

CONSERVATION FRAMEWORK MID-TERM REVIEW

COLLABORATION

APRIL 27, 2017

NAVIGANT

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SECTION 1: EXECUTIVE SUMMARY

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- II. Introduction and Methodology
- III. Collaboration Scorecard & Snapshot
- IV. Current State Summary

Policy Context – 2013 Long-Term Energy Plan (LTEP) & Conservation First Framework/Industrial Accelerator Program Ministerial Directions

LTEP refers to a coordinated approach: “The government is committed to promoting a coordinated approach for all customers, including both electricity and natural gas utilities.”

Ministerial Directions to the IESO further define the policy around collaboration – March 2014 Conservation First Framework Direction relating to LDC Collaboration:

- “The OPA shall encourage Distributors to aggregate Distributor CDM Targets with neighboring Distributors to develop 21 regional CDM targets for the period January 1, 2015 to December 31, 2020. The OPA shall encourage Distributors to work cooperatively to develop regional CDM Plans to meet the regional CDM targets.”
- “The OPA shall encourage Distributors to maximize administrative and delivery efficiencies by utilizing appropriate program delivery models. Specifically, the OPA and/or Distributors shall provide enhanced coordination efforts with regard to:
 - a) Opportunities to target consumers with multiple locations across several licensed service areas (e.g., national accounts) and CDM measures delivered or promoted through provincial or national channels (e.g. retailer in-store rebates or coupons); and
 - b) CDM activities, including, but not limited to, the marketing, procurement and delivery of CDM measures and/or services where these will afford significant administrative cost and/or delivery efficiencies (e.g., call centre, rebate fulfillment and appliance de-commissioning).”

March 2014 Conservation First Framework Direction relating to collaboration with gas distributors:

- “The OPA shall require Distributors, where appropriate, to coordinate and integrate Province-Wide Distributor CDM Programs and Local Distributor CDM Programs with natural gas distributor (“Gas Distributors”) conservation programs to achieve efficiencies and convenient integrated programs for electricity and natural gas customers.”
- “The OPA shall require Distributors, where appropriate, to coordinate and integrate low-income Province-Wide Distributor CDM Programs and Local Distributor CDM Programs with Gas Distribution low-income conservation programs.”

Policy Context – 2013 Long-Term Energy Plan & Conservation First Framework/Industrial Accelerator Program Ministerial Directions**July 2014 Industrial Accelerator Program Direction:**

- “The OPA shall, where appropriate, coordinate and integrate the Industrial Accelerator Program with natural gas distributor conservation programs to achieve efficiencies and convenient integrated programs.”

June 2016 Direction to the IESO detailed the Whole Home Pilot and Pay-for-Performance Program requirements – the Whole Home Direction sets out to encourage a coordinated approach to delivering CDM for electricity and gas to homeowners:

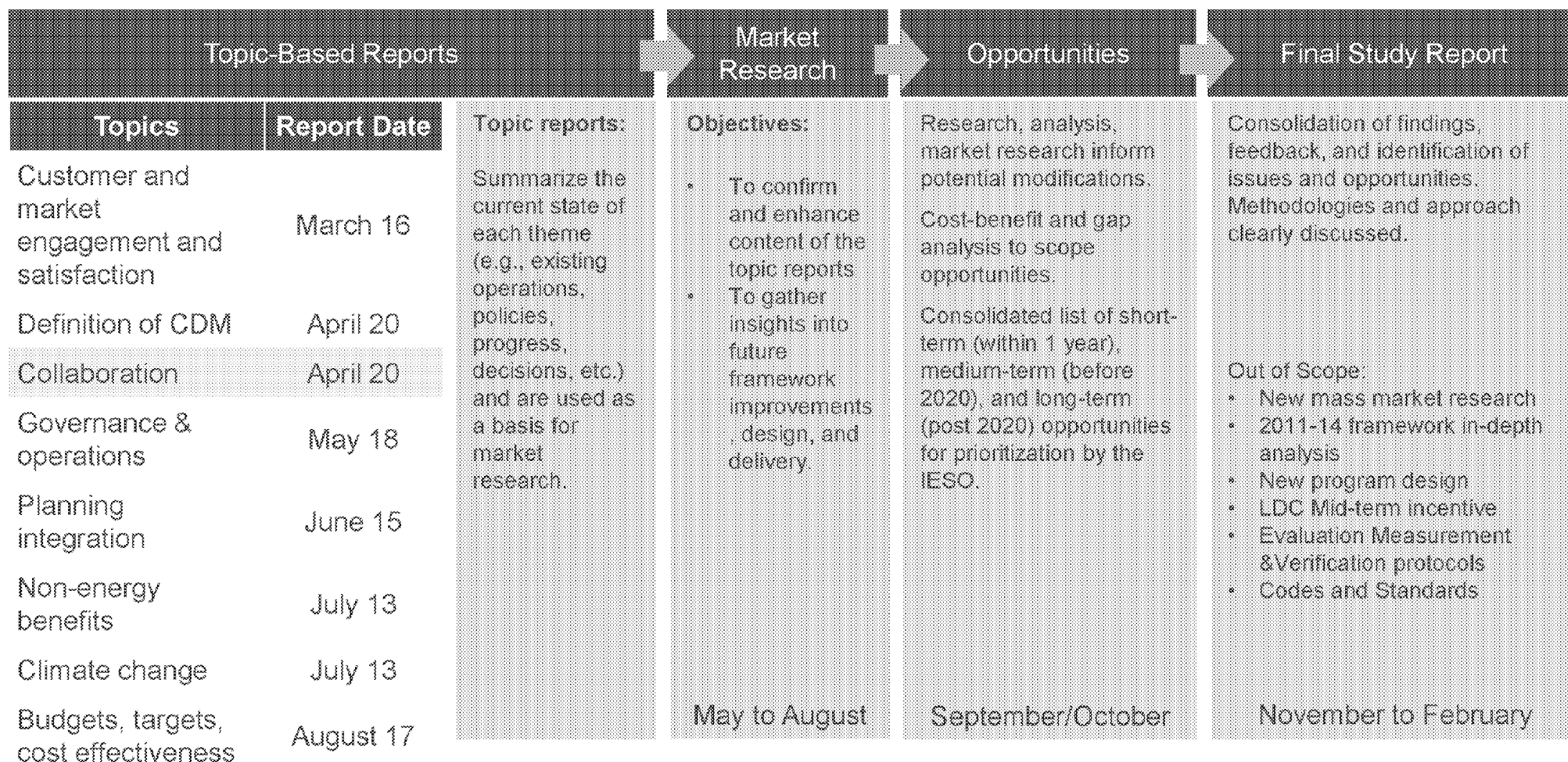
- “The IESO shall, in consultation with Distributors, centrally design, fund and deliver two CDM programs (“Centrally-Delivered Programs”): [...] b. A province-wide whole home CDM pilot program for residential consumers (“Whole Home Pilot Program”).
- “The IESO shall, where appropriate, deliver Centrally- Delivered Programs in coordination with natural gas distributors. The IESO may manage its relationship with the natural gas distributors on a non-competitive basis.”
- “Implementation of the Multi-Distributor Program and Whole Home Pilot Program shall commence by the end of the Fall of 2016.”

SECTION 1: EXECUTIVE SUMMARY

II. INTRODUCTION AND METHODOLOGY

MID-TERM REVIEW

Navigant was engaged by the IESO to complete the mid-term review for the Conservation First Framework and Industrial Accelerator Program. Issues were identified by the IESO and grouped into eight major topics that will guide the Framework Review through four key activities outlined below. This report is the topic-based report communicating the current state of **Collaboration**.



FOCUS AREAS AND KEY QUESTIONS

This report will analyze available information and begin to explore the issues and opportunities of the key questions and focus areas listed below pertaining to the **Collaboration** topic. The Conservation First Framework direction indicated that the expected outcomes of collaboration are **1) delivery efficiencies** and **2) customer convenience**. The focus of this section will be on whether collaboration has achieved these outcomes and whether collaboration [or some alternative or additional action(s)] should be pursued to achieve these ends.

Key Questions

- Have the expected outcomes of delivery efficiencies and customer convenience been achieved through collaborative efforts undertaken to date?
- What other outcomes has collaboration generated?
- Should additional collaboration be enabled? If so, how? If not, why not?
- What are the barriers to collaboration and what are some options to tackle these barriers?
- If collaboration should be encouraged, are there structural changes that can be addressed in the current or future frameworks (2020+) to drive collaboration and achieve the outcomes of customer convenience and cost efficiencies?

Focus Areas

I. Conservation First Framework:

- Types of collaboration activities that have occurred
- Outcomes of collaboration activities
- LDC collaboration
- Cross fuel collaboration and costs
- Cross fuel cost effectiveness inputs
- Attribution and cost sharing
- Collaboration opportunities with government funded initiatives

II. Industrial Accelerator Program:

- Cross fuel collaboration and costs

SECTION 1: EXECUTIVE SUMMARY

II. INTRODUCTION AND METHODOLOGY

REPORT ORGANIZATION

This report is organized by the sections outlined in the table below. The sections are designed to address one or more of the focus areas identified.

Section	Description	Focus Area
CDM Plans	Overview of CDM plan collaboration overall and LDC collaboration with regards to delivery of specific programs and pilots.	• LDC collaboration
LDC Collaboration	Breakdown of the activities undertaken as part of the IESO Collaboration Fund. Includes an overview of activities funding and past reasons for rejection. Review of other LDC collaboration activities (i.e. not funded by Collaboration Fund).	• LDC collaboration • Attribution and cost sharing • LDC collaboration
Cross-fuel Collaboration	Overview of cross-fuel (electricity and natural gas) collaboration activities undertaken either through programs and pilots or collaboration fund activities. High-level comparison of cost effectiveness and other guidance impacting collaboration between electric and natural gas frameworks. Cross reference of program alignment between the two frameworks (appendices).	• Cross fuel collaboration and costs • Attribution and cost sharing
Other Collaboration	Review of IESO collaboration efforts. Brief discussions on the influence of other non-ratepayer funded programs on ratepayer funded programs. Cross reference of program alignment between Conservation First Framework programs and programs communicated in the Climate Change Action Plan (appendices).	• Collaboration opportunities with government funded initiatives

SECTION 1: EXECUTIVE SUMMARY

III. COLLABORATION SCORECARD AND SNAPSHOT

CONSERVATION FIRST FRAMEWORK SCORECARD

METRIC	DESCRIPTION	RESULT	TREND	GOAL	INSIGHT
Joint plans	Metric: Number of Joint CDM Plans (one or more LDC) that are within the same planning region (full – all LDCs in the joint plan are in the same region; Partial – at least 2, but not all LDCs are in the same region) Goal: of 21 regional CDM plans as outlined in government direction	Full: 5 Partial: 4	↔	21	Market research should attempt to focus on the barriers to adopting joint CDM plans to understand if any framework changes can be made to encourage additional plan collaboration
Cost efficiencies realized through collaboration	Metric: [E.g. reduced \$/kWh delivery cost resulting from collaboration] Goal: as per government direction LDCs are required to collaborate with gas utilities and encouraged to collaborate with one another to achieve efficiencies	NA	NA	NA	- Efficiencies were not defined within the direction and no quantifiable goals were established at outset of framework - No quantifiable goals have been identified for individual collaboration efforts (e.g. joint CDM Plans, activities funded through Collaboration Fund)
Customer convenience improvements realized through collaboration	Metric: [E.g. improved satisfaction scores following introduction of collaborative activity] Goal: as per government direction LDCs are required to collaborate with gas utilities and encouraged to collaborate with one another to achieve efficiencies	NA	NA	NA	(except kWh targets for certain energy management resources funded through Collaboration Fund)

TREND



Minimal (less than 5 percentage points year over years) change in the metric relative to prior years



Increase in the metric relative to prior years



Decrease in the metric relative to prior years

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III. COLLABORATION SCORECARD AND SNAPSHOT

CONSERVATION FIRST FRAMEWORK SNAPSHOT

AREA	METRIC	DESCRIPTION	RESULT	INSIGHT
LDC Collaboration: CDM Plans and programs	# joint CDM plans with regional/ demographic alignment	# of joint CDM plans comprising of LDCs within the same IESO zone or customer breakdown as per OEB yearbook	14/16	• Most joint LDC plans are consist of LDCs that have either regional or customer alignment • There is collaboration amongst electric LDCs on programs and pilots • Market research will attempt to better understand any non-IESO funded collaboration as it relates to programs and plan delivery • Quality metrics (e.g., quantitative impact to customers or costs) are not clearly defined as part of CDM plan criteria and as such are not collected
	# LDCs collaborating on Programs and Pilots	# of electric LDCs collaborating on local/regional programs and/or innovation pilots	21/71	
	% of target pursued through collaborative efforts	% of targets achieved through programs and pilots that are delivered with another LDC	N/A	
	% of target pursued through collaborative efforts with demonstrated advantages of scale	% of targets achieved through programs and pilots that are delivered with another LDC and can demonstrate cost or customer advantages as a result	N/A	

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III. COLLABORATION SCORECARD AND SNAPSHOT

CONSERVATION FIRST FRAMEWORK SNAPSHOT

AREA	METRIC	DESCRIPTION	RESULT	INSIGHT
LDC Collaboration: Collaboration Activities	# of collaboration projects	# of approved IESO Collaboration Fund applications (includes: approved, complete or executed)	26/32	- Collaboration activities captured reflect IESO funded activities through the Collaboration Fund - Market research will attempt to understand collaboration that occurs without IESO funding - Quality metrics (e.g., quantitative impact to customers or costs) are not clearly defined as part of the Fund criteria and as such are not collected
	# of ongoing collaboration projects	# of collaboration activities that have continued beyond the collaboration funding term	N/A	
	# of collaboration projects not approved	# of IESO Collaboration Fund applications not approved (excludes applications invited to resubmit)	4/32	
	Collaboration Budget (\$ millions)	Proportion 2015-2020 budget committed to date (includes WG and LDC projects)	16%	
LDC Collaboration: Cross-fuel Collaboration	# of LDCs collaborating with natural gas utilities	Proportion of LDCs that have collaborated with gas utilities through collaboration fund activities, local/regional programs, and/or innovation pilots	13%	- Market research will attempt to understand the barriers that may be resulting in the low number of collaboration activities expressed within this scorecard - Market research will attempt to also capture collaboration that is not funded by the IESO
	# of collaboration projects	# of approved IESO Collaboration Fund applications that involve both a natural gas and electric utility (includes: approved, complete or executed)	2/26	
	# of programs and pilots	Proportion of local/regional programs and innovation pilots that feature cross fuel collaboration	4/32	

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III. COLLABORATION SCORECARD AND SNAPSHOT

INDUSTRIAL ACCELERATOR PROGRAM SNAPSHOT

AREA	METRIC	DESCRIPTION	RESULT	INSIGHT
IESO Collaboration: Cross-fuel Collaboration	# of collaboration activities	# of collaboration activities (planned within the next quarter or complete) between IESO and natural gas utilities	11	Quality metrics (e.g., quantitative impact to customers or costs) and goals with respect to cross-fuel collaboration are not clearly defined and as such are not collected

SECTION 1: EXECUTIVE SUMMARY

III. CURRENT STATE SUMMARY

THIS REPORT WILL REVIEW IESO-FUNDED COLLABORATION

- This report will assess the extent to which funded collaboration is taking place as part of the Conservation First Framework or Industrial Accelerator Program and whether that collaboration is achieving the outcomes of **1) customer convenience** and **2) cost efficiencies** per the Conservation First Framework Direction
- For the purposes of this topic report, collaboration is defined as IESO funded sources of collaboration as specified in the table below and described on subsequent slides
- Market research will aim to obtain information about LDC collaboration that is not IESO funded

Status in this Report	Collaboration	Collaboration Activity
Included	• Joint CDM Plan • Mid-Term Review Advisory Group participation • Stakeholder Advisory Committee participation • LDC Working Group participation	• Collaboration Fund • Local/regional program involving more than one LDC
Not Included *	• Informal information sharing and meetings • Formal collaboration groups not funded by IESO	• Informal collaboration on projects or events • Information collaborative outreach to customers

* To be investigated through market research

SECTION 1: EXECUTIVE SUMMARY

III. CURRENT STATE SUMMARY

IESO-FUNDED COLLABORATION INCLUDES FOUR MAIN SOURCES

- LDCs have the opportunity to collaborate through the following formal arrangements or groups: Joint CDM plans, Mid-Term Review Advisory Group participation, Stakeholder Advisory Committee participation, and LDC Working Group participation

Source	Description
Joint CDM Plan	• CDM Plan for the 2015 to 2020 period submitted to the IESO completed in cooperation with one or more electricity distribution companies
Mid-Term Review Advisory Group participation	• Current participation as either an Advisory Group member or observer (tracked by IESO)
Stakeholder Advisory Committee participation	• Current participation as a member of the IESO Stakeholder Advisory Committee (tracked by IESO)
LDC Working Group participation	• LDCs, IESO and natural gas utilities participate in regular meetings to discuss, for example, potential changes to province-wide programs • Current Participation as a member of one of the LDC working groups supporting the Conservation First Framework (tracked by IESO) • The IESO tracks participation in working groups

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III. CURRENT STATE SUMMARY

IESO-FUNDED COLLABORATION ACTIVITIES INCLUDE TWO MAIN SOURCES

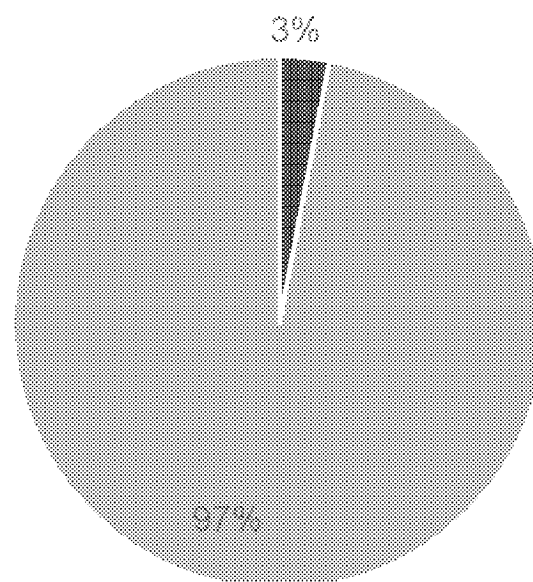
- The Collaboration Fund and Local and Regional programs provide opportunities for LDCs to obtain funding from the IESO in support of collaboration

