
Distribution Rates & Cost Mitigation

January 2017

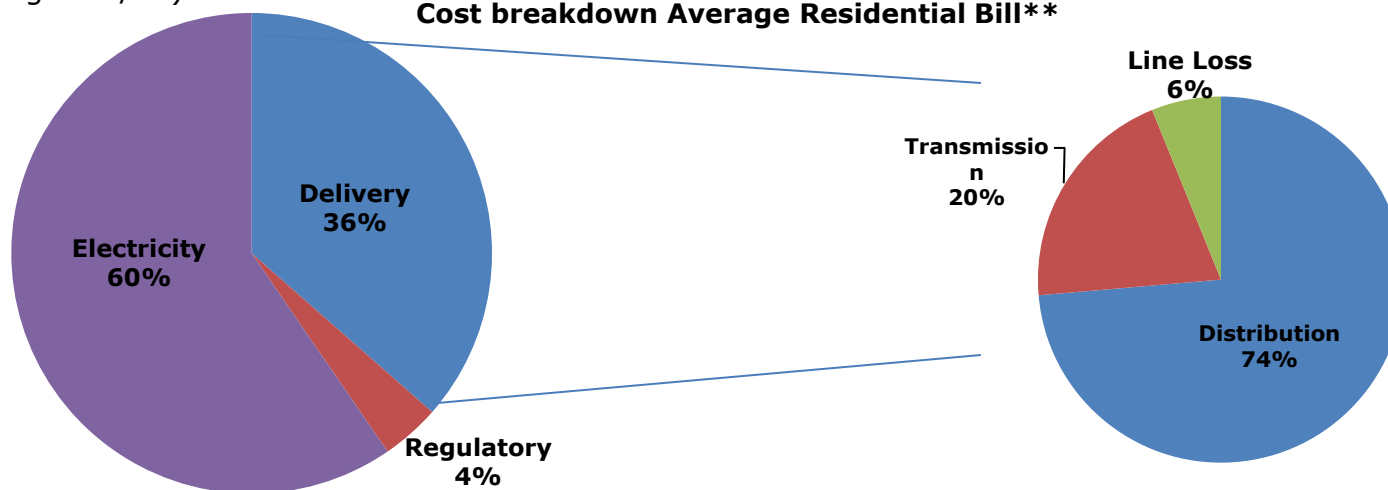
Presentation Overview

- Distribution Rates are the amounts charged by Local Distribution Companies (LDCs) to recover the distribution costs associated with delivering electricity to end users.
- The distribution cost is the component of the total electricity bill that varies the most across the Province as a result of distribution rates being unique to each LDC.
- Distribution rates make up 20-25% of the average residential electricity bill. As a result of investment requirements and other planning/policy decisions, distribution rates have been rising in recent years.
- This presentation provides an overview of distribution rates, including how distribution rates are set, who sets them and opportunities to contain those costs.
- The deck is divided into three main sections:
 1. Distribution Costs & Rates
 2. Distribution Rate Mitigation Measures
 3. Opportunities for Longer-Term Efficiency Gains and Cost Reduction

Electricity Invoices: Delivery Line

- Invoices for low volume (residential and small business) electricity consumers in Ontario include four main line items: *Electricity*, *Delivery*, *Regulatory*, and *Debt Retirement Charge*.*
- “**Delivery**” is the line item that covers the costs of delivering electricity from generating stations across the province to homes and businesses. It combines the costs of three components of the electricity sector into one line item charge:
 - **Transmission:** The costs of moving electricity across high voltage lines from generating stations to the distribution system. Includes the retail transmission network service rate and the connection service rate.
 - **Distribution:** The costs of moving electricity from the transmission system to homes and businesses, as well as other services provided by Local Distribution Companies (LDCs). Distribution rates include variable and fixed charges.
 - **Line Loss:** The costs of electricity created by generating stations that is lost during the process of delivery, either for technical reasons (ex: transfer of energy) or non-technical reasons (ex: theft).
- Both the heading as well as the components that comprise the delivery charge are prescribed in regulation (O. Reg. 275/04).

Cost breakdown Average Residential Bill**



*The Debt Retirement Charge ended for residential consumers on Jan 1, 2016, but remains as a line item showing \$0.00. See Appendix for info on other line items.

