
LTEP Themes Proposed Initiatives

Minister's Briefing
March 27, 2017

Overview

A. Discussion Items

1. Supporting Indigenous Capacity and Leadership
2. Energy Accessibility
3. Innovation (Smart Customer, Smarter Grid)
4. Supporting Ontario's Climate Change Strategy

B. Other Items

5. Supporting Indigenous Capacity and Leadership
6. Energy Accessibility
7. Innovation (Smart Customer, Smarter Grid)

A: Discussion Items

1. Supporting Indigenous Capacity and Leadership: Community Capacity and Participation Programming

Recommendations:

- **Direction:** Continue with and build on success of Indigenous energy capacity support programs currently delivered by the IESO within the existing support funding envelope of \$10 million annually and with no new impacts to rate base. Potential to reduce funding envelope by focusing support funding entirely on Indigenous communities.
- **Direction:** Continue support for and drive implementation of *Aboriginal Community Energy Plans (ACEPs)*.
 - Continue funding for new or updated ACEPs
 - Evolve existing programming to provide funding towards implementation of completed ACEPs to ensure existing investment in community energy planning is realized into actual community initiatives and projects.
 - Ensure new and updated ACEPs include climate change considerations (resiliency, adaptation and mitigation planning)
- **Direction:** *Evolve existing Indigenous project participation support streams* to reflect current electricity and energy system context, to build in funding flexibility for unique and innovative community interests, and to assist with implementation of ACEPs.
 - Net metering and micro-grid opportunities and pilots
 - Renewable energy integration into the local distribution system, and other innovative solutions to address particular community/local/regional energy needs and interests
- **Exploratory:** Explore how community energy planning support program can accommodate communities with different structures/land tenures, such as Métis and Algonquins of Ontario.
- **Direction:** Continue providing funding support for *Indigenous Education and Capacity Building (ECB)* initiatives that meet evolving community needs such as business and sector skills training, energy literacy, and youth.
- **Direction:** Continue supporting *Indigenous leadership and partnerships in renewable energy and transmission* projects through funding streams that support partnership due diligence and project development costs, as appropriate (e.g. continued funding for LRP and FIT projects until appropriate phase out time; transmission project funding continues based on identified priorities and needs).

1. Supporting Indigenous Capacity and Leadership: Community Capacity and Participation Programming

Considerations:

- 89 First Nations have been approved for Aboriginal Community Energy Plan (ACEP) funding to date.
- ACEP does not currently include implementation funding, although the most recent ECB call for proposals included targeted funding for certain implementation activities. Implementation funding could include activities such as feasibility studies and business case development, research, project development, conservation and energy efficiency initiatives.
- Aboriginal Community Energy Plans are currently funded through the rate base via the IESO's \$10 million annual support program allocation (for all Energy Partnerships Program support programs, including Education and Capacity Building, partnership and project development funding streams for renewable and transmission projects). If fully subscribed, this results in ~6 cents/month for a residential consumer.
- Encouraging community energy planning linkages with climate change resiliency, adaptation and mitigation planning are particularly important for northern Ontario communities, where the effects and negative consequences of climate change are more pronounced.
- No Métis communities have applied into the existing Aboriginal Community Energy Plan program to date, although interest was expressed during LTEP engagements in exploring models of community energy planning support that would provide flexibility to accommodate unique needs of Métis and special land tenures of communities without reserves.
- Indigenous community capacity and participation programming support could continue to be delivered through revised IESO Energy Partnerships Program streams (global adjustment) or through new ministry programs (tax base).
- Indigenous communities and groups should be engaged to inform evolving Indigenous participation programming needs.

1. Supporting Indigenous Capacity and Leadership: Conservation and Housing

Recommendation:

- **Direction:** Funding for implementation of ACEPs, which could include community-specific conservation, efficiency, or distributed energy measures.
- **Direction:** Report on options to improve availability of conservation programs for Indigenous communities.
- **Direction:** Promote energy literacy on energy conservation and efficiency, including engaging youth. (*links to Education and Capacity Building Fund – slide 4 and 5)
- **Exploratory:** Develop a First Nation Energy Strategy in coordination with the provincial, federal and First Nations governments, addressing energy-efficient and climate-appropriate design in homes on First Nation reserve lands and conservation and/or distributed energy resource measures for energy intensive infrastructure, such as water treatment plants.

Considerations:

- Better align conservation funding with local needs. For example, Hydro One's First Nations Conservation Program is not an open-intake program; non-grid connected and IPA communities cannot access distributor conservation programs.
- Seek potential links to CCAP such as resiliency/adaptation planning for Indigenous communities.
- Existing forums such as the First Nation-Ontario Energy Table could be used to engage with First Nation leadership on opportunities to improve housing and energy use on reserve.

1. Supporting Indigenous Capacity and Leadership

Improving Access to Financing

Recommendation:

- **Decision:** Work with the Ontario Financing Authority and/or other partners as appropriate to revise or replace the Aboriginal Loan Guarantee Program (ALGP) including streamlining the application and due diligence processes and reducing the threshold for project size in order to accommodate smaller-scale projects.

Considerations:

- The ALGP began in 2009 to assist Indigenous communities with accessing capital for large-scale renewable energy and transmission projects. Indigenous communities have acknowledged the importance of programs to assist with accessing financing for capital, however, the current ALGP is not meeting the needs of communities.
- Feedback from ALGP participants, financial advisors and the business community indicates that the onerous due diligence and high transaction costs are significant program barriers.
- With LRP suspended and the small FIT phasing out, there is a need to re-size the current threshold for eligible projects (currently \$5 million or greater), to reflect current energy needs and the interests of communities for smaller-scale projects.
- Revision of the ALGP, or development of alternatives, aligns with ENERGY's broader initiative of assessing social finance frameworks and support mechanisms.

2. Accessibility: Strengthening LDC Accountability to Consumers

Recommendation

- **Direction:** Direct the Ontario Energy Board (OEB) to examine and implement options to continue the work of the Renewed Regulatory Framework by enhancing utility performance through incentives for improved performance and penalties for poor performance in key areas. Options could include:
 - Optimization of investment planning, including tying return on equity (ROE) to performance and risk;
 - Strengthen LDC Scorecard by connecting it to LDC financial performance through earnings sharing or penalties paid to consumers;
 - Revise rate-setting to reflect tightening productivity requirements and capital cost avoidance
 - Create regulatory incentives for LDCs to pursue efficiencies and service sharing agreements.