Source	Description
Collaboration Fund	Funding available to LDCs from the IESO to support and encourage LDC collaboration with the goal of maximizing administrative and operational efficiencies throughout the program delivery process. • LDC collaboration allows for greater administrative efficiencies, information sharing, and the fostering of strong working relationships. Select Collaboration Fund guidelines: • Activity must include two or more LDCs, and ideally LDCs representing at least two CDM Plans; or be from a working group; • Provide a description and rationale for the collaboration activity (e.g. geographic and target customer commonalities); • Expected to have a measurable short-term and long-term impact and outcome, as determined by the IESO, acting reasonably; • the total amount of funding requested must be justified and optimized to robustly accomplish the objectives and demonstrate ratepayer value • results of the activities must be used to support decisions or actions The Collaboration Fund is under review and not currently not accepting applications outside of regular working group functions.
Local and regional programs	Funding available for LDC-led program design and market testing of new initiatives through the central services budget (i.e., not LDC budgets). Testing and learning from small-scale pilot programs (pilots) will contribute to the success and cost effectiveness of the full-scale launch of a new program. Local/regional program guidelines: • Gas and/or water integration if applicable; and, • Encouraged to develop pilots that include collaboration between electric and gas distributors and collaboration amongst LDCs. Two categories: (1) innovation (2) local/regional

96 PERCENT OF LDCS ARE PARTICIPATING IN FUNDED COLLABORATION

- All LDCs with the exception of 2 (3 percent) are participating in at least one form of funded collaboration (Joint CDM Plan, collaborative local/regional program or pilot, LDC Working Group, IESO Stakeholder Advisory Committee, Mid-Term Review Advisory Committee, or collaboration fund activity)

Proportion of LDCs not Participating in any Collaboration Activities



■ LDCs not Participating in any Collaboration Activities

■ LDCs Participating in at least one Collaboration Activity

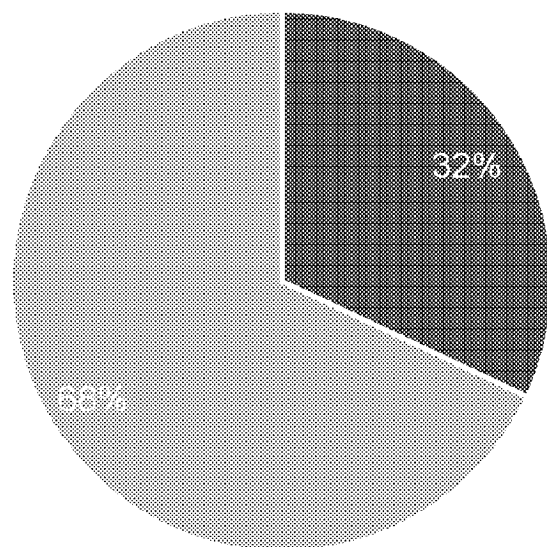
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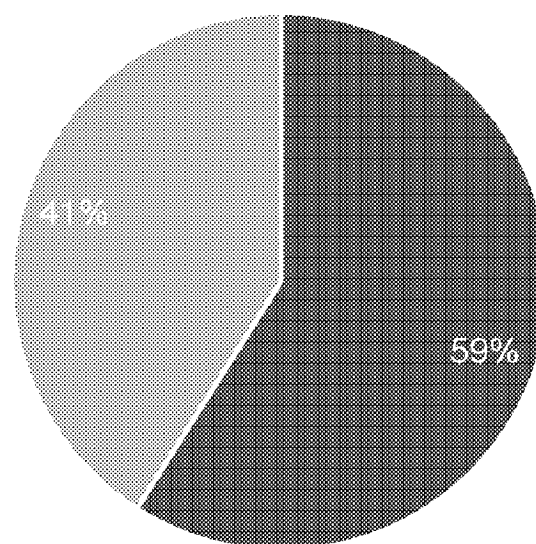
JOINT CDM PLANS REPRESENT A MAJORITY OF THE PROVINCIAL TARGET

- 68 percent of LDCs are in Joint CDM plans, which represents 41 percent of all CDM plans
- 83 percent of the provincial CDM target (7 TWh) is captured by Joint CDM Plans

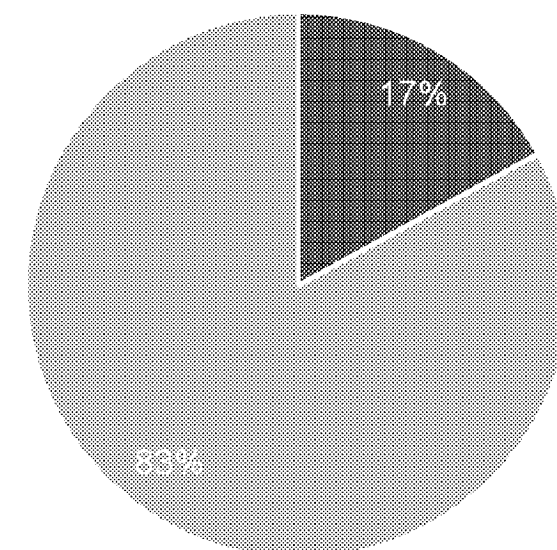
Proportion of LDCs
with Joint CDM Plans (out of 71)



Proportion CDM plans
that are Joint (out of 39)



Proportion of provincial CDM target
covered by Joint CDM Plans (out of 7 TWh)



■ Individual

■ Joint

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III. CURRENT STATE SUMMARY

COMPOSITION OF JOINT CDM PLANS

- This graphic illustrates the composition of the 16 Joint CDM Plans by individual LDCs' planned 2020 energy savings (GWh)
- The heat map shows a view of the size differentiation by budgeted savings between the LDCs within each Joint CDM Plan
- The majority of Joint CDM plans are made up of 2 LDCs (10 of 16 joint plans)

Joint CDM Plan #	Number of LDCs within Plan						
	1	2	3	4	5	6	7
1	1,576	94					
2	1,259	35					
3	535	17					
4	483	255					
5	395	42					
6	366	40					
7	221	49					
8	153	59					
9	45	31					
10	28	11					
11	11	32	11				
12	79	13	11				
13	65	54	11				
14	61	53	37	37	11		
15	35	32	31	24	14	35	25
16	16	14	11	87	87	63	50

Heat map of planned 2020 energy savings (GWh) by LDCs in Joint CDM Plans

- 9 out of 16 (56 percent) Joint CDM plans consist of one larger LDC and one significantly smaller LDC
- 2 out of 16 (13 percent) joint plans consist of two or more similar sized LDCs
- 5 out of 16 (31 percent) are a combination of smaller, larger and/or comparably sized LDCs

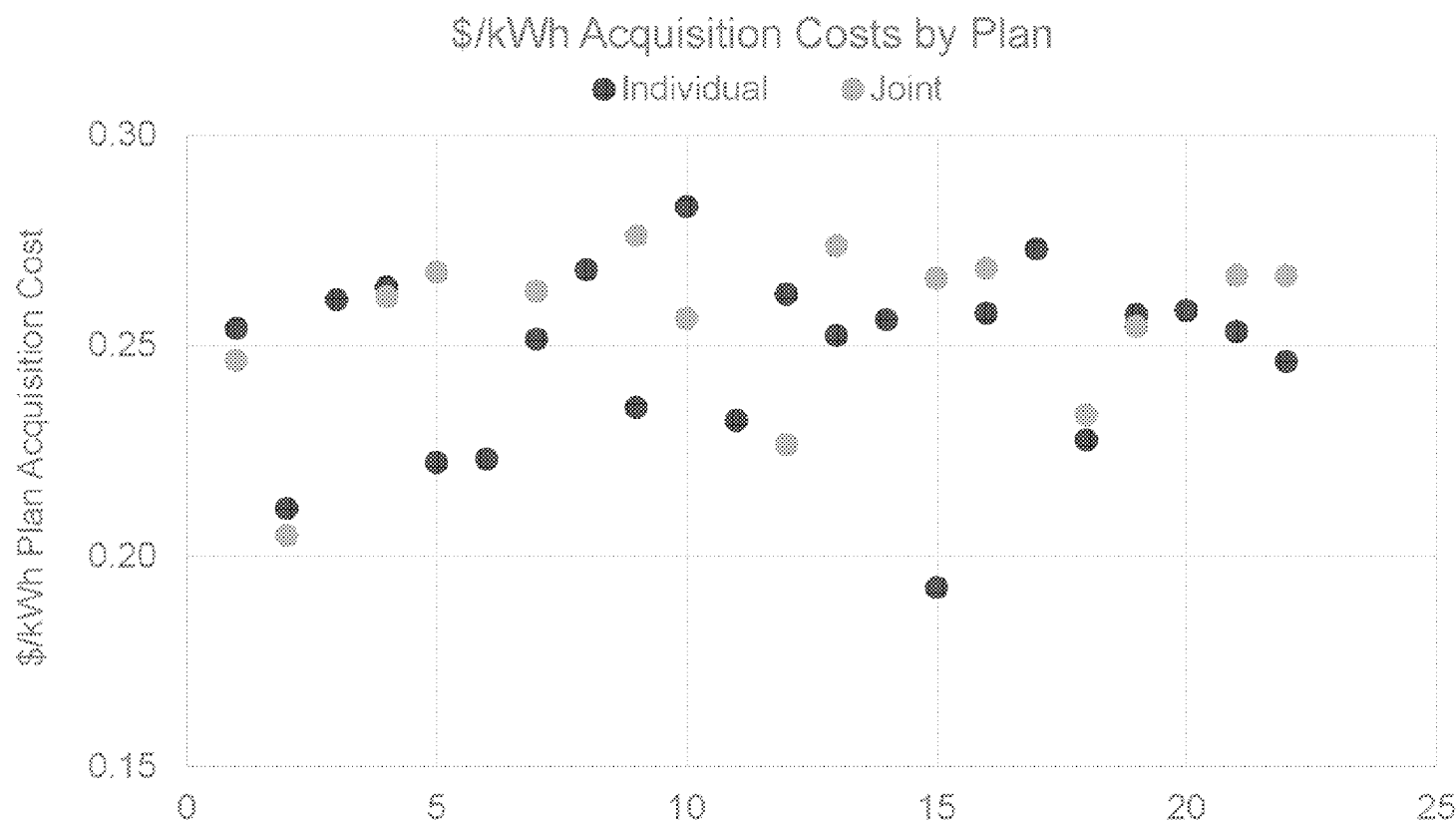
Category	Planned 2020 Energy Savings Range (GWh)
Large	500 – 1,600
Medium	10 – 499
Small	0.1 – 9

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THERE IS NO APPARENT TREND IN JOINT VS. INDIVIDUAL DELIVERY COSTS

- There is no apparent trend in acquisition costs between a joint or individual CDM Plan
- Delivery (acquisition) costs (\$/2020 kWh) were calculated for each CDM Plan using the total budget and total achievement to target (energy savings persisting to 2020)
- Note: this analysis does not take into account higher delivery costs associated with geography, urban vs. rural, etc.

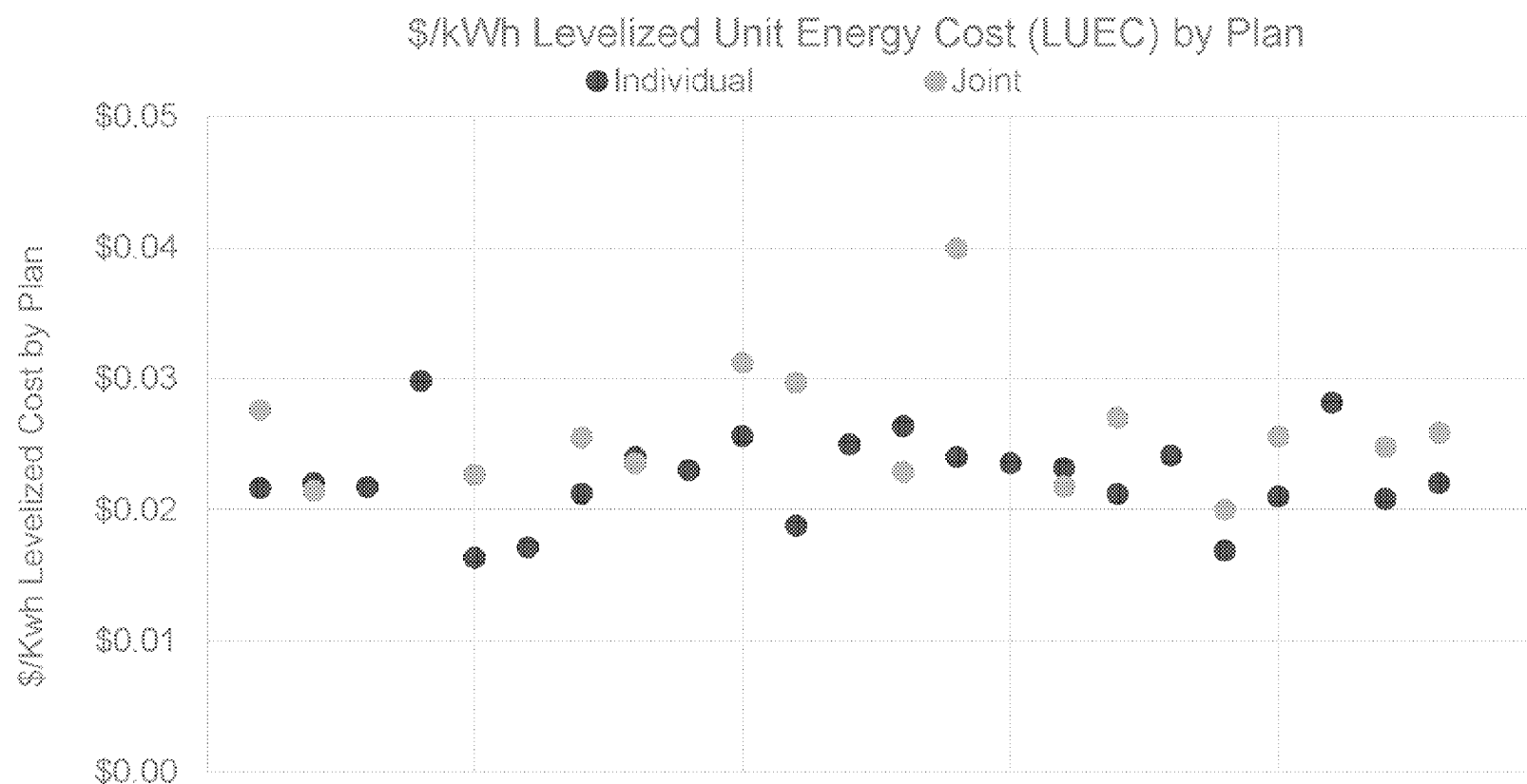


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III. CURRENT STATE SUMMARY

LUECS APPEAR SLIGHTLY HIGHER FOR JOINT CDM PLANS THAN INDIVIDUAL

- Levelized Unit Energy Costs (LUECs) appear to be higher for Joint CDM Plan's than Individual Plans slightly more often
- LUECs were taken from each CDM plan, as reported by the LDC(s) using a cost effectiveness tool
- Note: this analysis does not take into account higher delivery costs associated with geography, urban vs. rural etc.*



*Joint Plan 2C was removed because it did not pass cost effectiveness tool and was an order of magnitude higher than other LUECs

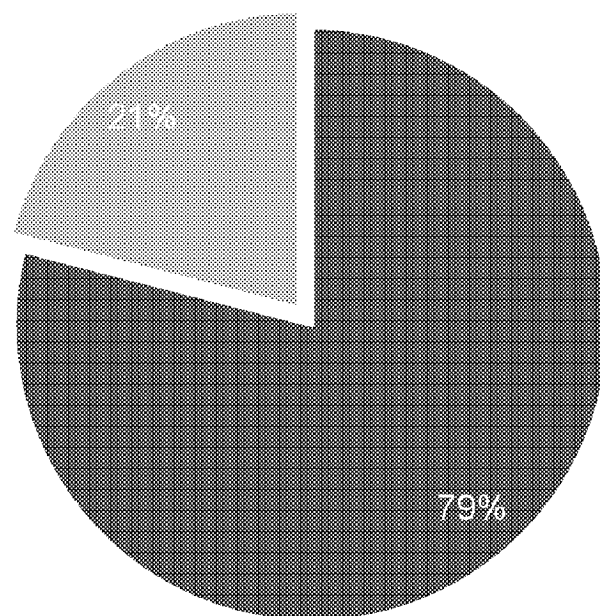
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III. CURRENT STATE SUMMARY

21 PERCENT OF INNOVATION PILOTS HAVE BEEN COLLABORATIVE

- 21 percent of approved Pilots since the start of Conservation First Framework have been collaborative

Proportion of Innovation Pilots that include
Collaboration Between LDCs



■ Non-collaborative Pilots
■ Collaborative Pilots

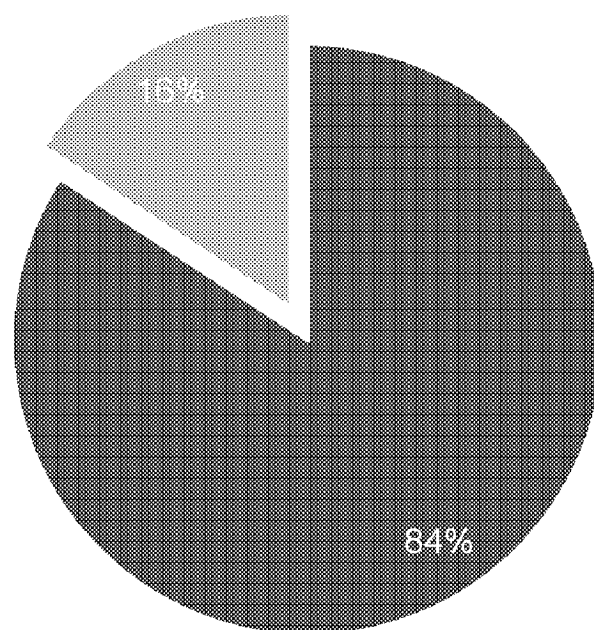
Total pilots	19
Number with multiple LDCs	4
Proportion	21%