LDC Distribution Rate Changes (2006 vs 2016)

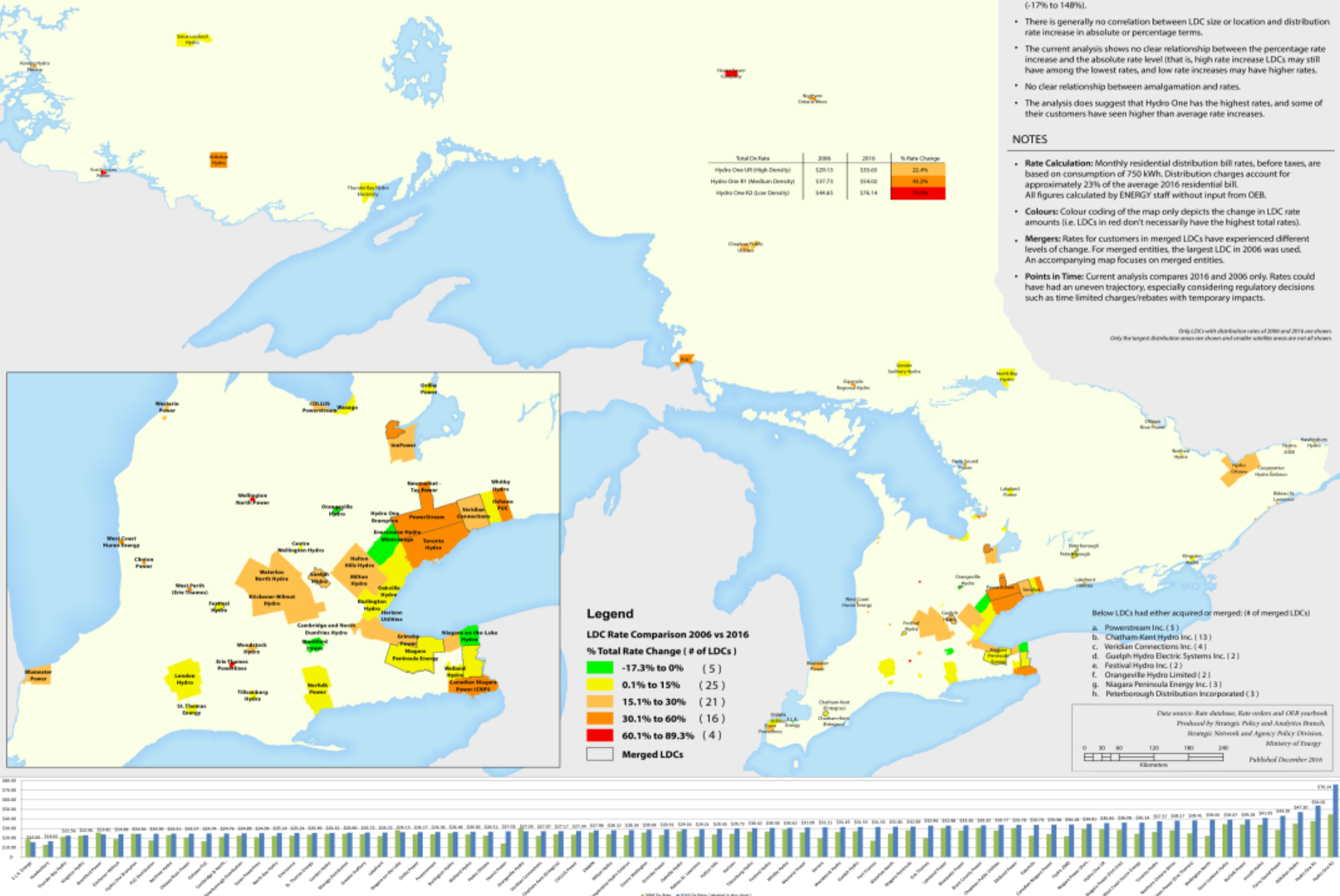
KEY FINDINGS

- In summary, distribution rates (including rate riders) have increased by about 24.5% across the Province, with significant variation between regions and LDCs (-1.7% to 148%).
- There is generally no correlation between LDC size or location and distribution rate increase in absolute or percentage terms.
- The current analysis shows no clear relationship between the percentage rate increase and the absolute rate level (that is, high rate increase LDCs may still have among the lowest rates, and low rate increases may have higher rates).
- No clear relationship between amalgamation and rates.
- The analysis does suggest that Hydro One has the highest rates, and some of their customers have seen higher than average rate increases.