Considerations

- **Forecast:** Recommended option should not have a material impact on the electricity forecast.
- **Prices:** Improved LDC performance should have a downward pressure on the distribution portion of the total electricity bill, with modest total bill impact.
 - Distribution rates only account for roughly 20% of the total electricity bill.
 - Opportunities for improved efficiencies and increased LDC performance may have moderate price impact on distribution rates, but are likely to result in mitigating increases rather than driving decreased rates.
 - Direct payments to consumers for failing to meet a performance threshold (ex: \$20 for an extended outage) would have greater bill impact but would be rare and intermittent in occurring.
- **Regional:** Different LDCs are currently operating at differing levels of operational performance and efficiency. Customers of highly-performing LDCs may see less of an impact than customers of poorly-performing LDCs, who have greater opportunity for improved performance.

2. Accessibility: Strengthening LDC Accountability to Consumers

Considerations

- Stakeholders provided general input on improving the regulatory framework.
- LDCs are looking for regulatory mechanisms that allow and encourage utilities to deliver services that meet the needs of consumers and are responsive to the changing environment.
- LDCs particularly expressed interest in expanding shared-service agreements with other LDCs.
- Like other components of Ontario's electricity system, distribution sector costs have risen as investments have been made to update and modernize system infrastructure. Over the same time period, distribution sector productivity and cost efficiency have decreased. This trend raises concern that customers are not realizing a net benefit from sector cost increases, as customers receive less value from the distribution bill.
 - For the period 2002-2012, sector productivity has decreased by an annual average of -0.93% when including Hydro One and Toronto Hydro, the worst performers.
- The OEB, through the Renewed Regulatory Framework for Energy (RRFE), has since 2012 attempted to move the distribution sector towards a performance/outcomes-based regulatory framework. While new reporting requirements such as the LDC performance scorecard are positive developments, RRFE does not tie these system performance expectations to LDC financial performance.
- The 2013 LTEP included a commitment to review the implementation of the LDC Scorecard and develop additional policy options.

2. Accessibility: Strengthening LDC Accountability to Consumers

Considerations Cont'd

- Performance-based options have the potential to indirectly incent consolidation (in a manner that returns benefits to consumers), improve customer experience, and potentially reduce ROE in an equitable manner in the event performance expectations are not met.
- Encouraging shared partnerships on services between utilities will help reduce costs in the back end and encourage further innovation for small to medium sized utilities.
- Under the Ontario Energy Board Act, the OEB's role is established as an independent regulator with authority to establish appropriate mechanisms to regulate local distribution companies (LDCs). The Minister of Energy holds broad responsible for energy sector outcomes over the long-term and is accountable for the OEB's fulfillment of its mandate as well as the OEB's performance.

Example of utilities sharing services and driving innovation:

Grid Smart City

- Thirteen LDCs working together to achieve greater economies of scale, efficiency and effectiveness.



CHEC

- CHEC, an association of 15 LDCs and modeled after a cooperative to combine resources

Centre Wellington
Collus PowerStream
InnPower
Lakefront Utilities
Lakeland Power
Midland Power Utility
Niagara-on-the-Lake
Orangeville Hydro
Orillia Power
Ottawa River Power
Renfrew Hydro
Rideau St. Lawrence
Wasaga Distribution
Wellington North
West Coast Huron

2. Accessibility: Enhancing Sector Transparency and Consumer Literacy

Recommendation:

- **Exploratory:** The Ontario Energy Report (OER) could be leveraged to provide more information on Global Adjustment to the public.
- **Exploratory:** Initiatives to increase accessibility and a consumer centric approach could be pursued. The LTEP could reference the OER and the Ministry's efforts to improve energy literacy.

Considerations:

- The need for a more engaged, energy literate public was highlighted in the Drummond Report, the 2013 Auditor General's Annual Report, and the 2013 and 2016 LTEP stakeholder consultation sessions.
- In response, the Ministry launched emPOWERme in 2013. It includes class room-focused fact sheets, videos, interactive tools, infographics and other energy-focused educational resources.
- In December 2016, Premier Wynne expressed an interest to provide more detail about the Global Adjustment (GA) to consumers.
- A link to the OER could be added to electricity bills to increase consumer awareness of the available resources
- In 2014, the Ministry, working with the IESO and OEB, launched the Ontario Energy Report (OER) website. In addition to quarterly reports on electricity, natural gas and oil, the site includes links to many other electricity sector publications and reports.
- Consumers voiced concerns during the 2017 LTEP consultations regarding the need for increasing transparency of Global Adjustment, while simultaneously asked for increased bill simplification.
- The Ministry also actively promotes energy literacy via Twitter, and more recently, through social media channels such as LinkedIn and Facebook.
- In the past, the Ministry supported Pollution Probe and the Mowat Centre's efforts to promote energy literacy.

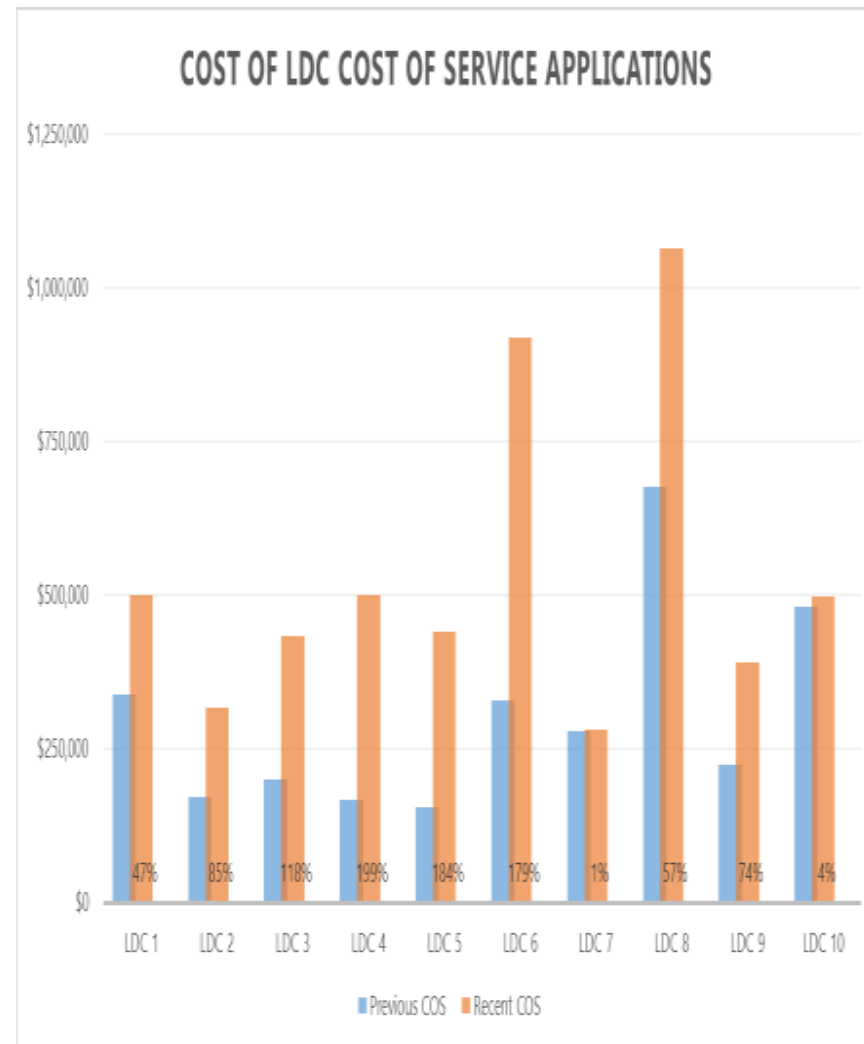
2. Accessibility: Ensuring a Modern, Streamlined and Cost-Effective Regulatory Process