Innovation Pilot	Joint Plan?
Residential Direct Mail Pilot Program (.23 GWh)	All LDCs in Joint Plan
Home energy assessment and retrofit pilot program (1.5 GWh)	All LDCs in Joint Plan
Small & Medium Business Energy Management System Innovation Pilot (2.4 GWh)	No LDCs in Joint Plan
ECM Furnace Fan Residential Upstream Pilot (0.73 GWh)	No LDCs in Joint Plan

3 INNOVATION PILOT FEATURES CROSS-FUEL COLLABORATION

- 3 out of 19 pilots feature cross-fuel collaboration

Proportion of Innovation Pilots that include
Collaboration Between an electric and gas utility



- Pilots with no Cross-fuel Collaboration
- Pilots with Cross-fuel Collaboration

Innovation Pilots	#
Total pilots	19
Number with both electric and gas LDCs	3
Proportion	16%

- Joint Low-Income Program Pilot (0.31 GWh)
- Smart Thermostat Demand Response Pilot (0.06 GWh)
- Hotel/Model in-suite A/C Upgrades (2.36 GWh)

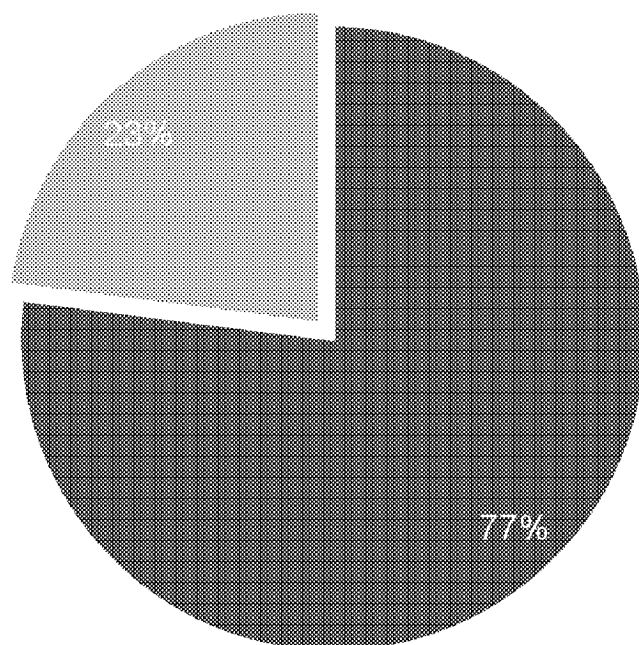
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III. CURRENT STATE SUMMARY

23 PERCENT OF LOCAL/REGIONAL PROGRAMS ARE COLLABORATIVE

- 23 percent of local/regional programs are collaborative (i.e. carried out by more than one LDC working together)

Proportion of Local Programs that include Collaboration Between LDCs



■ Non-collaborative Local Programs
■ Collaborative Local Programs

Total Local Programs	22
Number with multiple LDCs	5
Proportion	23%

Local/Regional Program	Joint Plan?
Instant savings program (1.8 GWh)	All LDCs in Joint Plan
Swimming pool efficiency program #1 (21 GWh)	All LDCs in Joint Plan
High Efficiency Agricultural Pumping Program (26.1 GWh)	No LDCs in Joint Plan
Home Assistance Program & Small Business Lighting Program (1.4 GWh)	All LDCs in Joint Plan
Swimming pool efficiency program #2 (21 GWh)	All LDCs in Joint Plan

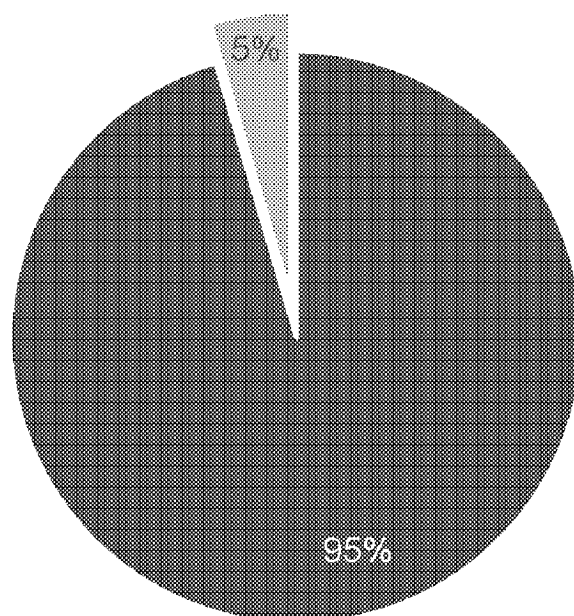
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1 LOCAL PROGRAM FEATURES CROSS-FUEL COLLABORATION

- 1 out of 22 local/regional programs feature cross-fuel collaboration

Proportion of Local Programs that include
Collaboration Between an LDC and Gas Utility



- Local Programs with no Cross-fuel Collaboration
- Local Programs with Cross-fuel Collaboration

Local Programs	#
Total Local Programs	22
Number of pilots with cross-fuel collaboration	1
Proportion	5%

- Adaptive thermostat rebate program (4.4 GWh)

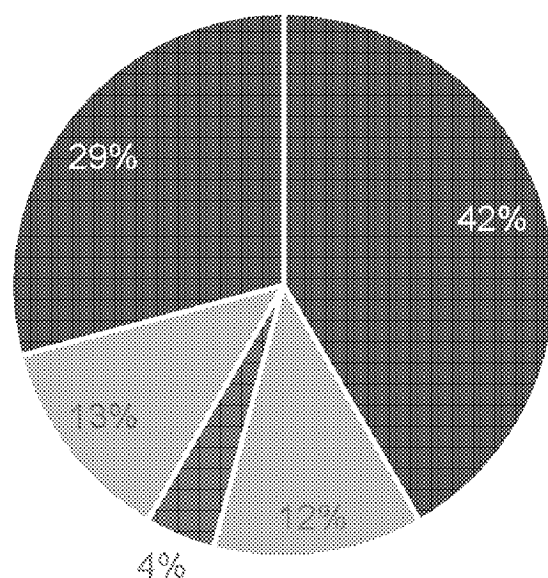
SECTION 1: EXECUTIVE SUMMARY

III. CURRENT STATE SUMMARY

MAJORITY OF COLLABORATION FUND PROJECTS ARE HUMAN RESOURCES

- The majority (54 percent) of Collaboration Fund projects are human resources related
- 42 percent of Collaboration Fund projects support Working Group (WG) activities

Breakdown of approved, completed, or executed Collaboration Fund projects



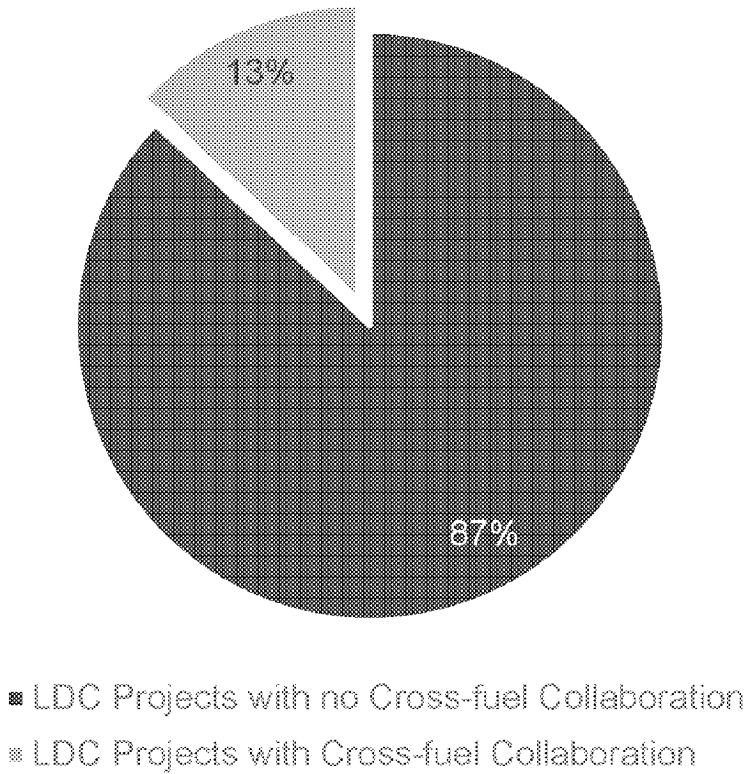
- LDC Human Resources
- WG Human Resources
- WG Training & Education
- LDC Training & Education
- WG Other

- Human resources (54% of Collaboration Fund projects) consists of funding for:
 - Key account managers/team (2)
 - Energy managers (regional or roving) (7)
 - Technical reviewer services (1)
 - Admin support (1)
 - Business case writer (1)
 - Program development support (1)
- Working Group (WG) Other (29% of Collaboration Fund projects) consists of funding for:
 - Legal services (2)
 - Program design vendor (3)
 - Project management (1)
 - Meeting admin costs (1)

13 PERCENT OF COLLABORATION FUND PROJECTS FEATURE CROSS-FUEL COLLABORATION

- 2 out of 15 approved Collaboration Fund LDC Projects (excluding working groups) feature collaboration between electric and gas utilities

Proportion of Collaboration Fund LDC Projects with Cross-fuel Collaboration



Total Projects	#
Total approved, complete or executed Collaboration Fund LDC Projects	15
Number of LDC Projects that feature cross-fuel collaboration	2
Proportion	13%

- Energy Into Action events (5% of total Collaboration Fund budget)

PRELIMINARY OBSERVATIONS

Have the expected outcomes of 1) delivery efficiencies and 2) customer convenience been achieved through collaborative efforts undertaken to date?

- There is no clear delivery efficiency (as measured by \$/kWh acquisition cost or \$/kWh Levelized unit Energy Cost) as a result of LDCs undertaking joint vs. individual CDM Plans
- Further, there is limited ability to assess what the cost of each LDC's delivery would have been had it opted not to be part of a joint plan)
- Quantitative outcomes (delivery efficiencies and customer convenience) were not defined or measured as part of the Collaboration Fund requirements
- Preliminary research begins to identify the level of delivery efficiencies for LDC collaboration – efforts will be made to expand upon this analysis in market research
- Defined metrics to understand the delivery efficiencies and customer convenience that have been or will be achieved through collaborative efforts will be helpful in understanding whether or not policy objectives have been met
- Market research will help understand the value of the outcomes of collaboration to customers, channel participants, IESO, and LDCs; however it may be difficult to substantiate whether or not these efforts are resulting in measurable improvements to 1) delivery cost efficiencies and 2) customer convenience

PRELIMINARY OBSERVATIONS

What other outcomes has collaboration generated?

- Almost all LDCs (97 percent) have participated in some form of funded collaboration, indicating that a culture of collaboration has been fostered in some way
- The majority (54 percent) of approved Collaboration Fund budget has gone to human resource related projects (e.g., energy managers, sales support, etc.)
- IESO and other Government organizations could lead to additional collaborative activities both within the Conservation First Framework and with other entities
- Limited collaboration with other entities is occurring through the conservation fund
- Market research will identify further outcomes of collaboration and attempt to discern whether collaboration funding has resulted in ongoing collaboration activities (i.e., collaboration continuing beyond the funding window)
- Further definition of anticipated outcomes would be helpful to understand the outcomes and benefits of funded collaboration activities

Should additional collaboration be enabled? If so, how? If not, why not?

- One LDC is delivering both an innovation pilot and local/regional program with a gas utility, there are two additional innovation fund pilots with natural gas utility collaboration
- Collaboration beyond working group participation could be improved and, if it is improved, should be done in a way that provides measureable results towards the stated policy goals of **1) improved delivery cost efficiencies** and **2) customer convenience**
- There is, in particular, a lack of cross-fuel collaboration
- Further investigation into the barriers of LDC collaboration and cross-fuel collaboration and opportunities to remove them will be investigated through market research

PRELIMINARY OBSERVATIONS

What are the barriers to collaboration and what are some options to tackle these barriers?

- Some aspects of natural gas and electric utility frameworks are aligned (e.g., evaluation), but other aspects could create barriers to collaboration (e.g., plan modification/approvals)
- Barriers to collaboration between electric LDCs will be investigated in market research
- Barriers to collaboration between electric LDCs and natural gas utilities will be investigated in market research

If collaboration should be encouraged, are there structural changes that can be addressed in the current or future frameworks (2020+)?

- Plan approvals for gas and electric utilities differ greatly, and could be an opportunity for alignment during the current or future framework
- Government entities are also involved in CDM activities that may provide opportunities for collaboration or competition for customer attention and investment
- Potential structural changes will be identified to address barriers to collaboration in the context of the advantages of scale that have and could be realized
- Market research will identify these opportunities

NEXT STEPS

Based on the preliminary assessment of the current state of collaboration, the following areas will be considered in the market research phase:

- Investigate non IESO-funded collaboration
- Investigate Collaboration Fund activities that have resulted in ongoing collaboration (i.e., benefits are such that it is worthwhile to continue without supplementary funding)
- Barriers to collaboration experienced and possible solutions
- Barriers to collaboration experienced and possible solutions specifically related to natural gas and electric collaboration.
- Uncover more information on the value of collaboration (savings – both kWh and \$ and customer satisfaction/engagement)
- Investigate opportunities to leverage other conservation efforts that are outside of the Conservation First Framework (e.g. Climate Change Action Plan, federal programs or initiatives, etc.)

SECTION 2: CURRENT STATE OF AFFAIRS

- I. CDM Plans
- II. LDC Collaboration
- III. Cross-Fuel Collaboration
- IV. Other Collaboration

I. CDM PLANS

OVERVIEW

Section	CDM Plans
Description	Overview of CDM plan collaboration
Focus area	• Joint and Individual CDM Plans
Source(s)	• LDC CDM Plans

Summary:

- Majority of the provincial target (83 percent) is planned to be met through Joint CDM Plans
- Most Joint CDM Plans (56 percent) have one large LDC and one LDC that is significantly smaller
- 31 percent of Joint CDM Plans are with LDCs that are in the same region
- There is no apparent trend in acquisition costs between a joint or individual CDM Plan
- Slightly more Joint CDM Plan Levelized Unit Energy Costs (LUECs) are higher than Individual CDM Plan LUECs

DEFINITION OF JOINT CDM PLANS

Joint CDM Plans: CDM Plan submitted to the IESO completed in cooperation with one or more distribution companies.

- **Context:**

- Collectively, Ontario's LDCs are responsible for planning cost effective ways to reduce 7 TWh of electricity consumption by December 31, 2020, with individual targets assigned to each.
- To meet these targets, LDCs have developed their own six-year plans for delivering CDM programs to their customers.
- An LDC may submit a Joint CDM Plan in cooperation with one or more other distribution companies, provided that the LDC (and each participating distribution company) will at all times have its own CDM Plan Target and CDM Plan Budget allocated to it under the Joint CDM Plan.
- Performance incentives will be assessed with reference to the aggregate performance of the LDC and other participants in the Joint CDM Plan and will be allocated on a prorated basis to the LDC and other participants based on their respective verified electricity savings under the Joint CDM Plan.

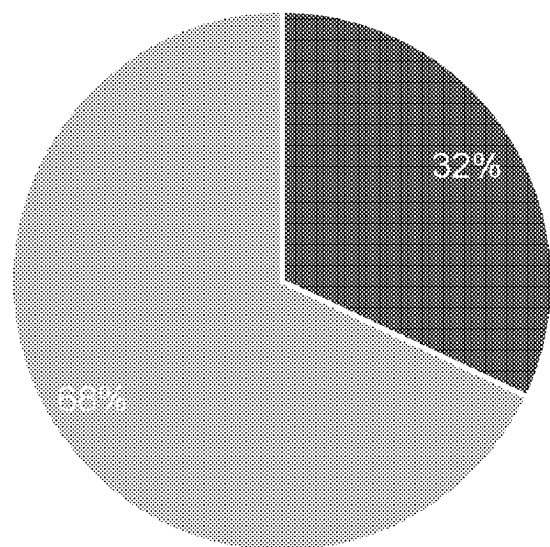
- **Potential Advantages:**

- Higher performance incentives: achieving target incentive increased by 0.05 cents/kWh.
- Risk mitigation: can re-allocate budgets and targets across utilities within the Joint CDM Plan.
- Administrative efficiencies: back-office admin associated with a representative agent for the LDCs in the Joint CDM Plan; joint invoices and reporting are not permitted.
- Delivery efficiencies: can work together to jointly deliver, where appropriate.