NOTES

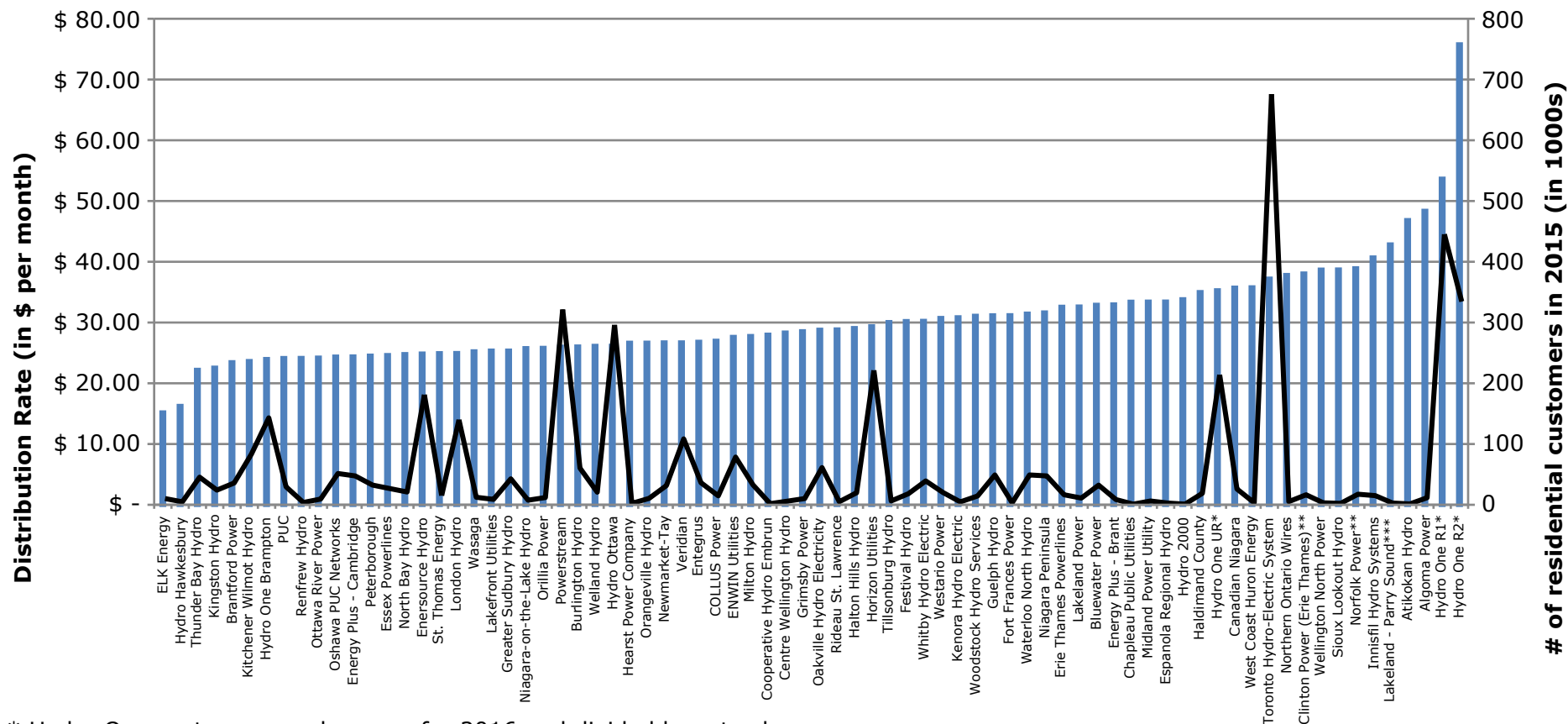
- Rate Calculation:** Monthly residential distribution bill rates, before taxes, are based on consumption of 750 kWh. Distribution charges account for approximately 23% of the average 2016 residential bill. All figures calculated by ENERGY staff without input from OEB.
- Colours:** Colour coding of the map only depicts the change in LDC rate amounts (i.e. LDCs in red don't necessarily have the highest total rates).
- Mergers:** Rates for customers in merged LDCs have experienced different levels of change. For merged entities, the largest LDC in 2006 was used. An accompanying map focuses on merged entities.
- Points in Time:** Current analysis compares 2016 and 2006 only. Rates could have had an uneven trajectory, especially considering regulatory decisions such as time limited charges/rebates with temporary impacts.

Only LDCs with distribution rates of 2006 and 2016 are shown. Only the largest distribution areas are shown and smaller satellite areas are not all shown.



