Term Funding Commitments**
  - Current funding approach (start/stop model) creates barriers; funding is required to enable longer-term energy efficiency project planning
- **Enhance Measure Offerings**
  - Opportunities identified to enhance the Save on Energy portfolio with additional program measures (e.g., a Retrofit Custom like offer, additional lighting and controls, air and ground source heat pumps)

What We Heard (cont'd)

- **Building Capacity & Going Deeper**
  - Increased investment and dedicated capacity building/customer awareness initiatives needed 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
- **Consumer Awareness**
  - Improved awareness is needed to encourage participation in programs and maximize potential
- **Alignment Across Energy Efficiency Programs**
  - Better coordination is needed across energy efficiency programs (e.g., Enbridge and Federal government) to decrease marketplace confusion and maximize offerings to meet customer needs
  - Community-based partnerships should be considered to broaden reach of programs

Program Review

Program Review

The Program Review consists of the following key tasks:

- Assessment of performance of current IESO CDM programs, including a review of the outcomes of the **Customer Needs Review**
- Updated forecast, based on projected performance, for remaining period of the Framework (2023-2024)
- Review programs offered outside of Ontario in comparable jurisdictions
- Consideration of opportunities for enhancement of current and planned programs

2021 Overview – Framework Launch

- For the new 2021 – 2024 Framework, 2019-2020 Interim Framework programs were enhanced to align with 2021-24 needs as identified in the 2019 Annual Planning Outlook:
  - Budget constrained due to limited near-term system needs; addressed by modifying existing programs
  - Introduced demand savings targets and incentives to increase focus on peak electricity system needs
- COVID-19 significantly impacted the delivery of CDM:
  - Provincial lockdowns and safety protocols disrupted program delivery; Small Business Program (SBP) and Energy Affordability Program (EAP) were out of market for several months
  - Completing project M&V and adjusting energy baselines during the pandemic is an ongoing challenge for participants
  - Participant uncertainty and shifting budget priorities reduced the number and timing of projects - industries were also faced with challenges related to staffing and site access
  - Supply chain issues and increased time/costs/complexity for implementation
  - For some programs, administration costs still accrued despite programs not delivering savings

2021 Overview – In-Market Successes

Program	Status
Retrofit Program	• Energy savings are ahead of forecast and the new regional model is improving administration; prescriptive focus improved project review timelines
Energy Manager Program (EMP)	• Program is fully-subscribed and non-funded EMs are expressing interest in new Strategic Energy Management (SEM) and Existing Building Commissioning (EBC) Programs
Energy Performance Program (EPP)	• Experienced better than expected uptake despite building modelling challenges related to COVID-19 lockdowns
Small Business Program (SBP)	• Launched as soon as COVID-19 restrictions allowed; expanded in 2022 to include non-lighting measures
Energy Affordability Program (EAP)	• Relaunched in 2022 with Enbridge collaboration to improve the customer experience, leverage economies of scale, and respond to stakeholder signals in support of collaboration between EE and DSM

Framework Forecast

- Business Programs are forecasted to exceed 2021-2024 Framework CDM budgets by $76M if not constrained, to achieve 116% of the energy savings target and 88% of the demand reduction target
- Support Programs are expected to remain under the 2021-2024 Framework CDM budget by $69M to achieve 55% of the energy savings target and 54% of the demand reduction target

Insights:

- 2021 CDM activity reduced due to COVID-19 – delays experienced will impact ability for some programs to meet Framework targets
- Retrofit measure mix is significantly different than expected – horticultural LED lighting driving strong energy savings but negatively impacting peak demand savings
- EBCx and SEM forecasts have been decreased following more detailed design
- EAP heavily impacted by COVID-19 restrictions and supply chain issues – IESO currently evaluating opportunities to close the forecast gap in the second half of the Framework

Technology & Market Insights Impacting CDM Success

- Lighting studies show LED becoming baseline, and HVAC energy consumption is decreasing as well
- Increasing ventilation standards due to COVID-19 may offset equipment improvements
- Lighting controls, networked lighting, and improved lighting design savings potential indicates a substantial opportunity
- Participants taking a GHG-savings focus may be increasing electricity demand as they phase out fossil fuels
- Customers are interested in DERs and resiliency measures
- Customers are interested in net-zero objectives, including deep retrofits, envelope upgrades, and electrification
- Proliferation of IoT-integrated equipment offering energy management sophistication and ease of use (e.g. smart thermostats, network controls, automated optimization and equipment monitoring)

Program Trends In Other Jurisdictions

- IESO conducted a comprehensive jurisdictional analysis to understand program trends in other markets:
  - **Strategic energy management (SEM)** programs are demonstrating success in serving commercial and industrial customers. SEM establishes a commitment and internal structure within the customer's organization to identify and pursue energy efficiency improvement
  - **Multifamily programs** are proliferating and diversifying. Most of these programs have successful cost-effective models providing both gas and electric measures, common area and in-suite measures, with services including audits, direct install measures, whole-building retrofits, engineering and construction funding
  - **Low-income programs** reaching customers with high energy burdens are growing in importance – seven of the eight profiled programs have increased their spending over the past three years
  - **Lighting programs** are deploying new designs and strategies, shifting to provide advanced lighting and control technologies while focusing less on 1:1 LED replacement projects
  - **New construction programs** are embarking on a path to net zero energy, with a number of programs supporting the construction of ultra-low-energy buildings in both the commercial and residential sectors
  - **Leading upstream- and midstream-focused programs** leverage rebates in product distribution channels for greater market impact and improved cost-effectiveness
  - **Grid enabling technologies** programs supporting solutions that provide flexibility to the grid; "non wires alternatives" and targeting local constraints to defer wires investments