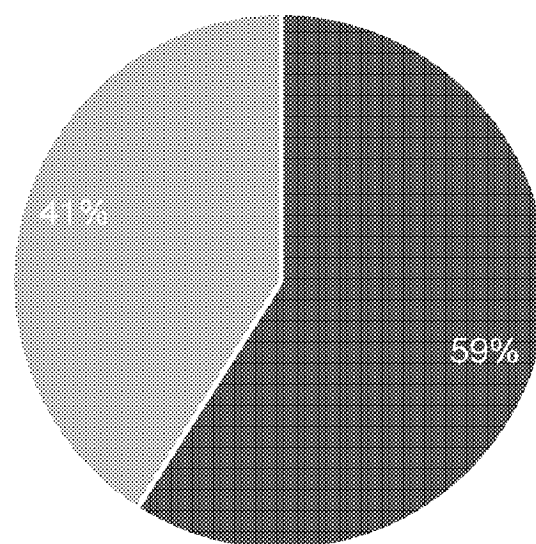
JOINT CDM PLANS REPRESENT A MAJORITY OF THE PROVINCIAL TARGET

- 68 percent of LDCs are in Joint CDM plans, which represents 41 percent of all CDM plans
- 83 percent of the provincial CDM target (7 TWh) is captured by Joint CDM Plans

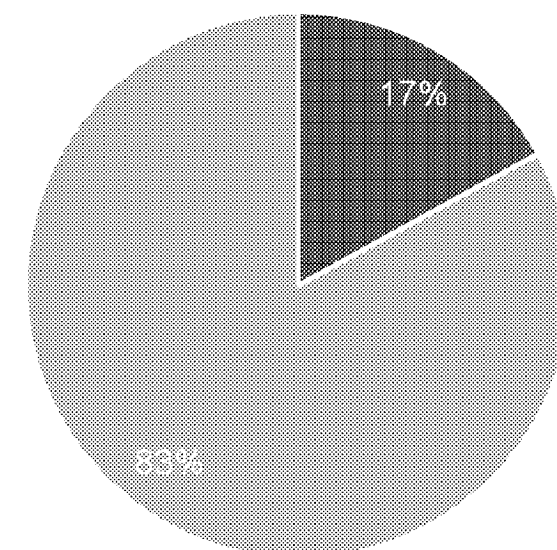
Proportion of LDCs
with Joint CDM Plans (out of 71)



Proportion CDM plans
that are Joint (out of 39)



Proportion of provincial CDM target
covered by Joint CDM Plans (out of 7 TWh)



■ Individual

■ Joint

COMPOSITION OF JOINT CDM PLANS

- This graphic illustrates the composition of the 16 Joint CDM Plans by individual LDCs' planned 2020 energy savings (GWh)
- The heat map shows a view of the size differentiation by budgeted savings between the LDCs within each Joint CDM Plan
- The majority of Joint CDM plans are made up of 2 LDCs (10 of 16 joint plans)

Joint CDM Plan #	Number of LDCs within Plan						
	1	2	3	4	5	6	7
1	1,576	94					
2	1,259	35					
3	535	17					
4	483	255					
5	395	42					
6	366	40					
7	221	49					
8	153	59					
9	45	31					
10	28	11					
11	11	32	11				
12	79	13	11				
13	65	54	11				
14	61	53	37	37	11		
15	35	32	31	24	14	35	25
16	16	14	11	87	87	63	50

Heat map of planned 2020 energy savings (GWh) by LDCs in Joint CDM Plans

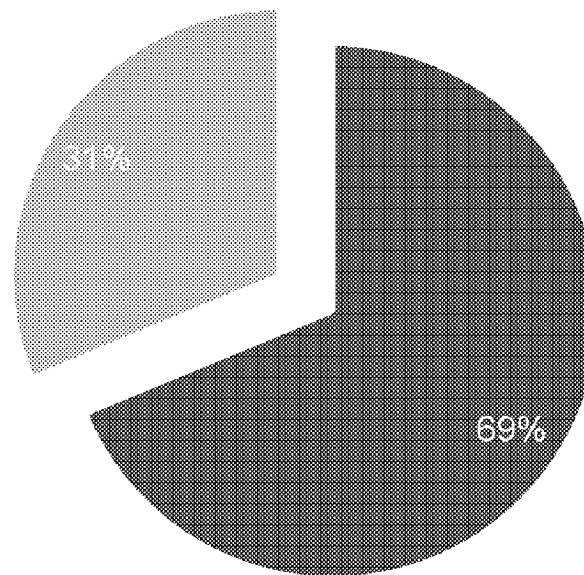
- 9 out of 16 (56 percent) Joint CDM plans consist of one larger LDC and one significantly smaller LDC
- 2 out of 16 (13 percent) joint plans consist of two or more similar sized LDCs
- 5 out of 16 (31 percent) are a combination of smaller, larger and/or comparably sized LDCs

Category	Planned 2020 Energy Savings Range (GWh)
Large	500 – 1,600
Medium	10 – 499
Small	0.1 – 9

REGIONAL BREAKDOWN OF CDM PLANS

- The majority of Joint CDM Plans consist of LDCs that are within the same IESO region and/or are very close in proximity to each other (69 percent)
- Of the five Joint CDM Plans consisting of LDCs that are not close to each other/in the same region, three (60 percent) have comparable customer bases (i.e. similar proportions of residential, commercial and industrial customers)

Regional Breakdown of Joint CDM Plans

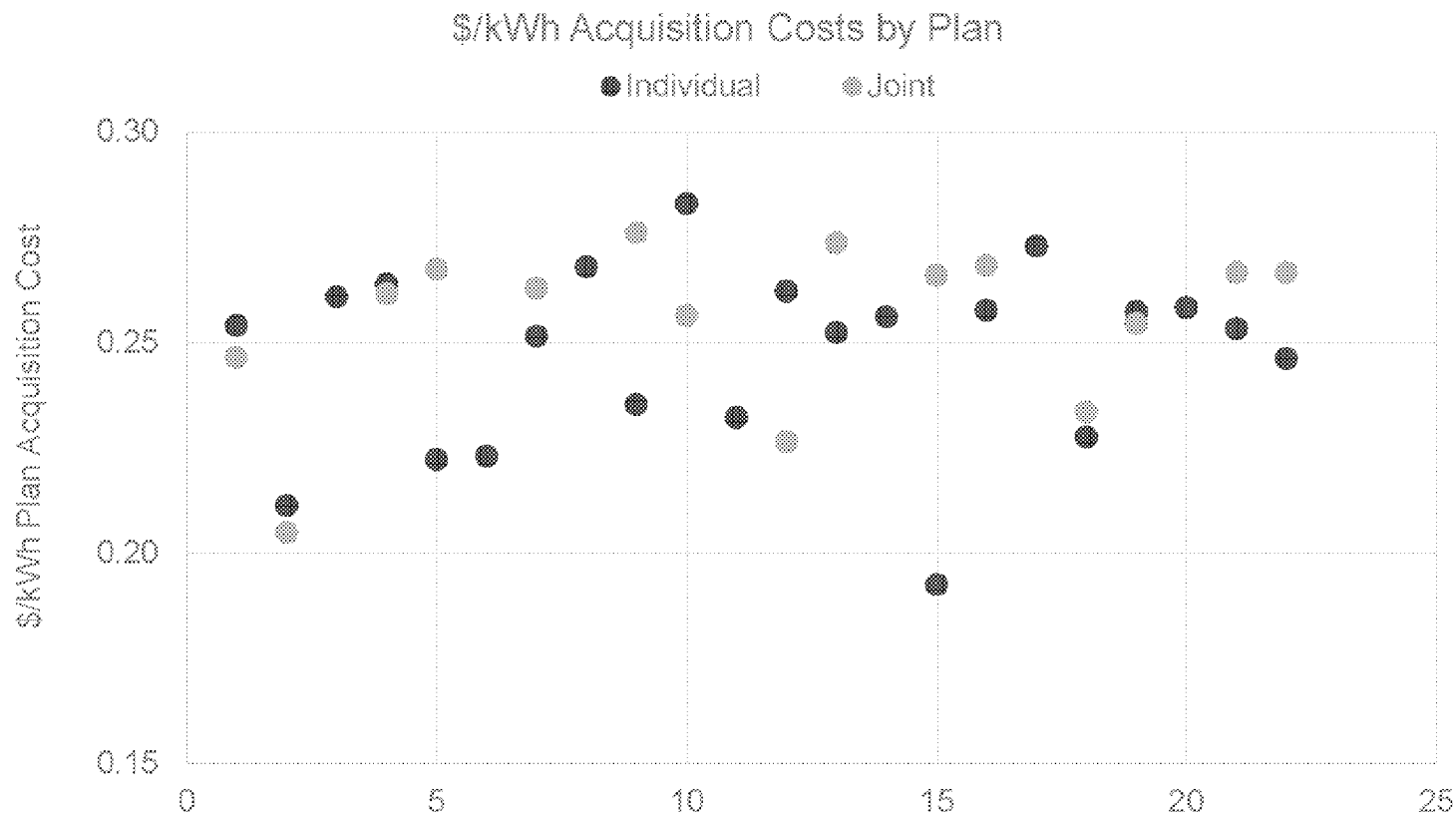


■ Joint Plan LDCs are in same region or very close

■ Joint Plan LDCs are in different regions and/or large distances away

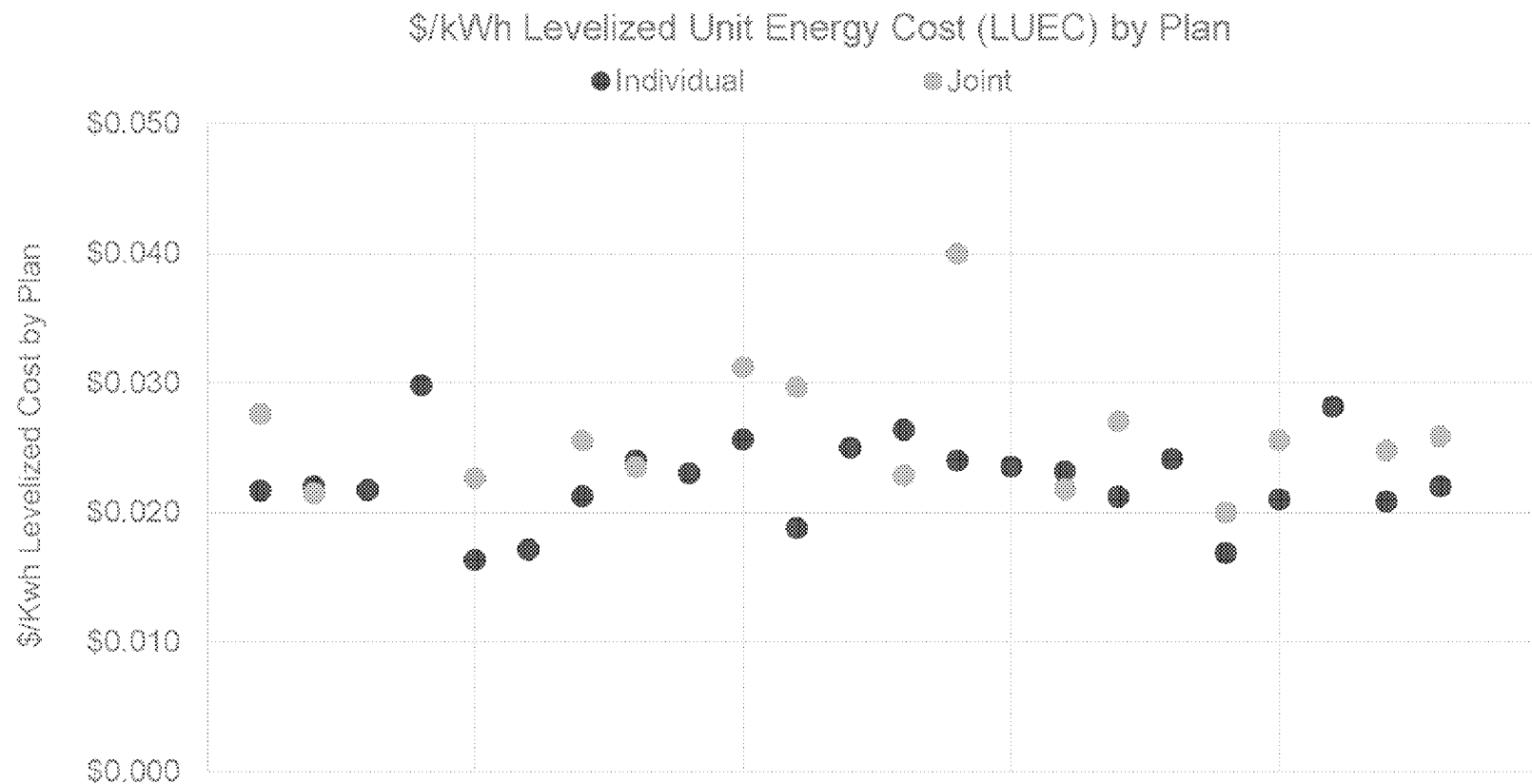
THERE IS NO APPARENT TREND IN JOINT VS. INDIVIDUAL DELIVERY COSTS

- There is no apparent trend in acquisition costs between a joint or individual CDM Plan
- Delivery (acquisition) costs (\$/2020 kWh) were calculated for each CDM Plan using the total budget and total achievement to target (energy savings persisting to 2020)
- Note: this analysis does not take into account higher delivery costs associated with geography, urban vs. rural, etc.



LUECS APPEAR SLIGHTLY HIGHER FOR JOINT CDM PLANS THAN INDIVIDUAL

- Levelized Unit Energy Costs (LUECs) appear to be higher for Joint CDM Plan's than Individual Plans slightly more often
- LUECs were taken from each CDM plan, as reported by the LDC(s) using a cost effectiveness tool
- Note: this analysis does not take into account higher delivery costs associated with geography, urban vs. rural etc.*



*One joint plan was removed because it did not pass cost effectiveness tool and was an order of magnitude higher than other LUECs

II. LDC COLLABORATION

OVERVIEW

Section	LDC Collaboration
Description	Breakdown of the activities undertaken as part of the IESO collaboration fund. Includes an overview of the processes to receive funding and past reasons for rejection. Review of other LDC collaboration activities (i.e. not funded by Collaboration Fund).
Focus area	• LDC collaboration • Attribution and cost sharing
Source(s)	• IESO data (collaboration fund tracking)

Summary:

- Almost all LDCs (97 percent) have participated in some form of collaboration (working groups, advisory group, stakeholder advisory committee, Joint CDM Plans, collaboration through Collaboration Fund projects or local/regional programs)
- 21 percent of innovation pilots and 23 percent of local/regional programs are collaborative
- 30 percent of LDCs, are participating in a collaborative local/regional program or innovation pilot
- 38 percent of the approved Collaboration Fund budget has gone to Working Group related projects, the rest has been committed to LDC Projects
- The majority (54 percent) of approved Collaboration Fund budget has been allocated to human resource related projects (e.g., energy managers, sales support, etc.)

THIS REPORT WILL REVIEW IESO-FUNDED COLLABORATION

- This report will assess the extent to which funded collaboration is taking place as part of the Conservation First Framework or Industrial Accelerator Program and whether that collaboration is achieving the outcomes of **1) customer convenience** and **2) cost efficiencies** per the Conservation First Framework Direction
- For the purposes of this topic report, collaboration is defined as IESO funded sources of collaboration as specified in the table below and described on subsequent slides
- Market research will aim to obtain information about LDC collaboration that is not IESO funded

Status in this Report	Collaboration	Collaboration Activity
Included	• Joint CDM Plan • Mid-Term Review Advisory Group participation • Stakeholder Advisory Committee participation • LDC Working Group participation	• Collaboration Fund • Local/regional program involving more than one LDC
Not Included *	• Informal information sharing and meetings • Formal collaboration groups not funded by IESO	• Informal collaboration on projects or events • Information collaborative outreach to customers

** To be investigated through market research*

IESO-FUNDED COLLABORATION INCLUDES FOUR MAIN SOURCES

- LDCs have the opportunity to collaborate through the following formal arrangements or groups: Joint CDM plans, Mid-Term Review Advisory Group participation, Stakeholder Advisory Committee participation, and LDC Working Group participation

Source	Description
Joint CDM Plan	CDM Plan for the 2015 to 2020 period submitted to the IESO completed in cooperation with one or more electricity distribution companies
Mid-Term Review Advisory Group participation	Current participation as either an Advisory Group member or observer (tracked by IESO)
Stakeholder Advisory Committee participation	Current participation as a member of the IESO Stakeholder Advisory Committee (tracked by IESO)
LDC Working Group participation	- LDCs, IESO and natural gas utilities participate in regular meetings to discuss, for example, potential changes to province-wide programs - Current Participation as a member of one of the LDC working groups supporting the Conservation First Framework (tracked by IESO) - The IESO tracks participation in working groups

IESO-FUNDED COLLABORATION ACTIVITIES INCLUDE TWO MAIN SOURCES

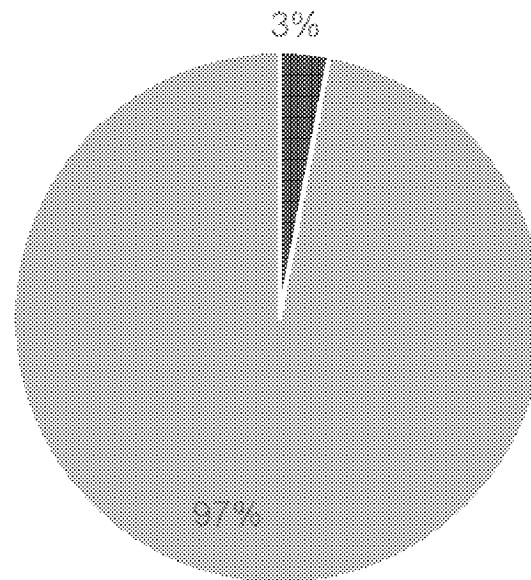
- The Collaboration Fund and Local and Regional programs provide opportunities for LDCs to obtain funding from the IESO in support of collaboration

Source	Description
Collaboration Fund	Funding available to LDCs from the IESO to support and encourage LDC collaboration with the goal of maximizing administrative and operational efficiencies throughout the program delivery process. • LDC collaboration allows for greater administrative efficiencies, information sharing, and the fostering of strong working relationships. Select Collaboration Fund guidelines: • Activity must include two or more LDCs, and ideally LDCs representing at least two CDM Plans; or be from a working group; • Provide a description and rationale for the collaboration activity (e.g. geographic and target customer commonalities); • Expected to have a measurable short-term and long-term impact and outcome, as determined by the IESO, acting reasonably; • the total amount of funding requested must be justified and optimized to robustly accomplish the objectives and demonstrate ratepayer value • results of the activities must be used to support decisions or actions The Collaboration Fund is under review and not currently not accepting applications outside of regular working group functions.
Local and regional programs	Funding available for LDC-led program design and market testing of new initiatives through the central services budget (i.e., not LDC budgets). Testing and learning from small-scale pilot programs (pilots) will contribute to the success and cost effectiveness of the full-scale launch of a new program. Local/regional program guidelines: • Gas and/or water integration if applicable; and, • Encouraged to develop pilots that include collaboration between electric and gas distributors and collaboration amongst LDCs. Two categories: (1) innovation (2) local/regional

96 PERCENT OF LDCS ARE PARTICIPATING IN FUNDED COLLABORATION

- All LDCs with the exception of 2 (3 percent) are participating in at least one form of funded collaboration (Joint CDM Plan, collaborative local/regional program or pilot, LDC Working Group, IESO Stakeholder Advisory Committee, Mid-Term Review Advisory Committee, or collaboration fund activity)

Proportion of LDCs not Participating in any Collaboration Activities



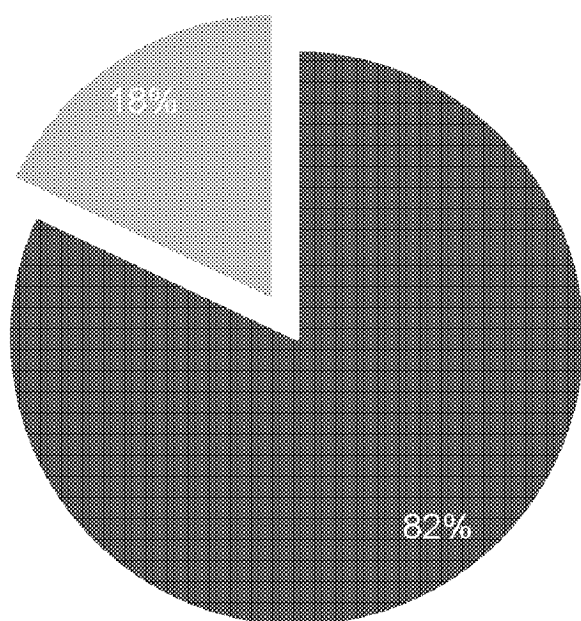
■ LDCs not Participating in any Collaboration Activities