2016 Distribution Rates

**2016 Monthly Residential Distribution Bill, @ 750 kWh, Before Tax
with Total No. of 2015 Residential Customers***



* Hydro One customer numbers are for 2016 and divided by rate class.

** 2014 res. customers.

*** 2013 res. customers.

Distribution Cost Overview

- LDCs are licensed and regulated by the Ontario Energy Board (OEB), a quasi-judicial body responsible for the oversight of Ontario's electricity and natural gas sectors. There are currently 69 LDCs that are rate-regulated by the OEB.
- LDCs recover their costs (revenue requirement) through the distribution rates approved by the OEB. Costs to provide distribution services are unique to each LDC, which is why the OEB, through its rate-setting processes, undertakes comprehensive reviews of each utility's specific costs, including costs to:
 - Design, build and maintain overhead and underground distribution lines, poles, stations and local transformers,
 - Operate local systems (including reading meters, providing customer service, and emergency response)
 - Deliver electricity from generating stations to local utilities along the high-voltage transmission system, and
 - Regulated rate of return
- There are many reasons for the wide range of distribution rates across the province, including:
 - Differences in business conditions and service territory among LDCs (e.g., urban vs rural, overhead vs. underground, expanding customer base vs. stagnating or declining customers, new system vs. old system);
 - Short-term rate impacts (both up and down) due to temporary additional charges known as "rate riders";
 - Management decisions with respect to investment and expenditure.

Moving to Fixed Distribution Rates

- Currently, electricity distributors recover their costs through a combination of a fixed monthly charge and a volumetric charge based on kilowatt hours used.
- Beginning with 2016 rates, fully-fixed distribution rates are being phased in over a four year period for most LDCs.
- According to the OEB, this change will help achieve three main objectives:
 - It will enable residential customers to leverage new technologies, manage costs through conservation, and better understand the value of distribution services.
 - It is a fairer way to recover the costs of providing distribution service.
 - It will provide greater revenue stability for distributors, which will position them for technological change in the sector, remove any disincentive to promote conservation, and help with their investment planning.
- As LDCs transition to a single fixed charge to access the system, customers with the lowest consumption will pay more for distribution, while customers with high consumption will pay less.
- For customers of Hydro One Networks, the OEB approved a five-year transition to fixed distribution rates for its high density urban residential rate class (UR), and an eight-year transition for medium- and low-density residential (R1 and R2) and seasonal residential rate class customers.
 - This is to allow the impact of the change to be held at less than 10% for low volume customers.
- The OEB is currently working on an initiative to look at the rate design of Commercial and Industrial Customers as well.

Enhancing Distribution Cost Protection

- Defining program eligibility for an expanded rate protection program is challenging, as the current rate protection program is targeted to a very specific group of high-cost to serve customers (see appendix for RRRP background).
- Questions of eligibility, equitability, and policy intent must be considered when expanding rate support.

Prescribing Specific LDCs as Eligible

- Previous proposals for expanding eligibility for rate protection have contemplated giving rate protection to **specific LDCs** with the next highest average rates.
 - This would require setting an appropriate fixed amount for each eligible LDC to provide to all their customers, regardless of consumption (as is currently done for Hydro One's R2 customers).
- This approach may be perceived as inequitable or arbitrary (as LDC eligibility would not be determined by density or any factor beyond high cost). Additionally, such a program may not capture all targeted consumers.
 - A low-volume consumer of an LDC with a typical distribution charge above the cap would receive a benefit, despite the customer having a relatively low distribution bill.
 - A high-volume customer of an LDC with a typical distribution charge below the cap would not receive a benefit, despite the customer having a relatively high distribution bill.

Prescribing Eligibility Thresholds

- Creating a "**customer-specific**" program could address this consequence. Tax-based support could be provided to any customer across Ontario whose distribution charges are higher than a specified threshold.
 - Instead of some LDCs providing support to all their customers, all LDCs would provide support to some of their customers – those with the highest distribution costs.