Recommendation

- **Exploratory:** Ministry and OEB to work together to consider how the regulatory process can be reformed to clarify policy signals for regulated entities, ensure access and transparency for consumers, reduce costs and burdens, and better support and enforce new performance expectations.
- **Exploratory:** Digitize OEB operations and allow for Ontarians to participate in rate hearings digitally.

Considerations

- Local Distribution Companies are concerned that regulatory processes have become increasingly costly, time-consuming and overly-prescriptive with limited cost-benefit analysis to justify.
- LDCs are hesitant to prepare comprehensive rate filings due to unclear guidelines. LDCs believe certain regulatory and reporting requirements placed on LDCs can be streamlined, and instead focus on achieving outcomes.
- Providing LDCs with regulatory clarity and consistency would assist in achieving new LDC performance expectations.



2. Accessibility: Ensuring a Modern, Streamlined and Cost Effective Regulatory Process

Considerations

- A number of reviews and changes have been introduced to the OEB regulatory and process framework in recent years in an attempt to become more consumer-focused and promote LDC efficiency and productivity. Such an initiative would represent a continuation of work the OEB has already begun.
- The OEB is an independent regulator and as such they set their own procedural and administrative rules (within the confines of existing legislation) and will ultimately determine how reforms are implemented in practice.
- Current performance measures designed by the OEB on its own operations have been assessed to be almost fully achieved, leaving little scope and incentives from within the regulator for further changes and improvements. However, there are general concerns that the regulatory process still requires further work to ensure LDC efficiencies are returned to consumers.
 - The Mandate Review of the OEB, underway in Q1 2017, can inform development of a new performance framework.
- As intervenor costs make up a large portion of OEB-assessed costs, the Ministry could encourage the OEB to continue to reform its consumer engagement practices.
- **Forecast:** This initiative is not expected to affect Ontario's demand forecast.
- **Prices:** Across LDCs, costs for hearings have increased, separate and apart from inflationary increases. Hydro One's latest Custom IR application cost \$679,889 to file. The OEB's regulatory cost per customer in 2015 was \$5.71, up 39.3% over 2009. Enhanced cost effective regulatory processes is expected to result in downward pressure on distribution rates for consumers.
- **Regional:** Consumers served by LDCs that are larger and more operationally complex would experience the greatest benefits as these rate filings tend to drive OEB costs.

3. Innovation (Smart Customer, Smarter Grid): Distribution Grid Modernization

Recommendation:

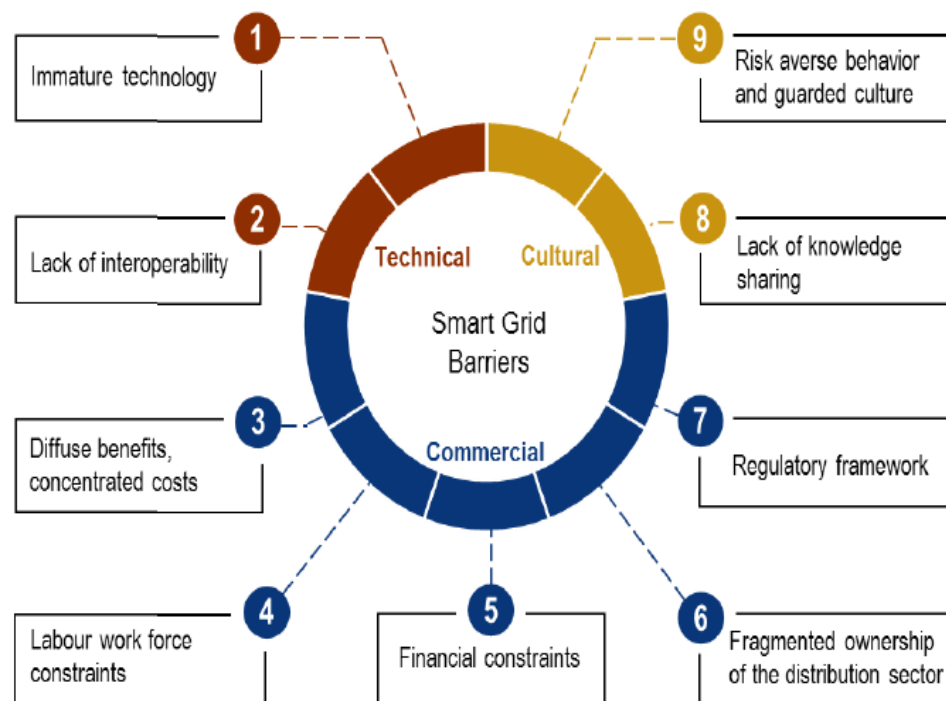
- **Decision:** The Ministry will articulate a vision for distribution grid modernization in LTEP, emphasizing the value created by using information technology to create a platform for an integrated, intelligent electricity distribution system.
- **Decision:** The Ministry will work to create the basic environment that enables utilities to choose the investments that make the most sense for creating efficiency, managing their systems, and serving customers better. This requires moving beyond traditional capital planning models that rewards more investment in “poles and wires” and deters investment in innovative technologies and solutions.
- **Direction:** The Ministry will articulate its intent to remove market and regulatory barriers to innovation in the distribution system. This includes, but is not limited to:
 - Addressing the diffuse benefits problem arising from smart grid investments to capture the full value of distribution sector innovation, including establishing a formal framework for evaluating the costs and benefits of grid modernization activities;
 - Require that distributors clearly communicate their expenditures on smart grid technologies and articulate a substantial, long-term grid modernization plan in cost-of-service rate filings;
 - Create incentives for operational expenditures by distributors that defer upgrades or optimize the use of existing capital, which may include a regulated rate-of-return;
 - Exploring incentives for utilities to introduce new technologies that promote an integrated and intelligent grid ; and,
 - Moving to address the aversion to innovation and smart grid investment. -
- **Decision:** Establish a formal mechanism to incent and encourage the sharing of grid modernization activities and regulatory experiences among Ontario’s distribution companies
- **Decision:** Create an advisory body of external knowledge experts to provide the Ministry and the sector with unbiased, evidence-based advice for specific energy issues.