■ LDCs Participating in at least one Collaboration Activity

18 PERCENT OF LDCS HAVE DESIGNED/DELIVERED IN INNOVATION PILOTS

- The majority of LDCs in Ontario are not participating in innovation pilots in collaboration with another LDC (82 percent)

Proportion of LDCs Participating in Collaborative Pilot Programs



- LDCs Not Participating
- LDCs Participating in in-market pilots

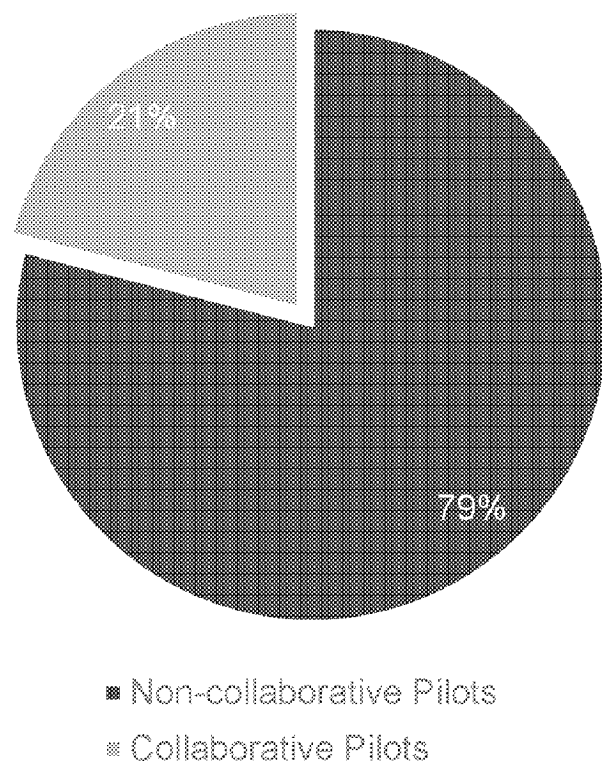
Total LDCs in Ontario	71
LDCs participating in collaborative pilots*	13
Proportion	18%

**LDCs participating in more than one pilot have only been counted once*

21 PERCENT OF INNOVATION PILOTS HAVE BEEN COLLABORATIVE

- 21 percent of approved Pilots since the start of Conservation First Framework have been collaborative

Proportion of Innovation Pilots that include Collaboration Between LDCs



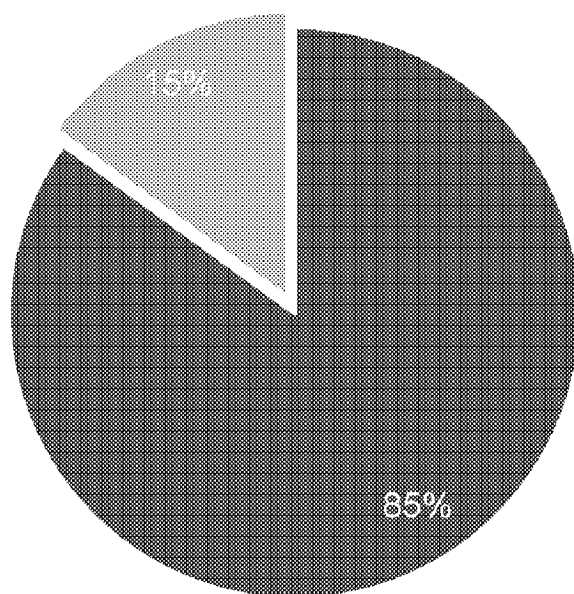
Total pilots	19
Number with multiple LDCs	4
Proportion	21%

Innovation Pilot	Joint Plan?
Residential Direct Mail Pilot Program (.23 GWh)	All LDCs in Joint Plan
Home energy assessment and retrofit pilot program (1.5 GWh)	All LDCs in Joint Plan
Small & Medium Business Energy Management System Innovation Pilot (2.4 GWh)	No LDCs in Joint Plan
ECM Furnace Fan Residential Upstream Pilot (0.73 GWh)	No LDCs in Joint Plan

15 PERCENT OF LDCS ARE PARTICIPATING IN LOCAL/REGIONAL PROGRAMS

- The majority of LDCs in Ontario are not participating in local/regional programs in collaboration with another LDC (85%)

Proportion of LDCs Participating in Collaborative Local Programs



- LDCs Not Participating
- LDCs Participating in Ongoing Local programs

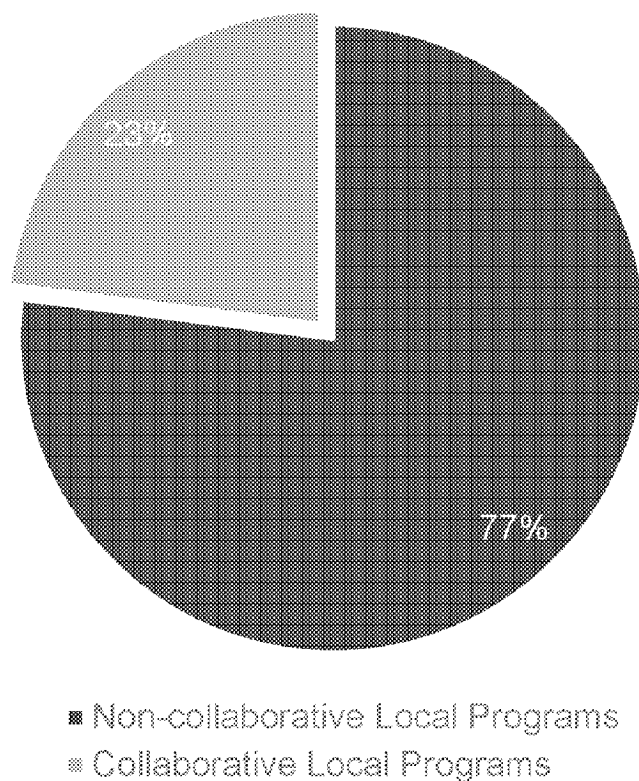
Total LDCs in Ontario	71
LDCs participating in collaborative local/regional programs*	11
Proportion	15%

**LDCs participating in more than one pilot have only been counted once*

23 PERCENT OF LOCAL/REGIONAL PROGRAMS ARE COLLABORATIVE

- 23 percent of local/regional programs are collaborative (i.e. carried out by more than one LDC working together)

Proportion of Local Programs that include Collaboration Between LDCs



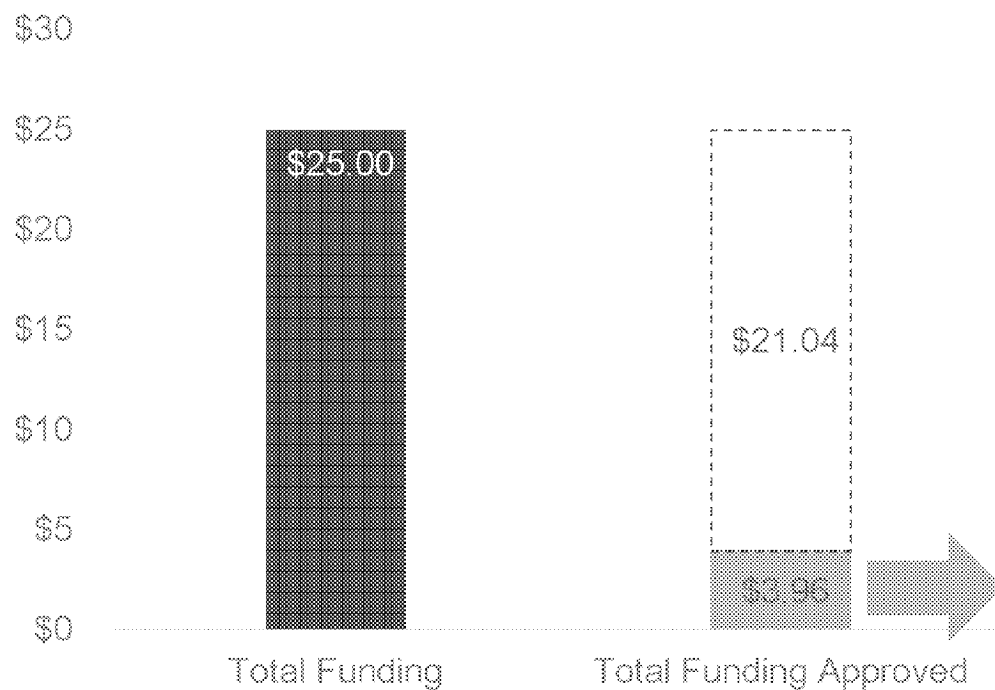
Total Local Programs	22
Number with multiple LDCs	5
Proportion	23%

Local/Regional Program	Joint Plan?
Instant savings program (1.8 GWh)	All LDCs in Joint Plan
Swimming pool efficiency program #1 (21 GWh)	All LDCs in Joint Plan
High Efficiency Agricultural Pumping Program (26.1 GWh)	No LDCs in Joint Plan
Home Assistance Program & Small Business Lighting Program (1.4 GWh)	All LDCs in Joint Plan
Swimming pool efficiency program #2 (21 GWh)	All LDCs in Joint Plan

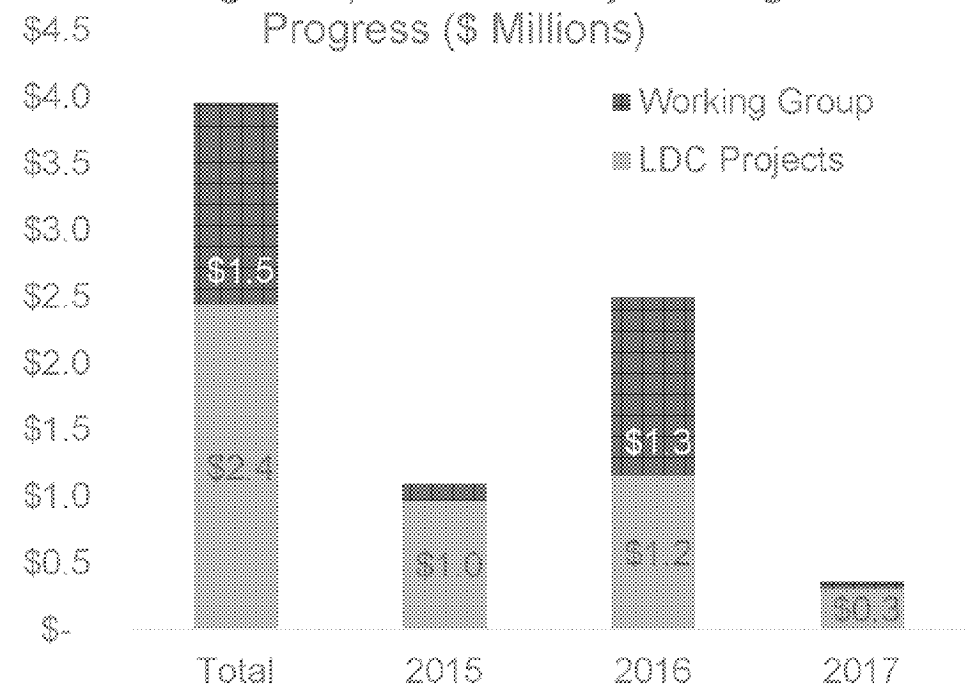
16 PERCENT OF THE COLLABORATION FUND BUDGET IS COMMITTED

- Of the \$25 million Collaboration Fund budget, \$3.96 million has been approved for collaboration projects so far
- Of the approved funds (\$3.96 million), \$1.5 million (38 percent) has been committed to Working Group expenses and \$2.4 million (62 percent) has been committed to LDC Projects
- The Collaboration Fund is under review and not currently accepting applications outside of regular working group functions

Collaboration Fund Budget Progress
(\$ Millions)



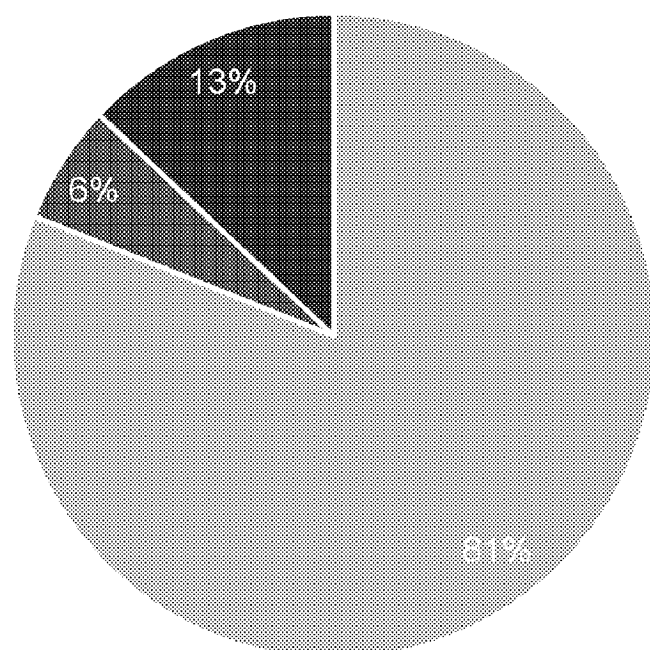
Breakdown of Total Funding Approved:
Working Group vs. LDC Project Budget
Progress (\$ Millions)



87 PERCENT OF COLLABORATION FUND APPLICATIONS WERE APPROVED OR INVITED TO RESUBMIT

- Of the 32 applications to the collaboration fund, 4 (13 percent) have been rejected
- The rest (87 percent) have either been accepted, or the proponents have been invited to resubmit their application

Collaboration Fund Application Status



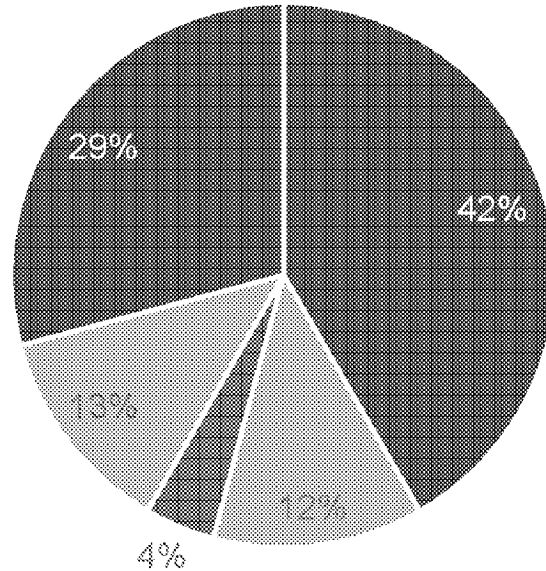
■ Approved ■ Invite to Resubmit ■ Rejected

Collaboration Fund Projects	#
Number of Projects In Contracting	1
Number of Projects Complete	9
Number of Projects Executed	16
Number of Projects Invite to Resubmit	2
Number of Projects Rejected	4
Total Projects	32

MAJORITY OF COLLABORATION FUND PROJECTS ARE HUMAN RESOURCES

- The majority (54 percent) of Collaboration Fund projects are human resources related
- 42 percent of Collaboration Fund projects are tagged to the Working Group (WG)

Breakdown of approved, completed, or executed Collaboration Fund projects



- LDC Human Resources
- WG Human Resources
- WG Training & Education
- LDC Training & Education
- WG Other

- Human resources (54% of Collaboration Fund projects) consists of funding for:
 - Key account managers/team (2)
 - Energy managers (regional or roving) (7)
 - Technical reviewer services (1)
 - Admin support (1)
 - Business case writer (1)
 - Program development support (1)
- WG Other (29% of Collaboration Fund projects) consists of funding for:
 - Legal services (2)
 - Program design vendor (3)
 - Project management (1)
 - Meeting admin costs (1)