Program Proposal: Customer-Specific Distribution Support

- **Proposal:** Limit the amount an LDC can bill consumers for distribution service at a to-be-determined reasonable cost, with distribution costs that exceed this cap covered by support from the fiscal plan.
 - A cap example could be to use \$**42.26** as the base cap amount. This represents a Toronto Hydro customer's distribution cost at 1000kWh/month (2016 rates).*
- Analysis of various LDCs to be included as well as projection of costs

Options for Setting a Cap

- When implementing the program, setting the cap by linking with a specific LDC's rates may be viewed as arbitrary.
- It could also create difficulties over time as the chosen LDC's rates (ex: Toronto Hydro) may change in unpredictable ways due to cost pressures unique to that LDC.
- A more robust effort to set a cap would be to link it to a specific rate level, relative to the spread of other rates in the province. Option include (using 2016 rates):
 - Setting the cap at the median approved distribution rate for 1000kWh:
\$31.89
 - Setting the cap at a level where 75% of all approved rates fall below:
\$38.33
 - Setting the cap at a level where 90% of all approved rates fall below:
\$43.47
- Various options and methods can be designed using simple or weighted rate averages.
- Selecting a percentile level similar to Toronto Hydro's rates could satisfy the near-term policy intent while providing a reliable measure for adjusting the cap moving forward.
 - The OEB could be given authority to adjust the cap year-over-year based on the desired percentile.

Customer-Specific Distribution Support: Considerations [will be further updated after OEB conversations and data analysis]

Cost Considerations

- A customer specific approach is the most equitable option (versus an LDC specific approach) and targets rate protection for those with highest distribution costs.
- Costs and ratepayer impacts depend on the number of customers within each LDC whose distribution charges exceed the cap. Costs will fluctuate seasonally and will have year-over-year changes, creating uncertainty in forecasting. Ministry is preparing case study analysis.
- Eligibility for increased protection would be based solely on distribution charges above the established threshold and therefore would not be specific to any one LDC. All LDCs must be prepared to offer the program to some of their customers.
- This program would be in addition to the existing RRRP program, which should remain as rate-payer funded protection for costs specifically driven by low-density.

Implementation Considerations

- LDCs would track credit variances in a variance account and settle amounts with the IESO, which receives taxpayer funding from ENERGY/MoF in the same manner as the 8% rebate happens today.
- New legislation would be required to establish this program. Legal and regulatory risks (particularly with regards to the Ontario Energy Board's role in setting rates and incenting efficiencies) require further analysis.
- This program structure could be temporary until the completion of the OEB-mandated move to completely fixed costs, scheduled for 2019 (2020-2022 for Hydro One), as there would no longer be distribution cost variance between customers of the same LDC.

Future Opportunities to Drive Efficiency in Distribution Sector

- To ensure that LDCs are continued to be incented to be efficient a number of initiatives could be considered to ensure productivity and efficiency is still gained in the distribution sector.

Leveraging the OEB

- The Ontario Energy Board (OEB) has a mandate to regulate the electricity distribution sector in the public interest, ensuring the financial viability of the sector while promoting reliable service to customers at just and reasonable rates.
- 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.
- Performance-based options have the potential to indirectly incent consolidation (in a manner that returns benefits to consumers), improve customer experience, and potentially reduce Return On Equity (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.

Opportunities

- ENERGY could help promote or accelerate these efforts by asking the OEB – through the LTEP Implementation Directive, s. 35 of the *Ontario Energy Board Act, 1998*, and/or the 2017 Mandate Letter and other agency business planning processes – to consider opportunities to further drive these efficiency, productivity, and performance improvements.

LDC Performance Incentives

Option	Description	Potential Cost Impacts*	Timeline**	Notes
Performance Standards with Rewards & Penalties	Strengthen LDC scorecard by connecting to LDC financial performance through earnings sharing or penalties paid to consumers. Ex: SAIDI/SAIFI; OM&A per customer	1-2% of revenue requirement could be recycled back to customers. - Performance penalties would be real, periodic on-bill \$ reductions. - Cost reduction would only occur if standards are not met.	1 year	UK Regulator Ofgem requires utilities to pay consumers up to £50 if reliability standards are not met.
Enhanced Economic Regulation	Revise rate-setting to reflect tightening productivity requirements and capital cost avoidance.	<1% reduction in rates annually, with additional capital investment avoidance. - Methods include stronger productivity factors, broader peer comparisons, and elimination of ICM.	1-3 years	Incentivizes innovation by requiring LDCs to provide equal or better service on less inflation-adjusted revenue annually.
LDC Collaboration Incentives	Create regulatory incentives for LDCs to pursue efficiencies and service sharing agreements.	- Potential to avoid individual LDC capital investments of up to six figures, plus additional OM&A tightening. - Actual level of rate reduction dependent on specific LDC proposals.	1 year for new guidelines, savings to be realized through LDC planning process.	LDCs have already indicated an interest in pursuing such arrangements but have expressed concern on regulatory barriers and costs.
Line Loss Accountability	Create appropriate benefit-sharing mechanism so LDCs are incented to pursue line loss reductions.	- Potential for 1-3% reduction in commodity charges associated with losses. - Requirements dependent on business cases so costs don't outweigh benefits.	1-2 years	Potential linkages with related proposal for in-front of the meter conservation.