3. Innovation (Smart Customer, Smarter Grid): Distribution Grid Modernization

Considerations:

- Through the *Green Energy Act*, 2009, and the 2010 Ministerial Directive to the OEB, the government articulated its direction for the OEB to establish, implement, and promote a smart grid for Ontario.
 - Ministry research finds that the vision of an integrated, intelligent grid for Ontario has not been realized.
 - Since the introduction of the OEB's Renewed Regulatory Framework for Electricity Distributors, distributor asset planning shows little evidence of extensive exploration of smart grid technologies as opposed to traditional 'poles and wires' investments.
- The 2015 Navigant *Ontario Smart Grid Assessment and Roadmap* identified that continued investment in smart grid through 2035 has the potential to deliver a net benefit of \$6.3 billion to Ontarians.
 - Navigant also identified a number of technical, commercial, and cultural barriers that would inhibit Ontario's ability to realize the full value of continued smart grid investment, including Ontario's regulatory framework, a culture of risk aversion in the distribution industry, and a lack of information sharing among distributors on smart grid investments.
 - A number of these barriers – including diffusion of benefits, the regulatory framework, and lack of knowledge sharing – are addressed by Ministry's grid modernization recommendations.

Figure 5. Barriers to the Development of a Smart Grid



Source: Navigant

3. Innovation (Smart Customer, Smarter Grid): Distribution Grid Modernization

Considerations:

- Ministry research indicates that advanced communications and information technology infrastructure is required to realize the full value emerging technologies:
 - New distribution technologies are increasingly digital, using automation and grid information to optimize their operation.
 - Modern home and business energy management systems rely on intelligible information to make decisions on energy use.
 - Any exchange between customer technologies and the grid (like vehicle-to-grid or demand response) requires a communications infrastructure.
 - Sensors can also provide grid visibilities to areas that Ontario's distributors are typically blind to – low-voltage systems close to our homes and businesses. As DER is adopted, the visibility enabled by these sensors will be needed to maintain reliability and fully utilize these assets.
- There are a number of business models that may emerge in the distribution sector in the future – from “transactive energy” to “distribution system operators.”
 - What model will emerge for Ontario is unknown – it will be a function of local conditions, customer behaviour, regulatory decisions, and policy direction.
 - By implementing an information and communication technology platform – the one commonality between all of these models – the Ministry can enable the natural evolution of the electricity market, but not dictate it.
- Accordingly, grid modernization is about moving beyond isolated smart grid investments to an integrated, distributed, intelligent system that embraces a holistic view of innovation – from technology to business models. It is a comprehensive policy that touches on the role of the LDC, approaches to innovation, and customer choice.

3. Innovation (Smart Customer, Smarter Grid): Distribution Grid Modernization

Considerations:

- Conceptually, grid modernization can be seen as a “*platform*,” a foundation comprised of an information technology, including smart meters, sensors, data analytics, and advanced distribution management systems.
- The *platform* is inherently technology agnostic: it provides the prerequisite infrastructure for advanced distributed energy resources, utility assets, and customer energy technologies but does not dictate those to be adopted.
 - Realize the full value of distributed energy resources and other innovative technologies, including realizing their full potential and minimizing potential negative impacts on the grid;
 - Enhance grid visibility and provide advanced data and analytics, increasing reliability, enabling better maintenance regimes, encouraging innovation, and promoting advanced asset planning; and,
 - Provide the information and infrastructure required to enable and support customer choice.
- The goal of the platform is to enable – but not direct – efficient outcomes in the distribution sector by providing a framework that enables utilities to optimize their asset and operational plans, and enables customers to make sound energy decisions.
- The platform enables a number of other Ministry outcomes, including:
 - The greater adoption of renewable energy (see LTEP Themes, Minister’s Briefing February 2, 2017);
 - Customer empowerment;
 - Enhanced conservation and energy efficiency outcomes;
 - Virtual net metering (see Net Metering content in LTEP Themes, Minister’s Briefing February 2, 2017); and,
 - Reduction of emissions from the energy sector.

3. Innovation (Smart Customer, Smarter Grid): Exporting Expertise and Financial Innovation

- **Recommendation:** Develop initiatives to promote innovation including supporting Ontario companies to export their expertise, and explore innovative financial tools that stimulate lower cost financing in the sector.

	Exporting Expertise	Financial Innovation
Decisions	1. Increase Ministry's efforts to open new markets for Ontario's energy expertise by producing market intelligence, building sector strategies, and promoting Ontario's technical expertise at international forums. 2. Consider the potential benefits of a fund to support demonstration of Ontario technologies abroad in collaboration with the Federal Government.	1. Stimulate lower cost financing for energy sector innovations by exploring alternative financing tools (e.g. credit enhancement like ALGP, impact bonds, local improvement charges, interest buy-downs, community funds, first-loss capital). 2. Capture the social, environmental, and other non-financial impacts of proposals by developing a comprehensive social finance framework to support policy development.
Considerations	Enhanced collaboration with federal and provincial ministries and agencies would be needed to avoid duplication of programs and increase value add.	Financial innovation aligns with Ontario's <i>Social Enterprise Strategy</i> , <i>Cleantech Strategy</i> , and <i>Climate Change Action Plan</i> that explore innovative financial supports and models.
Draft LTEP Statements	<i>The Ministry will research and produce market intelligence, collaborate with stakeholders to build sector-specific strategies and look for ways to promote Ontario's technical and policy expertise at international energy forums.</i>	<i>The Ministry will explore financial innovations – including financing models, social finance frameworks, and support mechanisms – that can be applied to support Ontario's continued commitment to innovation in the energy sector.</i>

4. Supporting Ontario's Climate Change Strategy: Mitigation Measures

- The Climate Change Action Plan (CCAP) cabinet minute stipulates that ENERGY is responsible for work on 21 actions, which includes:
 - Leading reviews and report backs on 11 proposed CCAP actions; and
 - Supporting reviews and report backs on 14 proposed CCAP actions.