III. CROSS-FUEL COLLABORATION

OVERVIEW

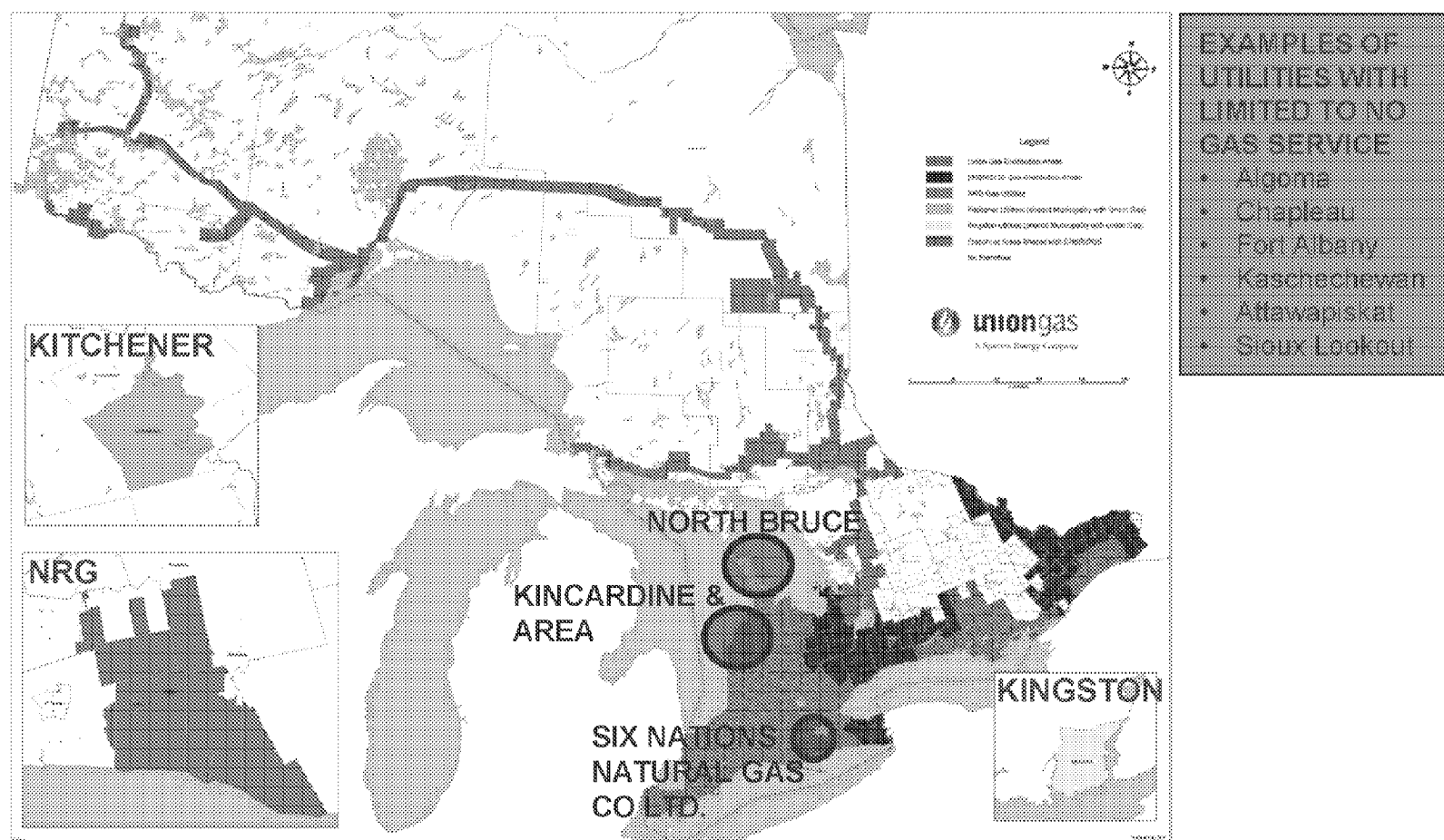
Section	Cross-Fuel Collaboration
Description	Overview of cross-fuel (electricity and natural gas) collaboration activities undertaken either through programs and pilots or collaboration fund activities. High-level comparison of cost effectiveness and other guidance impacting collaboration between electric and natural gas frameworks. Discussion of other barriers to cross-fuel collaboration. Cross reference of program alignment between the two frameworks.
Focus area	
Source(s)	• IESO data (pilot and program list, collaboration fund tracking), CFF framework documents, OEB DSM framework documents, Navigant analysis

Summary:

- There is minimal official collaboration between electric and natural gas utilities
 - One LDC is delivering both an innovation pilot and local/regional program with a gas utility, there are two additional innovation fund pilots with natural gas utility collaboration
 - 13 percent of LDCs participated in a Collaboration Fund project - Energy Into Action
- Some aspects of natural gas and electric utility frameworks are aligned, but other aspects create barriers to collaboration
 - Timing and evaluation are aligned (both frameworks are targeting the same end year, have a mid-term review, and have the opportunity to earn performance incentives)
 - Plan approvals differ greatly and could result in sub-optimal approaches to meaningful collaboration (e.g., trying to force-fit solutions into existing constructs)
 - Though collaboration is encouraged, the benefits are not immediately recognized or financially encouraged

MOST ELECTRICITY CUSTOMER ALSO HAVE NATURAL GAS SERVICE

- There are minimal service territories in southern Ontario without natural gas service (orange circles)
- Northern Ontario has greater limitations, in particular in Hydro One territory



BOTH ELECTRICITY AND NATURAL GAS UTILITIES ARE REQUIRED TO COLLABORATE TO GAIN EFFICIENCIES WITHIN THE 2015-2020 PERIOD

- Both the natural gas and electric utilities are working towards the same target timeframe, but the approval bodies vary
- Both IESO and OEB emphasize and encourage collaboration

	Electricity	Natural Gas
Duration	2015 – 2020	2015 – 2020
Province-Wide Target	7 TWh	Metrics developed by program (CCM, households, participants)
Province-Wide Budget	\$1.8 billion + central funding	\$699 million
Approval from	IESO	OEB

- As per government Direction:
 - “The OPA shall require Distributors, where appropriate, to coordinate and integrate Province-Wide Distributor CDM Programs and Local Distributor CDM Programs with natural gas distributor (“Gas Distributors”) conservation programs to achieve efficiencies and convenient integrated programs for electricity and natural gas customers.”
 - “The OPA shall encourage Distributors to maximize administrative and delivery efficiencies by utilizing appropriate program delivery models. Specifically, the OPA and/or Distributors shall provide enhanced co-ordination with regard to [targeting multi-site customers, programs delivered through provincial or national channels (retail specifically mentioned), marketing, procurement, delivery/services “that will afford significant administrative cost and/or delivery efficiencies”].
 - “The OPA shall, where appropriate, coordinate and integrate the Industrial Accelerator Program with natural gas distributor conservation programs to achieve efficiencies and convenient integrated programs.”

SOME ASPECTS OF THE GAS AND ELECTRIC FRAMEWORKS MAY HAVE AN IMPACT ON COLLABORATION

- The table below outlines several areas of the gas DSM and electric CDM frameworks and outlines the potential impact on cross-fuel collaboration

Framework Component	Gas	Electric	Potential Impact
Program Evaluation	OEB has adopted IESO's EMV Protocols for evaluation of gas programs	IESO EMV Protocol used for program evaluation	Alignment achieved
Changes to program portfolio	DSM plans are approved as part of a regulatory process.	Changes to CDM Plans are approved by the IESO.	Regulatory processes could discourage changes to DSM plans and limit new programs and material changes.
Mid term Review	Required	Required	Opportunity to share learnings and best practices.
Cost effectiveness	DSM programs are evaluated annually based on cost effectiveness metrics.	CDM programs are evaluated for performance annually based on cost effectiveness metrics.	Frameworks are aligned to measure cost effectiveness using similar tests – Program Administrator cost.
Incentive mechanism	Performance incentives available for meeting and exceeding conservation targets.	Performance incentives available for meeting and exceeding conservation targets.	Financial incentives align utilities towards the target metrics.

THERE ARE AREAS OF PROGRAM ALIGNMENT BETWEEN THE GAS AND ELECTRICITY PROGRAMS TARGETING BUSINESS CUSTOMERS

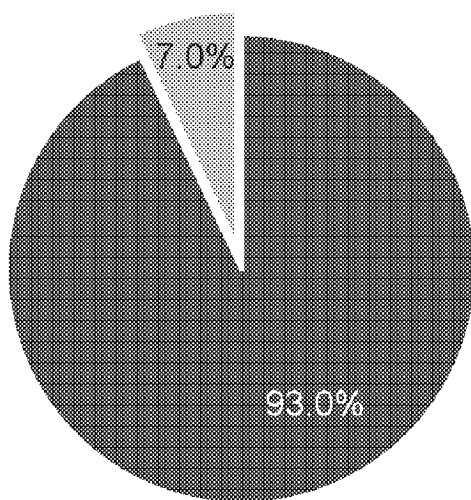
- The following table outlines the programs that align between the CDM and DSM frameworks and portfolios, additional detail for both residential and non-residential programs can be found in Appendix B
- ✓ indicates that a similar electricity conservation program/component exists

NATURAL GAS PROGRAMS →							
ELECTRICITY PROGRAMS ↓	Custom Industrial	Custom Commercial	Commercial & Industrial Direct Install	Commercial & Industrial Prescriptive	Savings by Design – Commercial	Run it Right –	Comprehensive (Strategic) Energy
Retrofit (prescriptive and custom)	✓	✓	✓	✓			✓
Audit Funding			✓				
Energy Managers							✓
Process & Systems	✓					✓	✓
System Re-Commissioning						✓	
New Construction					✓		
Monitoring and Targeting						✓	✓

5 LDCs ARE DELIVERING CROSS-FUEL INNOVATION PILOTS

- 5 out of 71 LDCs are currently delivering innovation pilots with a gas utility

Proportion of LDCs delivering pilot programs
with gas utilities



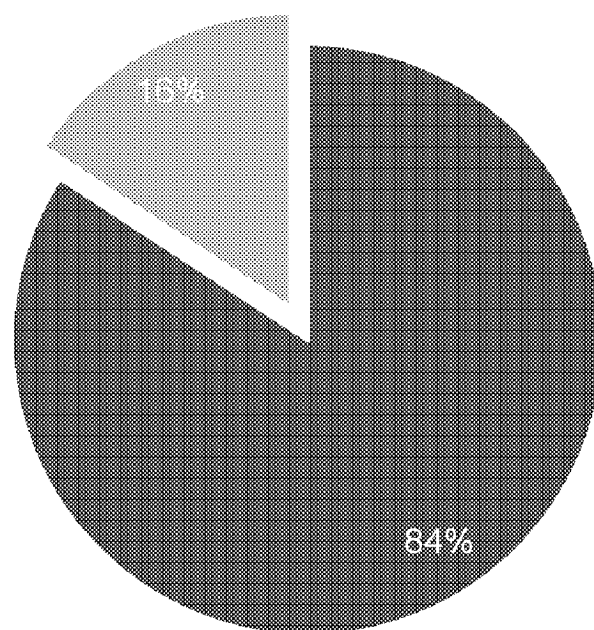
- LDCs not delivering in-market pilots with gas utilities
- LDCs delivering in-market pilots with gas utilities

Total LDCs	#
Total LDCs in Ontario	71
LDCs participating in collaborative pilots with gas utilities	5
Proportion	7.0%

3 INNOVATION PILOT FEATURES CROSS-FUEL COLLABORATION

- 3 out of 19 pilots feature cross-fuel collaboration

Proportion of Innovation Pilots that include Collaboration Between an electric and gas utility



- Pilots with no Cross-fuel Collaboration
- Pilots with Cross-fuel Collaboration

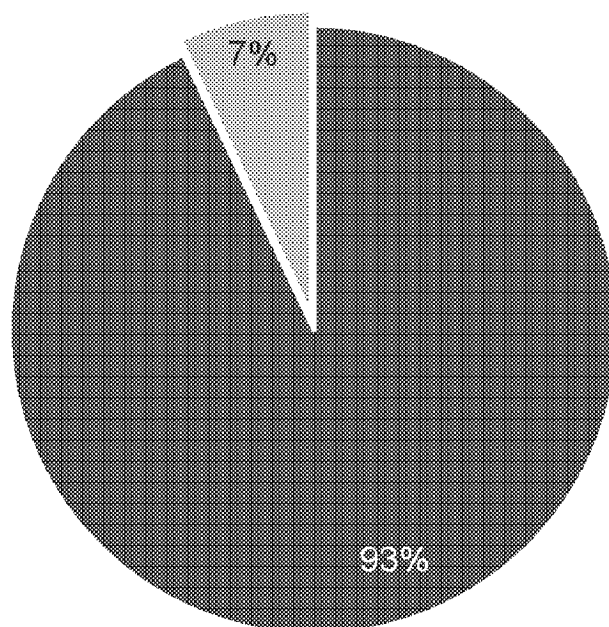
Innovation Pilots	#
Total pilots	19
Number with both electric and gas LDCs	3
Proportion	16%

- Joint Low-Income Program Pilot (0.31 GWh)
- Smart Thermostat Demand Response Pilot (0.06 GWh)
- Hotel/Model in-suite A/C Upgrades (2.36 GWh)

1 LDC HAS A LOCAL PROGRAM THAT FEATURES CROSS-FUEL COLLABORATION

- 5 out of 71 LDCs is currently delivering a local/regional program with a gas utility

Proportion of LDCs delivering collaborative local/regional programs with gas utilities



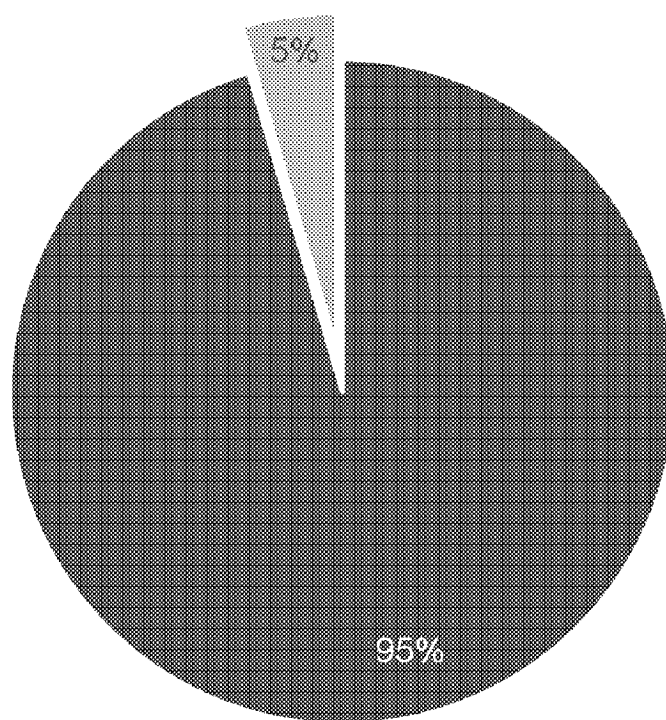
- LDCs not delivering in in-market local programs with gas utilities
- LDCs delivering in in-market local programs with gas utilities

Total LDCs	#
Total LDCs in Ontario	71
LDCs participating in ongoing collaborative local/regional programs with gas utilities	5
Proportion	7%

1 LOCAL PROGRAM FEATURES CROSS-FUEL COLLABORATION

- 1 out of 22 local/regional programs feature cross-fuel collaboration

Proportion of Local Programs that include Collaboration Between an LDC and Gas Utility



■ Local Programs with no Cross-fuel Collaboration

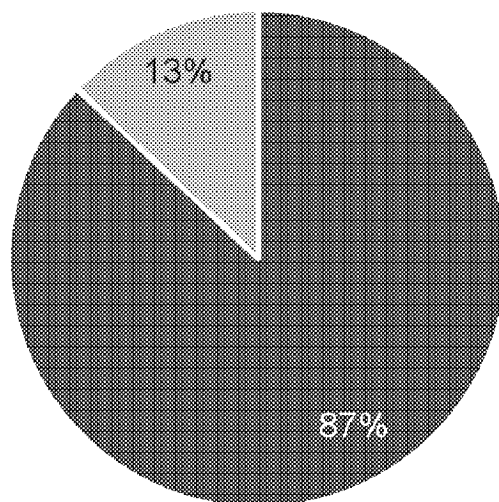
Local Programs	#
Total Local Programs	22
Number of pilots with cross-fuel collaboration	1
Proportion	5%

- Adaptive thermostat rebate program (4.4 GWh)

13 PERCENT OF LDCs ARE PARTICIPATING IN A CROSS-FUEL COLLABORATION FUND ACTIVITY

- 9 out of 71 LDCs are participating in Collaboration Fund LDC Projects with gas utilities (excluding working groups)

Proportion of LDCs Participating in Collaboration fund Activities with Gas Utilities (excluding working groups)



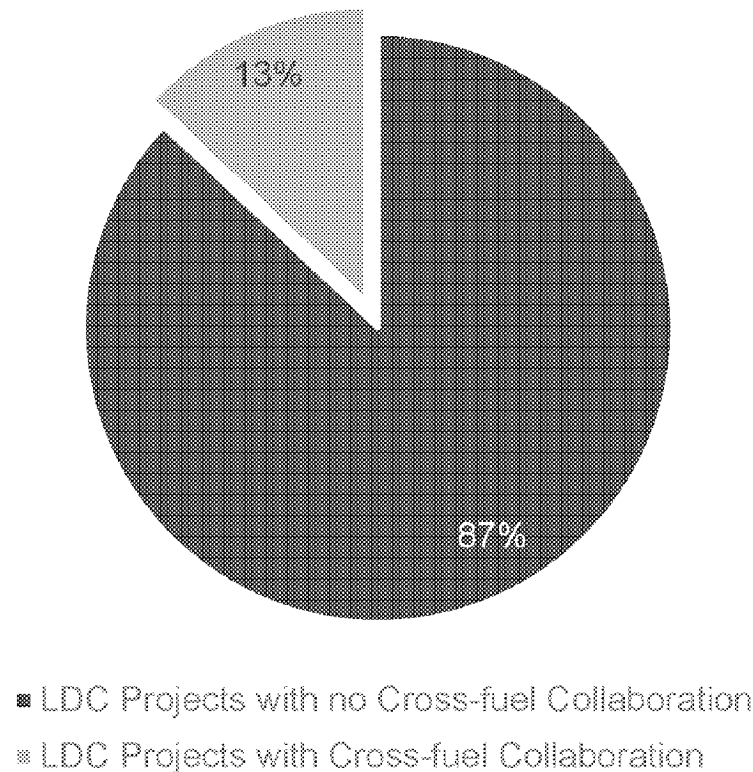
- LDCs Not Participating
- LDCs Participating in Collaboration Fund Activities with Gas Utilities

Total LDCs	#
Total LDCs in Ontario	71
Number of LDCs participating in Collaboration Fund LDC Projects	9
Proportion	13%

13 PERCENT OF COLLABORATION FUND PROJECTS FEATURE CROSS-FUEL COLLABORATION

- 2 out of 15 approved Collaboration Fund LDC Projects (excluding working groups) feature collaboration between electric and gas utilities

Proportion of Collaboration Fund LDC Projects with Cross-fuel Collaboration



Total Projects	#
Total approved, complete or executed Collaboration Fund LDC Projects	15
Number of LDC Projects that feature cross-fuel collaboration	2
Proportion	13%

- Energy Into Action events (5% of total Collaboration Fund budget)

THERE ARE FOUR IESO FUNDED INTEGRATED GAS – ELECTRICITY PROGRAMS IN ONTARIO

- There are four integrated natural gas and electricity pilot programs are either completed (Adaptive Thermostat Rebate program) or beginning soon (Whole Home program) that are reported to the IESO

Whole Home (IESO, Union, Enbridge)

Status: pilot, not yet in market

- The Minister of Energy issued a direction to the IESO on June 10, 2016 to centrally design, fund, and deliver a new province-wide whole home pilot program for residential customers
- Key Principle to provide an **integrated, multi-fuel whole home program** that provides a consistent positive experience for residential customers regardless of their home heating fuel type or location in Ontario, targeting approximately 10,000 homes (both electrically heated homes and homes eligible for gas programs)
- Enbridge and Union Gas each offer a whole home program for residential customers
- Employ existing gas utilities' program offers and infrastructure with added complementary electricity savings component

Hotel/Motel Pilot (Niagara Peninsula Energy and Enbridge Gas)

Status: Pilot Program, in Market

- Niagara Peninsula Energy (NPEI), in collaboration with Enbridge Gas, and the Ontario Restaurant Hotel & Motel Association is delivering an 18-month targeted holistic hotel/motel CDM program pilot in NPEI's service territory.
- The pilot is being funded by the Independent Electricity System Operator's (IESO) Innovation Fund.
- The pilot provides a comprehensive electricity - natural gas - water (steam) program for the hotel/motel sector in NPEI's service territory.
- Hotel/motel customers see a 'one-stop shop' for conservation programs, which leverage existing province-wide incentives available through CDM and Gas DSM programs.