CDM Gaps and Opportunities

Sector	Current Program Offerings	Opportunities
Residential	• Limited to income-qualified customers via Energy Affordability Program and to First Nation communities via First Nation Programs	• Residential HVAC is an underutilized resource that could be leveraged via demand response to address peak demand; many barriers to residential participation in capacity auction process • Regionally targeted savings can maximize system benefits • Weatherization, HVAC tune-ups, smart home technologies
Commercial	• Customers well served by business programs including Retrofit, Small Business Program, Energy Manager Program/Strategic Energy Management Program, Existing Building Commissioning and Energy Performance Program	• Customers seeking support for custom projects that do not fit prescriptive Retrofit approach • Regionally targeted savings can maximize system benefits and defer transmission investments • Support for beneficial electrification, net-zero, and deep retrofits to target GHG-reduction projects
Industrial	• Business programs support: Retrofit, Energy Manager Program, Energy Performance Program, and new Industrial Energy Efficiency Program	• Support for large custom projects including industrial decarbonization • Growth forecast for new lumpy loads; develop industry-specific programming to target key economic/growth sectors (e.g. mining, electronics)

CDM Gaps and Opportunities (cont'd)

Sector	Current Program Offerings	Opportunities
Agricultural	• Greenhouse LED lighting incentives currently available through the Retrofit program	• Increased funding for LED lighting and equipment controls targeted at west of London greenhouses could help mitigate rate of demand growth and allow more new customers to connect to a constrained grid • Enable additional DERs that can free up more grid capacity in the region

Filling the Gaps – Existing Programs

- Existing programs are continually evaluated for enhancement opportunities with the following changes planned in 2022 and 2023:

Program	Opportunities
Retrofit Program	• Semi-annual measure and incentive update cycle to ensure a strong and relevant customer offering
Small Business Program	• Evaluating additional non-lighting measures to strengthen offering • Assessing the opportunity to include manufacturing focused measures • Exploring program collaboration with Enbridge for gas savings measures
Energy Performance Program	• Adding a centralized M&V platform to ease participant burden • Adding an aggregator participant stream to broaden offering • Exploring program collaboration with Enbridge in future
Energy Affordability Program	• Improving program awareness and in particular access to energy savings kits for moderate-income customers • Evaluating feasibility of introducing additional measures to the program

Filling the Gaps – Planned New Programs

- New programs and program changes were planned for launch in 2022 and 2023 to expand CDM offerings for customers aligned with the forecast of increasing system needs:

Program	Description	Notes
Existing Building Commissioning (EBCx)	Incentives and capacity building support for building recommissioning activities which target operational and maintenance savings	Planned launch moved from 2022 to 2023
Strategic Energy Management (SEM)	Facilitated cohort-based continuous improvement approach to reduce energy waste by embedding energy management practices across organizations	SEM is the evolution of the Energy Manager Program which will end in 2022
Custom Lighting	Incentives for customer to go beyond 1:1 lighting replacements and target improved design and more sophisticated control strategies	Proposed to be incorporated into the Retrofit Program in 2023
Midstream Lighting	Lighting incentives directed to lighting distributors to increase sales of EE lighting through point-of-sale discounts, improved EE product stocking, marketing, and distributor training	Majority of current lighting incentives offered through Retrofit proposed to be moved to the midstream distributor channel to reduce participation barriers

Filling the Gaps – AAR Options

- The 2022 IESO's AAR highlighted an emerging capacity need in 2025 that grows through the decade. To address this need, the AAR put forward additional actions, a combination of new resource procurements as well as the opportunity to expand the 2021-2024 CDM Framework in advance of the framework's Mid-Term Review.
- With the objective of maintaining reliability by addressing the growing system needs and the ask from the Minister in his April 4, 2022 letter, the IESO will leverage CDM program opportunities to achieve incremental demand and energy savings.
- Speed to market will be key given the 2025 system needs – As a result, the IESO will focus on those programs where there is significant achievable potential and a ready market, and will look to leverage existing delivery mechanisms where available.
    - Slide 34 identifies potential opportunities that can meet this request

Additional Portfolio Opportunities

- Other opportunities have been identified through the Program Review task, but will require further consideration and development – these concepts may be pursued as part of portfolio enhancements for 2024 and beyond:
  - Single Family Residential Programs
  - Targeted Multi-Family & Multi-Family Social Housing Programs
  - Decarbonization Support
  - New Construction & Net-Zero Support
  - Load Management & Grid Support

Additional Portfolio Opportunities

Opportunity	Areas of Potential Focus	Future Options
Residential Programs	• Weatherization • HVAC tune-ups or replacement • Smart home energy management	• New programs
Income-Eligible Programs	• Deeper retrofits • Targeted multi-family social housing offering	• Enhance EAP • New social housing program, including common area and in-suite measures
Decarbonization Opportunities	• Beneficial electrification • EV charging support	• Potential support through Retrofit/other business programs • New beneficial electrification program
New Construction	• Net-zero new buildings	• New programs
Load Management	• Behind the meter generation and storage • Distributed energy resources	• Opportunity to support through LIP, or other existing programs

Next Steps

Timing	Engagement Activity
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
June 15	IESO published response to stakeholder feedback
July Engagement Days (July 19, 2022)	Stakeholder Engagement Webinar Purpose: • 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

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