CCAP Tranches	Action Plan Minute Item	LTEP Theme Deck Containing Additional Details
Tranche 1	Actions to support electric vehicles (EV)	Innovation
	Proceeds recycling to electricity sector ratepayers (under discussion)	Promoting Equitable Energy Access and Affordability
	Community energy planning	Regional Planning/Issues
	Microgrids and renewable energy in remote First Nations	Renewable Energy
	Development of 'Green Bank' [name under proposed regulation: 'Ontario Climate Change Solutions Deployment Corporation' (OCCSDC).	Enhancing our Commitment to Conservation
Tranche 2	Low-Carbon Fuels Policy/Programs	Promoting Equitable Energy Access and Affordability
	Home Energy Rating and Disclosure (HER&D)	Enhancing our Commitment to Conservation
Other Items	Green Button	Enhancing our Commitment to Conservation
	Single Portal for Social Benchmarking Programs	Enhancing our Commitment to Conservation
	Efficiency standards for equipment in waste water and drinking water treatment plants	Enhancing our Commitment to Conservation

4. Supporting Ontario's Climate Change Strategy: Adaptation Measures

The Ministry will consider climate change adaptation in energy planning as part of the 2017 LTEP

- **Decision:** Profile the extensive adaptation and resilience activities continuing, underway and completed by Ontario energy agencies and market participants.
- **Decision:** Propose further actions that the OEB can undertake to ensure LDCs integrate adaptation considerations in long-term planning. Possible initiatives include:
 - Leverage Regulatory Tools: The Ministry will direct the OEB to develop an adaptation framework for utilities to support the integration of sound evidence on climate change into rate application and to balance the need for system resilience with system costs.
 - Sector-wide Distribution Vulnerability Assessment: Complementing the 2015 IESO transmission system vulnerability assessment, the Ministry will support a comprehensive vulnerability and risk assessment of the distribution sector to encourage risk management strategies across the sector.
 - Facilitate Utility-Level Knowledge Sharing: The OEB will promote the sharing of lessons learned, expertise, and improved practices among utilities.

Considerations:

- Ontario's Climate Change Strategy commits the province to "integrate climate change mitigation and adaptation considerations into government decision-making and infrastructure planning."
- MOECC's upcoming Adaptation Plan seeks to profile new initiatives that are adaptation-focussed and have measurable outcomes.
- The Auditor General, the Environmental Commissioner and other stakeholders have been critical of the government's work on adaptation, including the Ministry's work of monitoring climate change preparedness at the distribution level.
- MOECC has indicated that the Auditor General in 2018 will undertake a follow-up audit on adaptation.

B: Other Items

1. Supporting Indigenous Capacity and Leadership: First Nation Delivery Credit

Recommendation:

- **Direction:** Implement a First Nation Delivery Credit*
- **Direction:** Continue offering energy affordability supports including the Ontario Electricity Support Program, the Low-Income Energy Assistance Program, Rural and Remote Rate Protection, and the 8% rebate on household electricity bills.
- **Exploratory:** Initiate discussions on how communities with unique land tenures can possibly be accommodated under this initiative.

Considerations:

- A 100% credit would provide an average \$85/month benefit to target customers.
- Annual cost \$13-20 million.
- This approach excludes First Nations that do not have reserve land, regardless of the strength of Aboriginal rights claims (e.g. 9 of the 10 AOO communities).
- First Nation leaders will continue lobbying for elimination of delivery charges for non-residential customers on reserve and members living off reserve.
- LTEP feedback from Métis included request for a Métis-specific program to help reduce their members electricity costs. Métis also do not have reserve lands.

**Refer to additional details about the First Nation Delivery Credit in LTEP briefing deck: Bending the Cost Curve*

1. Supporting Indigenous Capacity and Leadership: Energy Resiliency (Transmission)

Recommendation:

- **Decision:** Ontario to ensure that priority transmission lines identified in the 2013 LTEP remain listed as priority projects in the 2017.
- **Direction:** Ensure appropriate programs are in place to continue to support the participation of Indigenous communities in major, priority transmission lines and outline the process for the designation of priority transmission projects in Ontario in a clear, transparent way.
- **Exploratory:** Ontario to look at ways to enhance reliability, particularly in northern and remote areas of the province. See other LTEP theme decks (e.g. regional planning and making use of existing resources)

Considerations:

- Funding for transmission partnership work could continue through the IESO Energy Partnerships Program (funded through global adjustment) or through the development of new Ministry-led support programming (as noted in briefing deck– Renewables).
- The development of any new programming for Indigenous communities should include Indigenous community engagement as part of the development process.

**Further details in briefing deck – Maximizing the Use of Existing Energy Assets and Networks.*

1. Supporting Indigenous Capacity and Leadership: Energy Resiliency (Remote Community Connection)

Recommendation:

- **Decision:** Work with the federal government to finalize a cost-sharing agreement in support of the grid connection of 21 communities.
- **Decision:** Continue to work towards the early connection of Pikangikum.
- **Decision:** Continue to engage with remote First Nation communities to undertake the planning and transition work required to make grid connection a reality, including:
 - Engaging with Matawa communities that are not currently a part of the Watay project
 - Engaging with IPA communities to facilitate the transition to a licenced distributor
- **Decision:** Continue to engage with the four communities that are not economic to connect to the grid to develop diesel-reduction options that meet community energy needs using renewable generation and microgrid technology, where appropriate, consistent with implementation of CCAP commitments.