THERE ARE FOUR IESO FUNDED INTEGRATED GAS – ELECTRICITY PROGRAMS IN ONTARIO

- There are four integrated natural gas and electricity pilot programs are either completed (Adaptive Thermostat Rebate program) or beginning soon (Whole Home program) that are reported to the IESO

Adaptive Thermostat Rebate (Toronto Hydro, Enbridge)

Status: local/regional program, recently concluded

- This local/regional program was offered collaboratively by Toronto Hydro and Enbridge gas to residential customers within their combined service territory
- Enbridge and Toronto Hydro each offered \$50 of a \$100 incentive for customers to upgrade to a smart thermostat (if the customer has central air conditioning)
- The program allows the customer to fill out one application and receive incentives from two organizations, demonstrating the customer benefit from collaboration
- The collaborative program was in market from March, 2016 until March 31, 2017, and its funding was approved by the IESO

Joint Home Assistance Program (Toronto Hydro, Enbridge)

Status: Pilot Program, in Market

- This pilot program was approved in December, 2015 by the IESO and is ongoing
- The program tests savings and cost feasibility of jointly delivered HAP and Winterization Program for low-income Toronto Hydro and Enbridge Gas customers
- This pilot has the potential to be moved forward into a full program

IV. OTHER COLLABORATION

OVERVIEW

Section	Other Collaboration
Description	Review of other IESO collaboration efforts. Brief discussions on the influence of other, non-ratepayer funded programs on ratepayer funded programs. Cross reference of program alignment between CFF programs and programs communicated in the CCAP.
Focus area	• Collaboration opportunities with government funded initiatives
Source(s)	• IESO data (evaluation reports, collaboration fund tracking) • CCAP

Summary:

- IESO supports additional collaborative activities both within the Conservation First Framework and with other entities
 - The Conservation Fund contains several examples, but there are limited recent examples (post 2015)
- Government entities are also involved in CDM activities that may provide opportunities for collaboration or competition for customer attention and investment

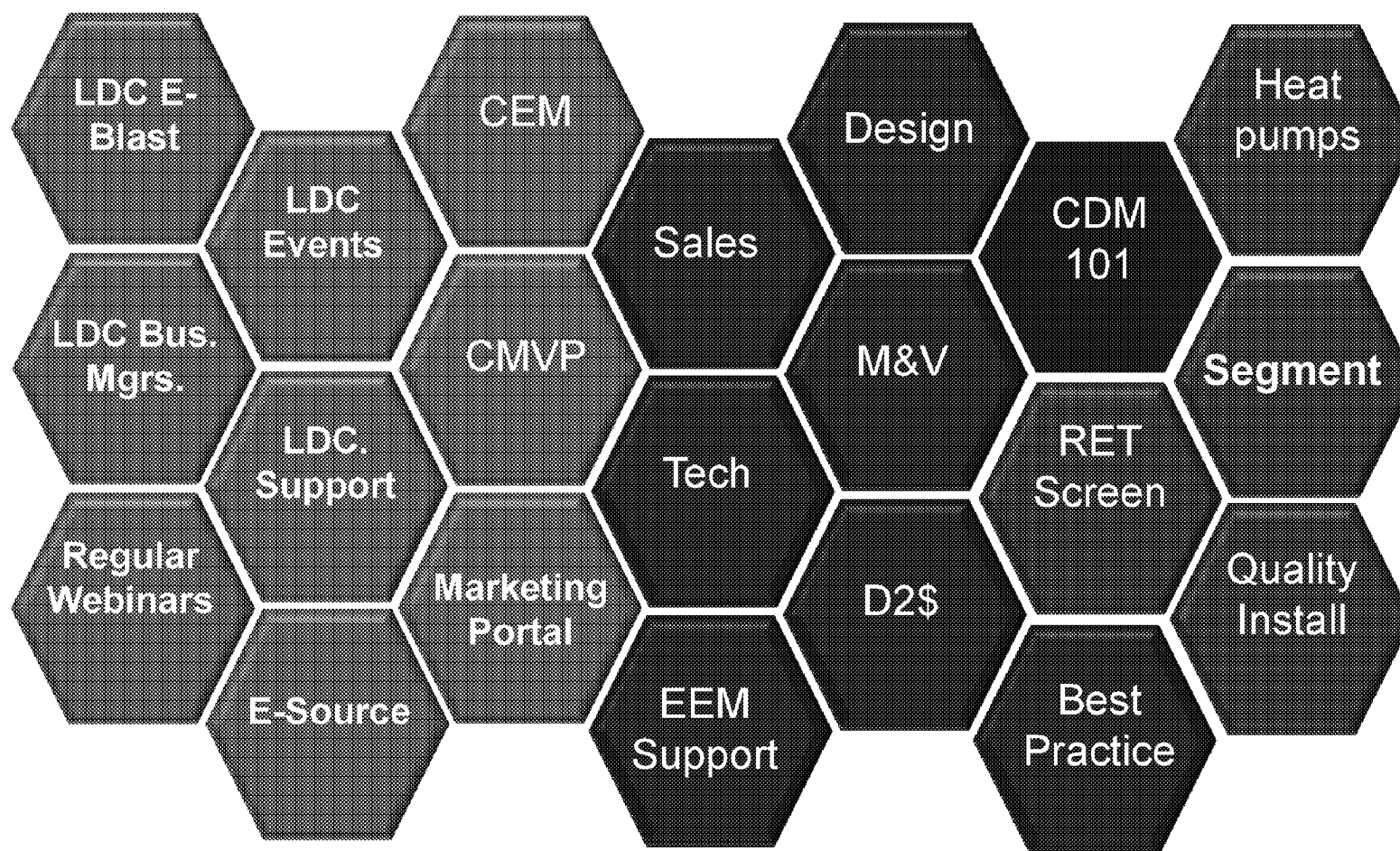
COLLABORATION WITH OTHER ENTITIES THROUGH THE CONSERVATION FUND

- The Conservation Fund provides funding for innovative projects testing technologies and approaches to conservation, collaboration is not a requirement and funding is outside of the Conservation Fund Framework
- Some examples of collaboration with other participants through the Conservation Fund are below

Year	Entities Involved		Description
2015	IESO	Ontario Clean Water Agency	Testing pay-for-performance model
2015	PowerStream	OEB, IESO	Dynamic pricing pilot + technology to inform decisions to implement a voluntary, year-round alternative to TOU structures
2015	IESO	Beworks Inc.	Building off OEB pilot to test effectiveness of communicating TOU pricing information
2014	Enwin	Water utilities	Evaluating benefits of water conservation measures to support integrated conservation programs
2014	IESO	Waterfront Toronto	Analyze energy and water data
2013	IESO, LDCs	EnerNOC	Engage medium and large commercial customers in strategic energy management
2013	IESO	Ryerson University	Three fellowship positions and student awards focused on integration of energy and urban planning, integrated delivery of conservation programs

IESO CAPABILITY BUILDING ACTIVITIES ACROSS MANY TOPIC AREAS

- IESO provides capability building opportunities for LDCs and Channel Partners ranging from information sharing to training and tools



IESO PROVIDES SUPPORT FOR ENERGY MANAGERS THROUGH EVENTS AT WHICH THERE ARE OPPORTUNITIES FOR LDC COLLABORATION

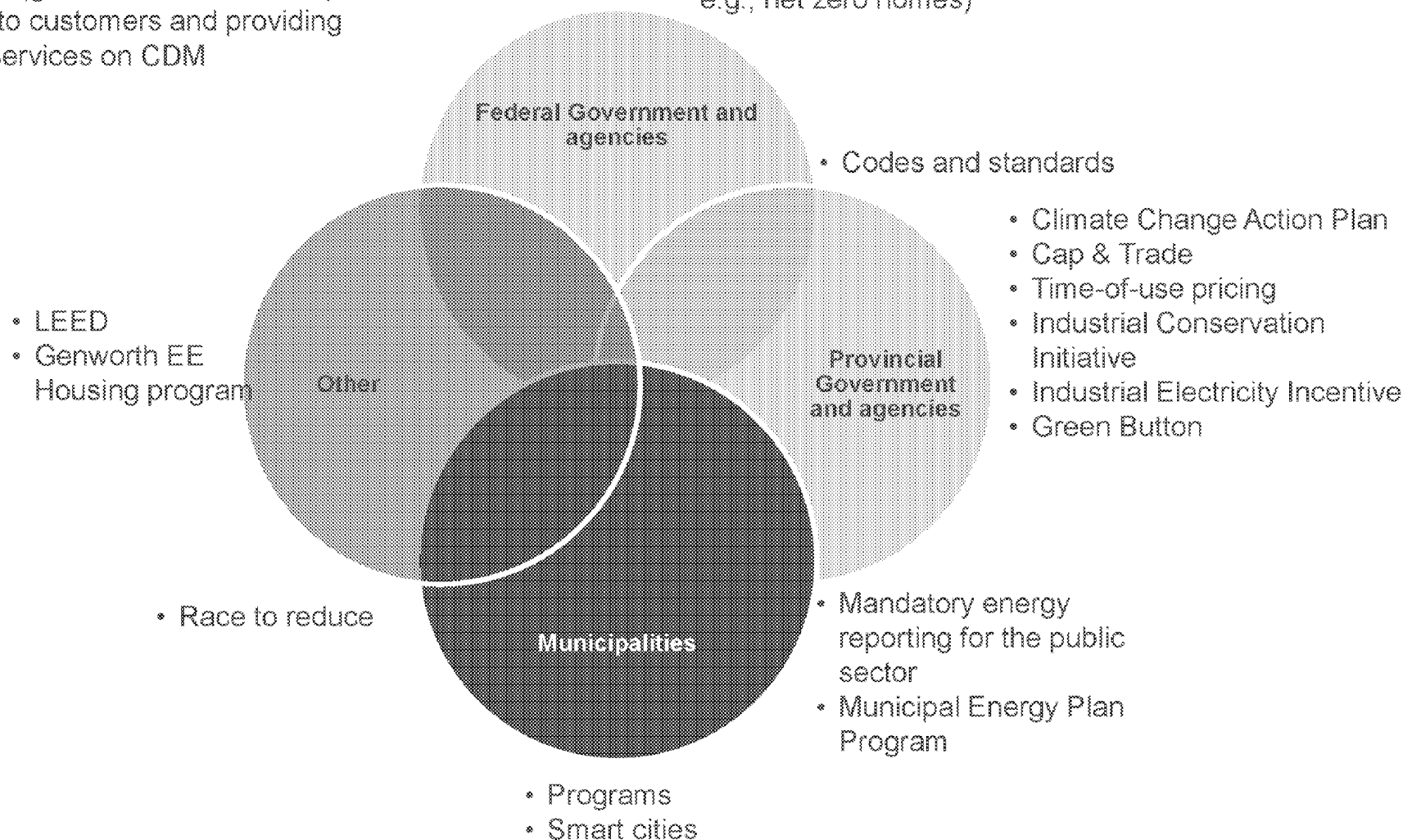
- IESO provides collaboration opportunities specifically for Energy Managers
- 20 events occurred from 2015 to 2017

Year	Event	Attendees
2015	3M Energy Hunt	25
	Cameco Energy Hunt	20
	EM Forum & Emmies	27
	Molson Energy Hunt	12
	Pepsi Energy Hunt	24
	Regional Energy Manager Meeting X 4	75
2016	City of London Energy Hunt	13
	GM Energy Hunt	18
	Regional Energy Manager Meeting X 5	179
2017	Sales Training	53
	Sunnybrook Health Sciences Centre Energy Hunt	16
	University of Toronto Energy Hunt	25

THERE ARE MANY OTHER ORGANIZATIONS INVOLVED IN ADVANCING SIMILAR POLICY GOALS IN ONTARIO, MANY ARE ASSOCIATED WITH GOVERNMENT

- Many other actors (government and others) are reaching out to customers and providing information and services on CDM

- NRCan (former ecoEnergy, other pilot funding – e.g., net zero homes)



IN THE PAST, OTHER PROGRAMS HAVE IMPACTED PARTICIPATION IN IESO PROGRAMS: CASE STUDY HEATING & COOLING PROGRAM

Case Study: ecoEnergy Retrofit-Homes program and IESO Heating & Cooling program

- The ecoEnergy Retrofit-Homes program was a federal program offering rebates to residential customers replacing heating and cooling equipment
- The IESO (then OPA) had a program that offered incentives (through a contractor) for the same equipment.
- Customers were able to obtain both incentives
- Many participants in Heating & Cooling leveraged both incentives available

Incentives and Tax Credits

In addition to the incentive provided by the OPA initiative, many participants received other incentives or tax credits (Table 89). More furnace purchasing participants (80) than CAC purchasing participants (45) received an additional incentive or tax credit. In addition to rebates and tax credits, three furnace purchasing participants and three CAC purchasing participants received a reimbursement for their energy audit.

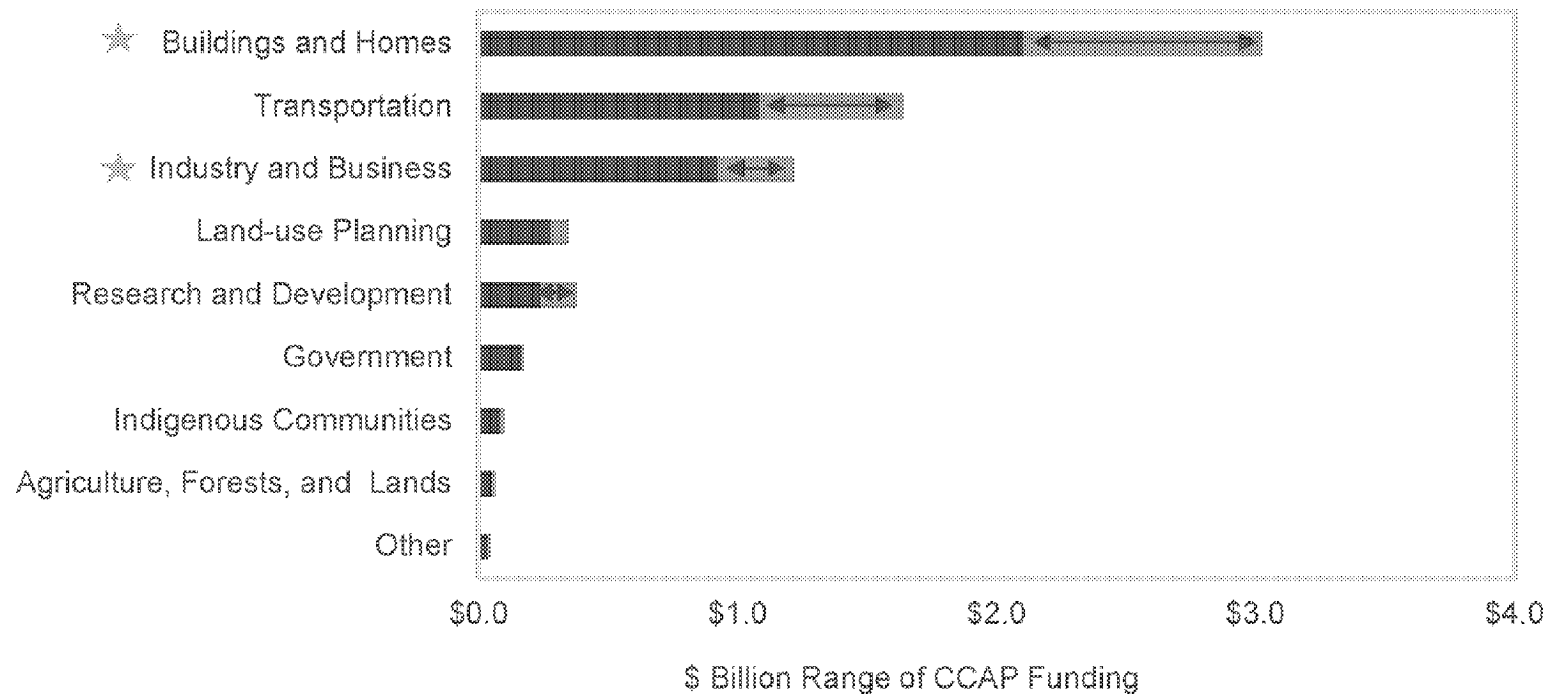
Table 89: Participant Incentives and Tax Credits Received

INCENTIVE/TAX CREDIT	FURNACE	CAC
Federal rebate	37	20
Manufacturer rebate	13	8
Provincial rebate	9	5
Rebate from the contractor	6	4
Other rebate	6	4
Don't know/ can't remember	17	6
Total	88	47

THE LARGEST ANTICIPATED FUNDING CATEGORY COULD ALIGN WELL WITH EFFORTS UNDER CONSERVATION FIRST FRAMEWORK

- Funding through the Climate Change Action Plan for buildings and homes could reach between \$2 and \$3 billion which is anticipated to be spent in the next 5 years
- The stars indicate potential areas of alignment and additional details are provided in Appendix A

Ontario Government to invest \$5.9B to \$8.3B through the CCAP



SECTION 3: SUMMARY OBSERVATIONS AND NEXT STEPS

PRELIMINARY OBSERVATIONS

Have the expected outcomes of 1) delivery efficiencies and 2) customer convenience been achieved through collaborative efforts undertaken to date?