*Note: Dependent on implementation specifics as determined by OEB

**Note: Timelines begin from Ministry approval of OEB LTEP Implementation Plan

Next Steps

- Complete fiscal and ratepayer impact analysis for a program that limits distribution charges to the level a Toronto Hydro customers pays at 750kWh/month and 1000kWh/month
- Return with recommendation on a cap-setting mechanism and analysis of implementation considerations.
- Receive direction and prepare for Cabinet submission

Appendix A: General Information

Distribution Sector Cost & Performance Trends

- Like other components of Ontario's electricity system, distribution sector costs have risen as investments have been made to update and modernize system infrastructure.
 - Overall distribution sector revenues collected from customers have risen from \$577.66 per customer annually in 2006 to \$703.36 per customer annually in 2015 (21.8% increase).
 - For the typical residential customer* (750kwh/month), monthly distribution costs have risen from \$24.49 in 2006 to \$30.75 in 2016. Distribution costs represent 23% of the total average pre-tax residential bill.
- 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 portion of their bill.
 - OM&A costs per customer have increased on average from \$235 in 2006 to \$319 in 2015.
 - 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.
 - When compared to other utility services and neighbouring jurisdictional studies, Ontario's electricity distribution sector is the only one to realize a negative productivity rate.
- Over this time period, LDC consolidation has been the driving force behind sector restructuring and the search for efficiencies. However, the historical consolidation process has not appeared to deliver cost savings/efficiencies for consumers.
 - Customers of LDCs acquired by Hydro One in the first wave of consolidation (1999-2003) have seen distribution costs rise by up to 268% (Arkona, Ontario) when comparing 2006 rates to 2016.
- Policy direction on investments, including smart meters, have also contributed to increasing sector costs while driving broader system and social benefits.

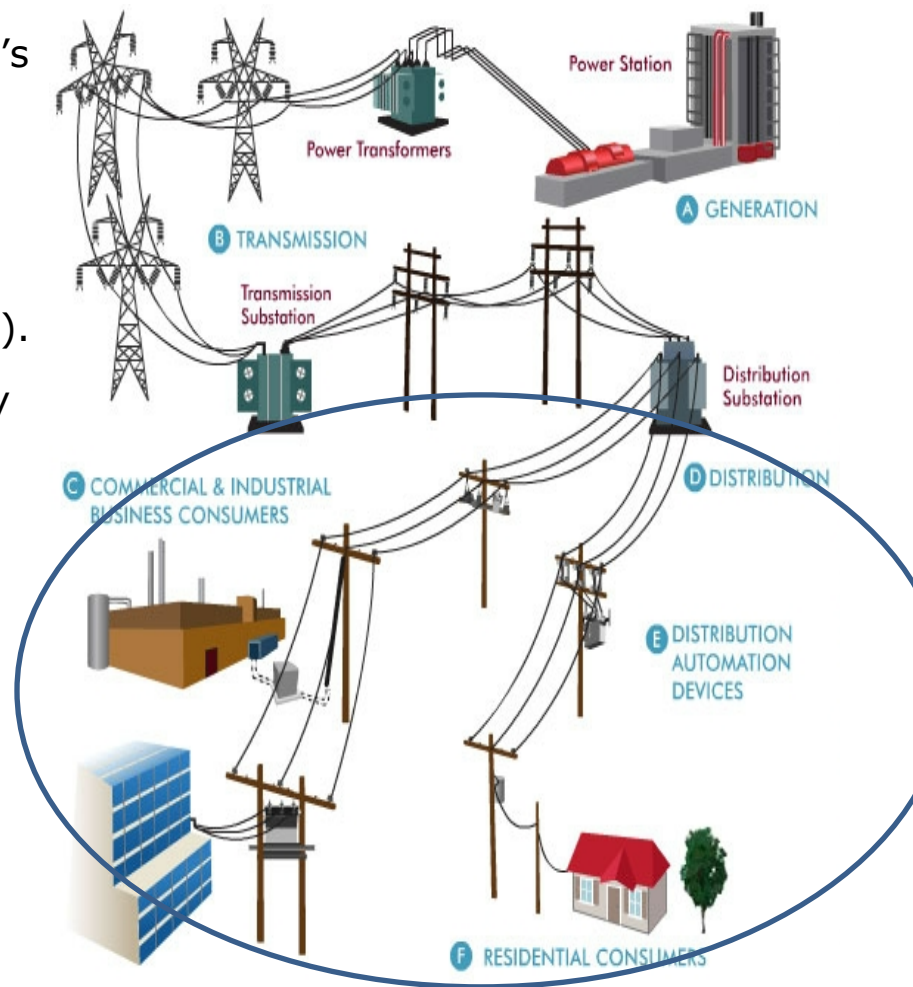
*Simple average of monthly 750 kWh distribution bill, exclusive of taxes using OEB rates database, including H1 residential classes, but excluding 88 acquired LDCs.