Considerations:

- The Ministry continues to work with the federal government on a fair cost-sharing agreement

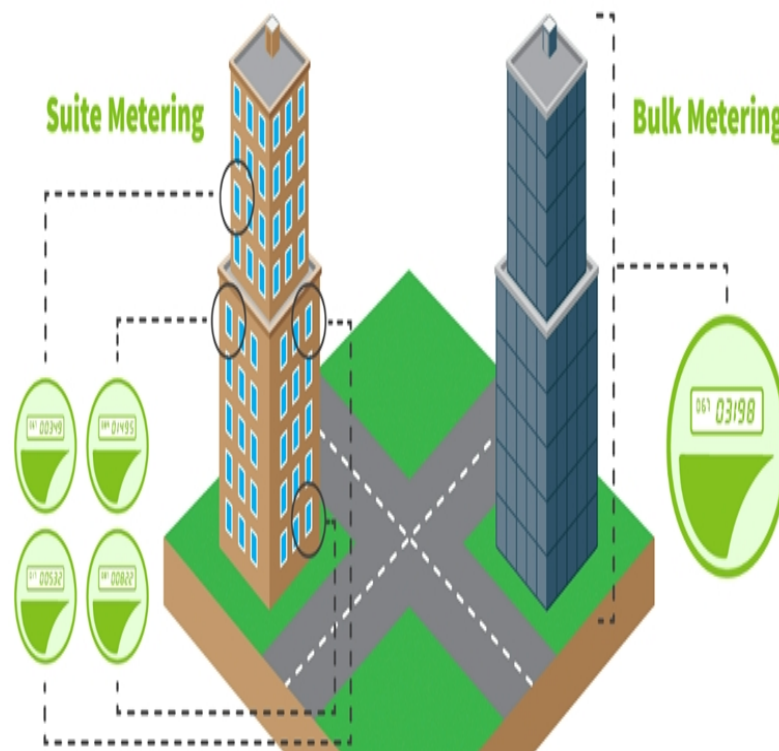
2. Accessibility: Protecting Tenants Through Rate Regulation of Sub-Metering Providers

Recommendation

- **Exploratory:** Task the OEB with conducting an assessment of whether Unit Sub-Meter Providers (USMPs) charges should be regulated as a means to ensure that the OEB is adequately fulfilling its mandate to protect the interests of electricity customers, including those billed by USMPs, with respect to rates

Considerations

- Unit sub-meter providers are private companies which install 'unit sub-meters' for individual units in a multi-unit building (connected to an LDC's bulk meter) and bill unit occupants directly
- As per O.Reg. 389/10 individual metering ('suite metering' – see diagram) is required in all new multi-unit buildings built after January 1, 2011 and is optional for pre 2011 buildings.
 - To comply, buildings can choose either 'unit smart metering' by an LDC or unit sub-metering by a USMP.
- USMPs are licenced by the OEB and are subject to the OEB's 'Unit Sub-Metering Code'.
- USMPs are required to pass on LDC bill charges as measured by the bulk meter at cost but their additional monthly fees (for sub-metering and billing) and miscellaneous charges (e.g. disconnection) are not reviewed or approved by the OEB
 - USMP fees usually vary by building and by customer type and are typically not available online.



2. Accessibility: Protecting Tenants Through Rate Regulation of Sub-Metering Providers

Considerations (Cont'd)

- The OEB Act contains an un-proclaimed provision which authorises the OEB to regulate USMP charges.
- Some USMPs have recently lobbied government to mandate suite metering for all multi-unit buildings as a conservation measure

Key USMP Stats

- 29 Licenced USMPs
- 7 USMPs serve ~175,000 residential & small business unit sub-metering customers (as of December 2015, according to Ontario Clean Energy Benefit payment data);

- **Forecast:** Regulations of USMP charges is not expected to affect the electricity demand forecast or require modelling
- **Prices:** Regulation of USMP fees and charges may result in more consistent, transparent and potentially lower electricity bills for USMP customers. The OEB's assessment would have to include a cost-benefit analysis which would consider additional costs to the OEB to rate regulate this sector versus the benefits to the relatively small pool of USMP customers
- **Regional Impacts:** USMP providers service multi-unit buildings in urban areas across the province

2. Accessibility: Regulatory Flexibility and Financial Support for Natural Gas Expansion

Recommendation:

- **Decision:** Support natural gas expansion noting the OEB decision and MOI funding, while recognizing that natural gas will not be available in every corner of the province.
- **Exploratory:** Seek to maximize the value of existing natural gas infrastructure while reducing GHG emissions through integrated energy solutions.

Considerations:

- Natural gas is commonly used as a heating fuel. Compared to other heating fuels, natural gas has a lower carbon footprint than propane or heating oil. Natural gas would have a higher carbon footprint than electricity or renewable sources like biomass (e.g., wood).
- Extensive natural gas infrastructure is in place in Ontario (approximately 75% of homes are heated with natural gas in Ontario). The infrastructure includes extensive storage and capacity to meet peak heating demands.
- Stakeholders identified that access to natural gas is urgently needed in rural Ontario to lower energy costs for homes and businesses, to facilitate industrial expansions and to attract investment.
- In February 2015, the Minister asked the Ontario Energy Board (OEB) to assess what options may exist to connect more communities to natural gas and to ensure the rational expansion of Ontario's natural gas transmission and distribution system.
- In November 2016, the OEB issued a decision on a generic hearing regarding natural gas expansion. The decision gives more flexibility to utilities (by allowing stand-alone rates and surcharges) to make expansion to unserved communities more economically feasible and encourages competition to service communities.
- Also supporting natural gas expansion is the plan from the Ministry of Infrastructure to support expansion by a loan and/or grant program.

2. Accessibility: Regulatory Flexibility and Financial Support for Natural Gas Expansion

Considerations

- The 2013 LTEP highlighted that Ontario wants to ensure communities can access natural gas to take advantage of low prices.
- Maximizing and maintaining the use of natural gas infrastructure can help keep costs down by avoiding “stranded asset” risk where ratepayers pay for minimally utilized / unused assets.
- Overall system costs need to be considered in the LTEP – natural gas can continue to play a role during the transition to a low carbon economy by meeting key needs (e.g., peak heating demand).
- Renewable Natural Gas (RNG) is an opportunity to leverage existing natural gas infrastructure and green the economy - RNG is a renewable fuel source that can help meet Ontario’s climate change objectives. Expanding natural gas to rural areas will increase pipeline connections to potential sources for RNG supply
- There may be niche economic opportunities for natural gas to replace higher carbon intensity diesel / gasoline in the transportation sector. Climate Change Action Plan has initiatives to support infrastructure expansion, a current barrier to natural gas use in the transportation sector.
- Due to high cost of pipeline connections, natural gas will not be economically viable for all regions / areas of the province. Other fuels (e.g., electricity, heating oil, propane, wood, etc.) will have to meet end user needs.
- **Forecast:** Expansion of gas services is not anticipated to have a significant impact on electricity or gas demand on a provincial scale .
- **Prices:** Individual consumers could see major energy cost savings for space and water heating.
- **Regional:** Expansion will affect regional electricity and gas demand and associated planning on a community scale.