- There is no clear delivery efficiency (as measured by \$/kWh acquisition cost or \$/kWh Levelized unit Energy Cost) as a result of LDCs undertaking joint vs. individual CDM Plans
- Further, there is limited ability to assess what the cost of each LDC's delivery would have been had it opted not to be part of a joint plan)
- Quantitative outcomes (delivery efficiencies and customer convenience) were not defined or measured as part of the Collaboration Fund requirements
- Preliminary research begins to identify the level of delivery efficiencies for LDC collaboration – efforts will be made to expand upon this analysis in market research
- Defined metrics to understand the delivery efficiencies and customer convenience that have been or will be achieved through collaborative efforts will be helpful in understanding whether or not policy objectives have been met
- Market research will help understand the value of the outcomes of collaboration to customers, channel participants, IESO, and LDCs; however it may be difficult to substantiate whether or not these efforts are resulting in measurable improvements to 1) delivery cost efficiencies and 2) customer convenience

PRELIMINARY OBSERVATIONS

What other outcomes has collaboration generated?

- Almost all LDCs (97 percent) have participated in some form of funded collaboration, indicating that a culture of collaboration has been fostered in some way
- The majority (54 percent) of approved Collaboration Fund budget has gone to human resource related projects (e.g., energy managers, sales support, etc.)
- IESO and other Government organizations could lead to additional collaborative activities both within the Conservation First Framework and with other entities
- Limited collaboration with other entities is occurring through the conservation fund
- Market research will identify further outcomes of collaboration and attempt to discern whether collaboration funding has resulted in ongoing collaboration activities (i.e., collaboration continuing beyond the funding window)
- Further definition of anticipated outcomes would be helpful to understand the outcomes and benefits of funded collaboration activities

Should additional collaboration be enabled? If so, how? If not, why not?

- Collaboration beyond working group participation could be improved and, if it is improved, should be done in a way that provides measureable results towards the stated policy goals of **1) improved delivery cost efficiencies** and **2) customer convenience**
- There is, in particular, a lack of cross-fuel collaboration
- Further investigation into the barriers of LDC collaboration and cross-fuel collaboration and opportunities to remove them will be investigated through market research

PRELIMINARY OBSERVATIONS

What are the barriers to collaboration and what are some options to tackle these barriers?

- Some aspects of natural gas and electric utility frameworks are aligned (e.g., evaluation), but other aspects could create barriers to collaboration (e.g., plan modification/approvals)
- Barriers to collaboration between electric LDCs will be investigated in market research
- Barriers to collaboration between electric LDCs and natural gas utilities will be investigated in market research

If collaboration should be encouraged, are there structural changes that can be addressed in the current or future frameworks (2020+)?

- Plan approvals for gas and electric utilities differ greatly, and could be an opportunity for alignment during the current or future framework
- Government entities are also involved in CDM activities that may provide opportunities for collaboration or competition for customer attention and investment
- Potential structural changes will be identified to address barriers to collaboration in the context of the advantages of scale that have and could be realized
- Market research will identify these opportunities

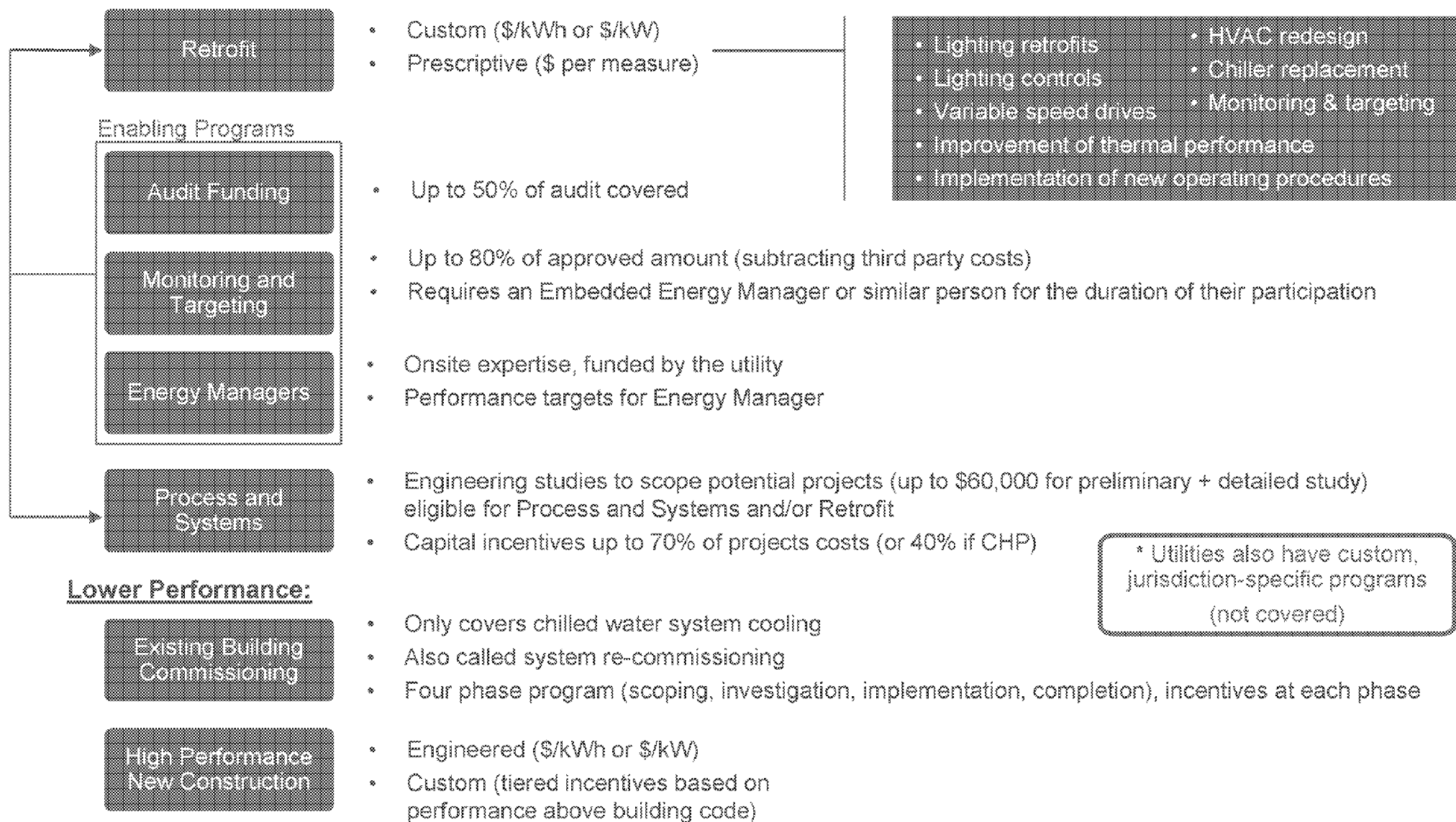
NEXT STEPS

Based on the preliminary assessment of the current state of collaboration, the following areas will be considered in the market research phase:

- Investigate non IESO-funded collaboration
- Investigate Collaboration Fund activities that have resulted in ongoing collaboration (i.e., benefits are such that it is worthwhile to continue without supplementary funding)
- Barriers to collaboration between electric utilities experienced as it relates to the framework and possible solutions
- Barriers to collaboration experienced and possible solutions specifically related to natural gas and electric collaboration
- Uncover more information on the value of collaboration (savings – both kWh and \$ and customer satisfaction/engagement)
- Investigate opportunities to leverage other conservation efforts that are outside of the Conservation First Framework (e.g. Climate Change Action Plan, federal programs or initiatives, etc.)

APPENDIX A: PROGRAMS ACROSS FUELS

ELECTRICITY (NON-RESIDENTIAL PROGRAMS)



ELECTRICITY (EXISTING AND UPCOMING TRAINING)

Existing
Training/Information:Building Operator
CertificationCommissioning
Agent CertificationCertified M&V
Professional
CertificationCertified Energy
Manager Training

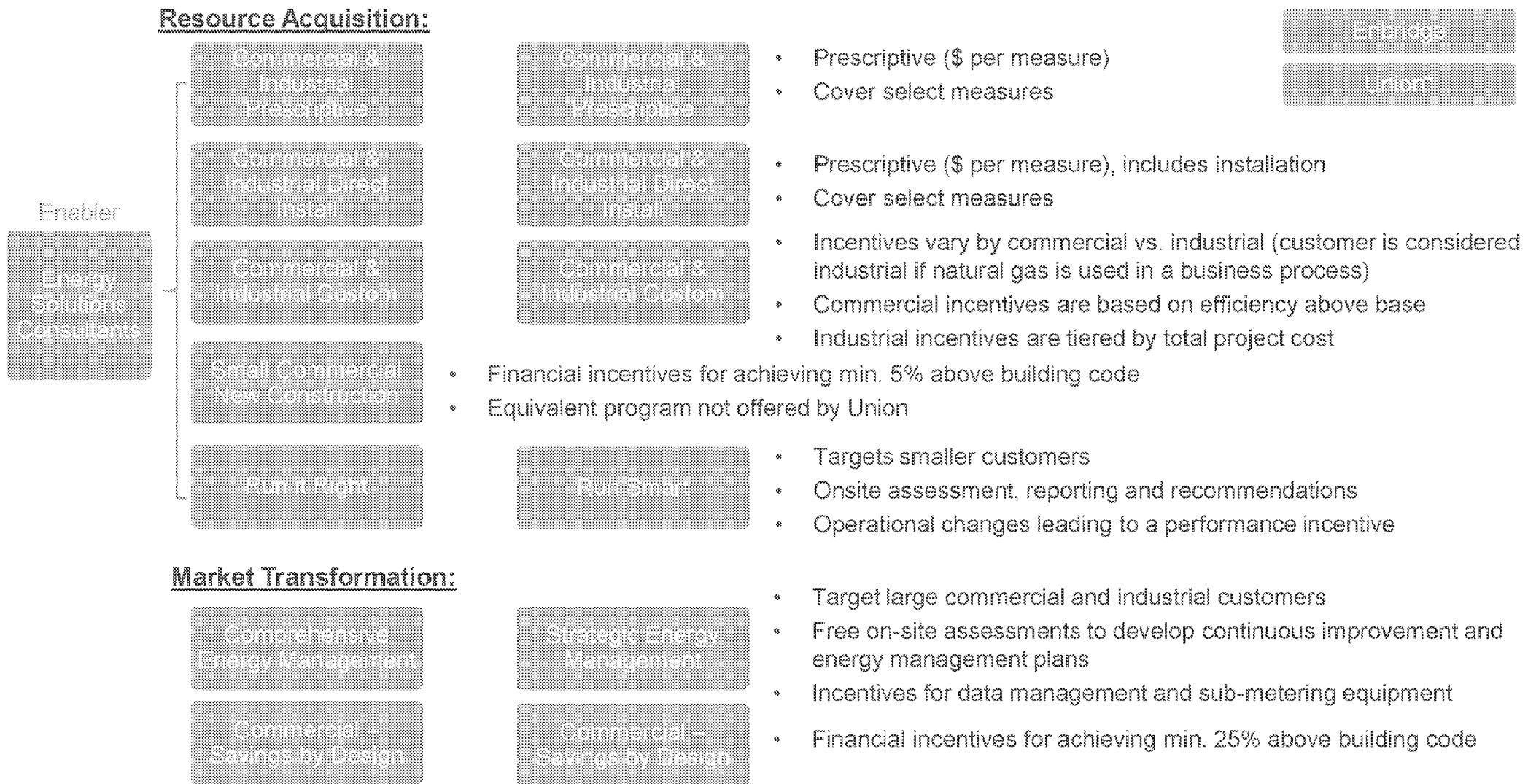
Case Studies

- Other focused training varies by year and is initiated by the IESO:
 - Benchmarking
 - Sales (Mark Jewell)
 - Compressed Air Challenge
 - Steam
 - IESO webinars (higher-level topics)

Upcoming Training: (as provided by IESO)

- New Energy Manager Plan which is a tab attached to the Quarterly Reports that all EEM's must use to report their savings
- Enhancing the Quarterly Report to improve user experience
- Guideline for non-incented savings
- On-boarding library for new and existing energy managers including
 - Contractual guideline outlining what EEM's need to know about their host organization's contractual obligations and key dates
 - Contact list
 - Using the Energy Manager Hub
 - Roles and Responsibilities one-pager
 - One page overviews on all incentive programs
 - Power point deck to help sell Energy Efficiency projects upwards
- Fall 2016 Regional events geared towards EM education
- Fall 2016 Provincial EM event

NATURAL GAS (NON-RESIDENTIAL PROGRAMS)



* Union information was not available

NATURAL GAS (EXISTING AND UPCOMING TRAINING)

Existing Training/Information*:

Builder Technical
Bulletins

ESC Training

Energy and Cost
Savings Calculators

Case Studies

- Enbridge provides ESCs with training with the Energy Solutions Center
- Both technology focused training and sales training such as “selling to the C-suite”

Upcoming Training*:

- No anticipated changes for Enbridge

** Union information was not available*

RESIDENTIAL PROGRAM PORTFOLIO COMPARISON

Top 5 End Uses	Constrained Achievable Potential in 2020 (GWh)	Save on Energy Programs	Applicable LDC Pilot Programs	Applicable CCAP Action Area and Funding	Applicable Gas Programs
1. Lighting	748	Coupons	- Whole Home Retrofit - Residential Direct Mail - Community LED Distribution - Truckload Events	- Retrofit Social Housing Apartments (\$380-500MM) - Incentives for Apartment building Retrofits (\$300-400MM) - Near Net Zero Carbon Home Incentive (\$180-220MM) Up to \$1.12 Billion	
2. Domestic Hot Water	154		- Whole Home Retrofit - Integrating Water Conservation into HAP - Heat Pump Water Heaters	- Retrofit Social Housing Apartments (\$380-500MM) - Protect Tenants from Price of Carbon - Incentives for Apartment building Retrofits (\$300-400MM) - Near Net Zero Carbon Home Incentive (\$180-220MM) Up to \$ 1.12 Billion	- Enbridge Home Energy Conservation - Enbridge Home Winter proofing program (low income) - Union Gas Home Weatherization

RESIDENTIAL PROGRAM PORTFOLIO COMPARISON

Top 5 End Uses	Constrained Achievable Potential in 2020 (GWh)	Save on Energy Programs	Applicable LDC Pilot Programs	Applicable CCAP Action Area and Funding	Applicable Gas Programs
3. Space Heating	119	HVAC	- Residential DR Smart Thermostat Pilot - Home Energy Assessment & Retrofit Pilot - Residential Ductless Heat Pump/ Financing - Energate addition to Dynamic Pricing Pilot (Smart thermostat) - Heat Pump Pilot - ECM Retrofit in residential Furnaces	- Protect Tenants from Price of Carbon - Boost Low Carbon technology in Homes (\$500-600MM) - Incentives for Apartment building Retrofits (\$300-400MM) - Near Net Zero Carbon Home Incentive (\$180-220MM) - Help Retire Older Wood Stoves (\$1-4MM) Up to \$1.224 Billion	- Enbridge Home Energy Conservation - Enbridge Home Winter proofing program (low income) - Enbridge Smart Thermostats - Union Gas Home Weatherization
4. Ventilation and Circulation	44	HVAC	Solar Powered Ventilation Fan	Retrofit Social Housing Apartments (\$380-500MM) Up to \$500 Million	- Enbridge Home Energy Conservation - Enbridge Home Winter proofing program (low income) - Union Gas Home Reno

RESIDENTIAL PROGRAM PORTFOLIO COMPARISON

Top 5 End Uses	Constrained Achievable Potential in 2020 (GWh)	Save on Energy Programs	Applicable LDC Pilot Programs	Applicable CCAP Action Area and Funding	Applicable Gas Programs
5. Space Cooling	61	HVAC	Heat Pump Pilot	- Protect Tenants from Price of Carbon - Boost Low Carbon technology in Homes (\$500-600MM) - Incentives for Apartment building Retrofits (\$300-400MM) - Near Net Zero Carbon Home Incentive (\$180-220MM) Up to \$1.22 Billion	- Enbridge Smart Thermostats - Enbridge Home Winter proofing program (low income) - Union Gas Home Weatherization

APPENDIX B: GLOSSARY

GLOSSARY

Term	Description
CDM Plans	A six-year conservation plan that each LDC must complete demonstrating a plan to meet an allocated conservation target given an allocated budget in a cost-effective manner.
CDM Plans (Joint)	An LDC may submit a Joint CDM Plan in cooperation with one or more other distribution companies, provided that the LDC (and each participating distribution company) will at all times have its own CDM Plan Target and CDM Plan Budget allocated to it under the Joint CDM Plan.
Collaboration Activity	Collaboration between LDCs and/or gas utilities on collaboration fund projects and/or local/regional, regional or pilot programs.
Collaboration Fund	A fund that is designed to support collaboration activities for conservation. It is overseen by the IESO.
Conservation Frameworks	High-level directives for conservation activities in the province. There is a unique framework for both electricity conservation and natural gas conservation.
Cross-fuel collaboration	Collaboration between one or more electric utility and one or more gas utilities
Delivery Cost	This is the cost to deliver conservation programs. Often measured vs. the amount of savings achieved or budgeted to achieve e.g. \$/MWh
DSM	Demand Side Management: the term for conservation initiatives carried out in other jurisdictions/sectors. In Ontario, DSM is the term used for natural gas conservation initiatives.
ECA	Energy Conservation Agreement: Sets out the contractual relationship between the IESO and LDCs under the Conservation First Framework.
EE	Energy efficiency.
Gas Distributors	Organizations that distribute natural gas to customers in Ontario. Consist of Enbridge Gas Distribution and Union Gas.

GLOSSARY

Term	Description
KWh, MWh, GWh, TWh	kilowatt-hour, megawatt-hour, gigawatt-hour & terawatt-hour. Units of energy of differing orders of magnitude.
LDC(s)	Local Distribution Company. Provides electricity and conservation programs to distribution-connected customers.
LTEP	Long term Energy Plan. A strategic plan developed by the Ministry of Energy to guide Ontario's electricity system. The previous LTEP was released in 2013, and an update will be released in 2017.
OEB	Ontario Energy Board. Is the organization that approves aspects of the Natural Gas Conservation (DSM) Framework.
OPA	Ontario Power Authority. Previous entity responsible conservation and demand management. Now merged with the IESO (as of January 1, 2015)
Program	A Conservation & Demand Management offering focusing on a particular opportunity or customer end-use (i.e. Retrofit, Heating & Cooling) from the 2015-2020 Conservation First Framework.
Working Groups (WG)	Groups with representatives from LDCs, Gas utilities and government organizations, intended to represent all electric and gas utilities in the province. WGs are funded by the Collaboration Fund, and facilitate collaboration initiatives and strategies for conservation programs.