Rural or Remote Rate Protection

- The Rural or Remote Electricity Rate Protection (RRRP) is a rate subsidy intended to moderate charges for electricity distribution in lower density rural and remote areas where costs to serve customers are higher than for urban/more densely populated areas.
 - RRRP is provided to rural grid-connected residential customers served by Hydro One (R2 rate class) and to customers of Algoma Power.
 - RRRP also supports costs to provide electricity service to off-grid remote communities served by Hydro One Remote Communities, and three James bay communities connected to the grid (Fort Albany, Attawapiskat and Kashechewan).
- RRRP is governed by S.79 (2) of the Ontario Energy Board Act, 1998 (OEBA) which requires rate protection for prescribed rural and remote customers to ensure that all Ontario residents pay similar prices for electricity distribution.
 - It also allows the government to determine cost protection, recovery, and rate classes through regulation (O.Reg 442.01).
- In the September 2016 Speech from the Throne, the government announced an enhancement to RRRP. As of January 1 2017, the RRRP subsidy supporting approximately 330,000 Hydro One R2 customers increased from \$31.50/month to \$60.50/month.
- The cost of RRRP, including this enhancement, is expected to be about \$290M annually. Costs to support the program are recovered through a regulated charge on all customers approved by the Ontario Energy Board (OEB) and collected by the Independent Electricity System Operator (IESO) on all electricity used in the Province.
 - For 2017, an average residential consumer (750kWh/month) pays \$1.58/month to contribute to RRRP.

Ontario's Electricity Grid

- Ontario's transmission and distribution networks form the backbone of the province's electricity system, as they link electricity consumers with power generators.
- The **transmission system** is comprised of high voltage lines, towers, transformation and safety equipment used to transport electricity at voltages above 50 kilovolts (kV).
- The **distribution systems** deliver electricity to local consumers over the lower-voltage networks operating at 50 kV and below.
- Key elements in the distribution system:
 - Transformers to step power down from transmission to distribution voltage.
 - There are typically several voltage changes before the electricity reaches the consumer.
 - Overhead or underground lines.
- Electricity delivery to the customer is the responsibility of **Local Distribution Companies** (LDCs) e.g. Toronto Hydro.



Sample Electricity Bill

Electricity Charges:

This is the cost of electricity supplied during the billing period and can be purchased either through a local distribution company or through a licensed electricity retailer.

Regulatory Charge:

This charge covers costs such as market regulation, management of the system, and rural and remote rate protection. It also includes the Standard Supply Service administration charge of \$0.25 stated on a 30-day basis.

8% Provincial Benefit:

Effective January 1, 2017, customers receive an 8% rebate equivalent to the provincial portion of the HST.

SAMPLE MONTHLY BILL STATEMENT

Anytown Hydro-Electric Limited

Account Number:
000 000 000 000 0000

Meter Number:
00000000

Your Electricity Charges

Electricity

Off-Peak @ 8.700 ¢/kWh 41.20

Mid-Peak @ 13.200 ¢/kWh 16.35

On-Peak @ 18.00 ¢/kWh 23.60

Delivery 53.07

Regulatory Charges 4.79

Debt Retirement Charge 0.00

Total Electricity Charges \$139.00

HST 18.07

8% Provincial Rebate (11.12)

Total Amount \$145.95

Delivery Charges:

Customer Service Charge: A fixed charge for costs relating to meter reading, billing, customer service and account maintenance, and general utility operations.

Distribution Charge: A variable charge for costs of building and maintaining the distribution system, including overhead and underground power lines, poles, and transformer stations.

Transmission Charge: A variable charge for the costs of transmitters to operate and maintain the high-voltage transmission system that carries electricity from generating stations to your utility.