3. Innovation (Smart Customer, Smarter Grid): Expanding the Smart Grid Fund

Recommendation:

- **Decision:** To build on previous success, an expanded SGF program is a policy tool which will continue to support the Ministry's goal of addressing barriers to grid modernization within the sector. The expanded program will be diversified to achieve a broader set of government policy objectives and ensure that government learns as much as possible about how new technologies work and how they can be commercialized.
 - Recommended \$12.5M per year from CRF– it is recommended that this annual amount be maintained, within a set number of years (e.g. \$50M over four years).
 - IESO has limited experience with the distribution sector, which is a growing policy responsibility for the Ministry of Energy. Thus, rate-basing the program is not recommended.
 - This action is supported by Navigant's *Smart Grid Roadmap*, which states that there is a strong business case for continuing to invest in smart grid technologies through 2035.

Considerations:

- Over five years, the Ministry has developed in-depth knowledge and insight into cutting edge technologies and leveraged its learnings to identify both barriers to and opportunities to support distribution grid modernization.
 - For instance, in the most recent SGF round, investments were strategically made in high-value technologies identified in the Navigant Smart Grid Roadmap, specifically focussing on the technologies providing greater grid visibility. Grid visibility, in turn, is a focus of grid modernization.

3. Innovation (Smart Customer, Smarter Grid): Expanding the Smart Grid Fund

Considerations:

- A survey of SGF recipients and subsequent research indicates that there are a number of cultural and market behaviours that are impeding the uptake of grid modernizing technologies in Ontario.
 - While technologies may be market ready, developers are not working together to present complete solutions to utilities in a way that makes good business sense. There continues to be work required to ensure companies can be in a better position to market their technologies in the sector.
- The government has several initiatives in place to support innovation and advance economic growth. The Smart Grid Fund is the only one focusing on the electricity distribution sector, which has significant room to grow as smart meters are rolled out in other jurisdictions.
 - The SGF puts the Ministry in a strategic position to continue to encourage the adoption of -- but not dictate -- innovative processes, services, business models, and technologies as well as an awareness of innovation and best practices – a critical support for grid modernization policy.
- The SGF can be broadened to do more than electricity distribution innovation, helping to meet other government policy initiatives (e.g. climate change mitigation and adaptation, fuel switching, district energy systems).

3. Innovation (Smart Customer, Smarter Grid): Learning from Energy Storage

Recommendations:

- **Decision:** Ensure there are no market or regulatory barriers for storage technology to participate in Ontario's market. The Ministry should continue to work with agencies and stakeholders to address regulatory barriers to commercial deployment of energy storage technologies, either onto the grid or behind the meter.
- **Direction:** Direct OEB and IESO to continue to work with storage companies to ensure no unfair barrier exists.

Considerations:

- Ministry analysis to date is that there is not a specific need for a policy framework focused on storage deployment in Ontario. At this time, technology costs and system needs do not align.
- Nonetheless, there are potential value streams from storage technology on the system, and prices continue to drop. As such, the Ministry should continue to work with agencies and stakeholders to address regulatory barriers to commercial deployment of energy storage technologies.
- Storage projects that were awarded contracts in the first phase of the IESO procurement were expected to be in service by end of 2016. None are yet in service and it is likely that some will request extensions to their contracted timelines. Storage projects that were awarded contracts in the second phase of the IESO procurement are not expected to enter service until early 2018.
- The Ministry agrees with IESO that future procurements for system services (such as regulation services) should be technology agnostic, and storage providers should be encouraged to participate in tenders alongside alternative service providers.
- As energy storage costs fall and become competitive with other technologies in the provision of system services, the Ministry should continue to work with agencies and stakeholders to address regulatory issues that might create barriers to the deployment of commercial energy storage projects.

3. Innovation (Smart Customer, Smarter Grid): Low Emission Vehicles

Recommendations:

- **Decision:** The Ministry will develop a vehicle to home / grid integration roadmap that reflects the potential benefits of leveraging EV batteries to provide benefits to the home and to the grid.
- **Decision:** Work with other ministries on the implementation of EV initiatives under the CCAP to ensure that grid impacts are identified and mitigated, and any grid benefits are optimized.
- **Exploratory:** The Ministry will continue working with industry and ministry partners to identify other ways that it can support the uptake and integration of electric and low-carbon (i.e., hydrogen fuel cells, biofuels and natural gas) mobility in the province.
- **Decision re: Low Emission Fuels:**
 - Recognize that there are multiple alternatives for low-carbon transportation fuels and vehicles and that not all solutions are applicable in all parts of the province. Transportation is a system -- low emission vehicles often require infrastructure investment and fuel availability to be used and adopted.
 - Continue work on the green commercial vehicle program to support the purchase of a range of alternative fuel vehicles and low-carbon technology, and a four-year limited incentive program for LNG or CNG-fuelled trucks. (NOTE: ENERGY is not the lead.)
 - Continue work on the fuelling infrastructure program for commercial motor vehicles that will establish a network of natural gas, recovered biogas, hydrogen and electric charging stations, as needed.

3. Innovation (Smart Customer, Smarter Grid): Low Emission Vehicles

Considerations:

- **General:** There is no government policy lead for low emission transportation. However there are positive interministry relationships to ensure information sharing and cooperation. Thus, if there is a desire for the Ministry to carve out a broader role in this sector, it has a strong basis upon which to work with other ministries.
- **Vehicle to home / grid (V2X) Roadmap:** The technology needed for these applications is being tested, but commercialization of solutions has not achieved scale. The Ministry has started a detailed investigation to create the Roadmap, but at this time, the LTEP should only provide indicative wording.
 - However, V2X is an excellent example of grid modernization technology, and could be treated as a vignette under this broader theme.
- **Low Emission Fuels:**
 - Green Commercial Vehicle Program: The CCAP allocates \$125-170 million for this program.
 - Network of Low-Emission Fuelling Stations: The CCAP allocates \$75-100 million for this program.
 - Other measures: CCAP also proposes to boost renewable content in fuels, pilot programs for use of waste methane as a transportation fuel and assist fuel distributors to offer high-blend sustainable biofuels (**Note:** MOECC is responsible for renewable fuel standards).

3. Innovation (Smart Customer, Smarter Grid): Continuing to assess the feasibility and potential of Nuclear Innovations

Recommendation:

- **Exploratory:** The 2017 LTEP could highlight Ontario's continued interest in nuclear innovation which includes monitoring and researching the evolving energy landscape as it relates to new technologies and opportunities to support Ontario's nuclear industry.

Decision:

- The Ministry will continue to collaborate with the federal government in the promotion of research and development to support both energy and non-energy applications of nuclear innovations. These could include small modular reactors (SMRs), nuclear fuel research, nuclear fusion, hydrogen and nuclear technology spin-offs.
- The Ministry will continue to build relationships with key industry stakeholders to:
 - Foster innovation across the nuclear sector and maintain Canada's world-class science and technology capabilities; and
 - Promote Ontario's nuclear expertise domestically and globally.
- The Ministry will continue to assess the policy and regulatory considerations for nuclear innovations in Ontario, as well as exploring various forms of support for potential demonstration projects.

3. Innovation (Smart Customer, Smarter Grid): Continuing to assess the feasibility and potential of Nuclear Innovations

Considerations – Nuclear Innovations:

- **SMRs** – SMRs are a new generation of compact, factory-built and expandable nuclear power reactors with advanced safety features. SMRs can potentially provide benefits compared to current reactor designs such as a smaller footprint, more passive safety features, potential for economies of scale through mass production and reduced project/overbuild risk. SMRs can serve off-grid load to replace diesel power (e.g., 2 to 30 MW range) or provide grid-scale electricity generation (e.g., 30 to 300 MW range) on an incremental basis to adapt to changing energy demand.
- **Nuclear Fuel Research** – There may be opportunities in the future to pursue alternative nuclear fuels with the aim of reducing the volume and radioactivity of waste products. This could include technological innovations in recycling and reprocessing of used fuel or alternatives to uranium fuel for nuclear reactors (e.g., thorium).
- **Nuclear Fusion** – Fusion energy research has the potential to produce massive amounts of clean energy with minimal radioactive waste. Today, there are small-scale fusion energy research organizations in Canada: University of Alberta, University of Saskatchewan, General Fusion, Sylvia Fedoruk Canadian Centre for Nuclear Innovation, Alberta/Canada Fusion Technology Alliance.
- **Hydrogen** – Hydrogen is a low-carbon energy source that in the future could replace gasoline for transportation or natural gas for heating. Research is ongoing into applications for Ontario's nuclear technology in the large scale production of hydrogen (e.g., work is underway at the Hydrogen Laboratory at Canadian Nuclear Laboratories).
- **Technology Spin-offs** – Nuclear technology has other scientific applications such as the production of isotopes for medical diagnosis and treatment of life-threatening diseases (e.g., Cobalt-60), as well as for use in space exploration (e.g., heat and power for Mars rovers). Research is ongoing into opportunities for Ontario to expand its role in production and novel uses for isotopes.

3. Innovation (Smart Customer, Smarter Grid): Continuing to assess the feasibility and potential of Nuclear Innovations

Considerations – Federal Government and Industry Interest:

- The federal government recently signalled its continued interest in innovative nuclear technologies and their potential role in meeting Canada's climate change goals.
 - Canada's Mid-Century Long-term Low-Greenhouse Gas Development Strategy – The strategy, submitted as part of Canada's commitment to COP21, provides a basic framework for addressing challenges and opportunities for achieving deep emissions reductions in the mid to long-term with a focus on meeting climate-change objectives and enabling growth.
 - Among the proposed tools to help meet demand and GHG reduction targets, the strategy highlights a number of emerging nuclear technologies as discussed on the previous slide.
- The Canadian Nuclear Association (CNA) is also interested in exploring emerging nuclear technologies through the creation of a Nuclear Innovation Council.
 - Nuclear Innovation Council – To further explore the role emerging nuclear technologies in reducing GHG emissions, the CNA has proposed the creation of a Nuclear Innovation Council which would be a forum through which industry can talk with government practitioners and policy-makers in the area of industrial innovation and technology.
 - The aim of the Council would be to inform government policies relating to nuclear technology and to develop and support a Canadian Nuclear Innovation Agenda.

Appendix: LTEP Initiatives

LTEP Initiatives

The previous briefings covered 6 different policy themes and the following initiatives:

1) Regional Planning

- A) Barriers to implementation of economic non-wires options in regional planning
- B) Transmitter selection process
- C) Northwest Bulk
- D) Regional planning review
- E) Addressing regional economic development priorities

2) Renewable Energy

- A) Ontario's successful renewable energy sector
- B) Broadening opportunities to participate in net metering
- C) Evolving support programs
- D) Supporting the implementation of distributed generation

3) Encouraging Greater Customer Choice

- A) Regulated Price Plan (RPP) – residential and small business customers
- B) Class A – large industrial customers

LTEP Initiatives

4) Enhancing Commitment to Conservation

- A) Reaffirm and establish new conservation targets
- B) Eligibility of CHP and WER Projects Under the CFF and IAP
- C) In front of the meter conservation
- D) Alignment and collaboration within and between conservation programs
- E) Reaffirming commitment to advancing energy efficiency standards
- F) Energy conservation education and awareness
- G) Large Building Energy and Water Reporting and Benchmarking
- H) Home Energy Rating and Disclosure
- I) Green Button
- J) Smart thermostats

5) Encourage Market-based Outcomes

- A) Implement annual capacity auctions
- B) Introduce a day-ahead market
- C) Adopt a single-schedule system
- D) Increase system flexibility and operability
- E) Enable the value of distributed energy resources
- F) Use Carbon Market to Influence Supply Decisions

LTEP Initiatives

6) Maximizing the use of Existing Energy Assets and Networks

- A) Continue with planned refurbishment of 10 units at Darlington and Bruce
- B) Continue support for ongoing Pickering operation up to 2024
- C) Enhance customer reliability
- D) Explore potential for technological upgrades and optimization of existing renewable generation
- E) Preserve transmission corridors
- F) Increase renewable natural gas
- G) Continue to consider firm import agreements with other jurisdictions where economic
- H) Support “right-sizing” transmission infrastructure
- I) Leverage natural gas infrastructure with integrated energy solutions
- J) Natural gas expansion
- K) Maximize value of transportation fuels infrastructure