Loss Adjustment

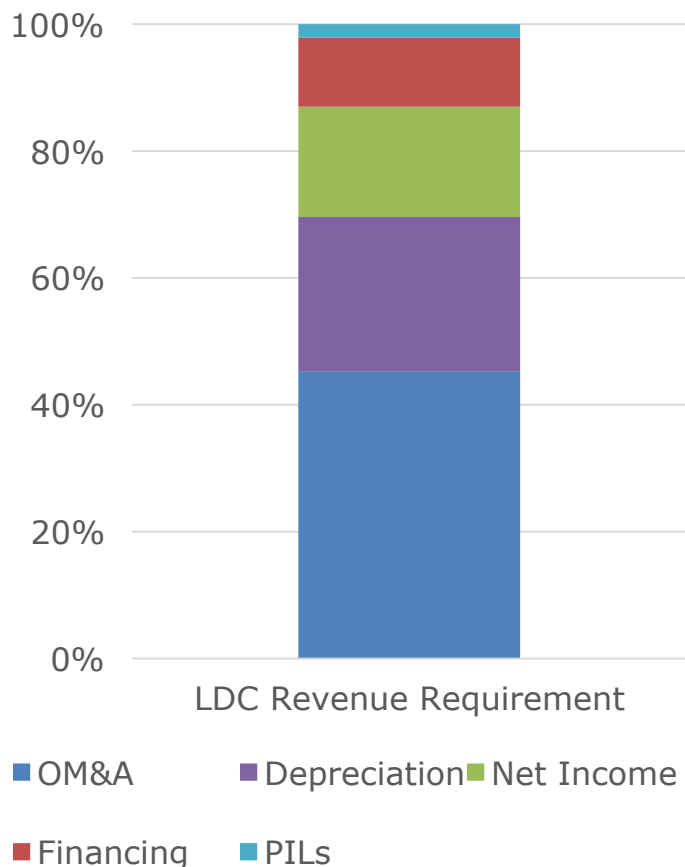
When electricity is delivered over a power line some is lost as heat. In calculating your electricity costs for the billing period, LDCs multiply the electricity cost by an OEB-approved adjustment factor to accounts for those losses.

Local Distribution Companies – Key Facts

- There are currently 69 LDCs in Ontario that are rate-regulated by the OEB. 3 LDCs (Cat Lake Power, Dubreuil Lumber and Cornwall Street Railway Light) are licensed by the OEB, but are not rate-regulated.
- LDCs vary significantly in size:
 - Range from roughly 1,200 to 1.2 million customers (Hydro 2000 and Hydro One respectively)
 - The smallest 29 LDCs (36%) account for less than 4% of Ontario's customers (<13,000 customers).
- The distribution sector:
 - Serves 5 million customers (residential, industry, commercial / MUSH),
 - Has \$48.7 billion in assets, and
 - Generates \$3.6 billion in revenues.
- In addition to distributing electricity to customers through their 199,456 km of distribution lines, LDCs provide services such as: billing, outage management, overall customer contact, and conservation programs.

LDC Revenue Breakdown

Sector LDC Revenue Components (2015)



- While there is considerable variation in this breakdown, on average LDC revenue components can be explained as follows:
 - OM&A (46%):** Includes system operation & maintenance, customer service, billing/collections, regulatory expenses, salaries.
 - Depreciation (24%):** Reflects accounting treatment of investments in system infrastructure (property, plant and equipment) and other assets. In proposing new investment, LDCs must justify the need and usefulness to the OEB.
 - Net Income (17%):** Reflects income after PILs/taxes.
 - Financing (11%):** Reflects interest expense.
 - PILs or income tax (2%):** PILs expense or income tax expense for privately owned utilities.
- These costs do not include costs associated with operating unregulated affiliates. Any OM&A service costs shared between LDC and affiliate are prorated for inclusion in the ratebase.

RRRP Administrative Roles

 Ontario Ministry of Energy	• The Province sets out the parameters of the program through legislation (s.79, OEB Act) and regulations (O. Reg. 442/01, O. Reg. 445/07). • These set out, among other things: • Eligible customers • Amounts available to Hydro One Networks and James Bay First Nations.
 Ontario Energy Board	• The OEB determines annually the charge levied on all electricity consumption.
 hydro one	• Hydro One Networks determines the monthly RRRP subsidy available to each of its customers based on amount of RRRP made available to it through Regulation, the number of R2 customers, and accounting for any surplus or deficit in its variance account.
 ieso	• The IESO collects the charge from distributors across the Province and re-distributes to those distributors whose customers are eligible to receive the subsidy.

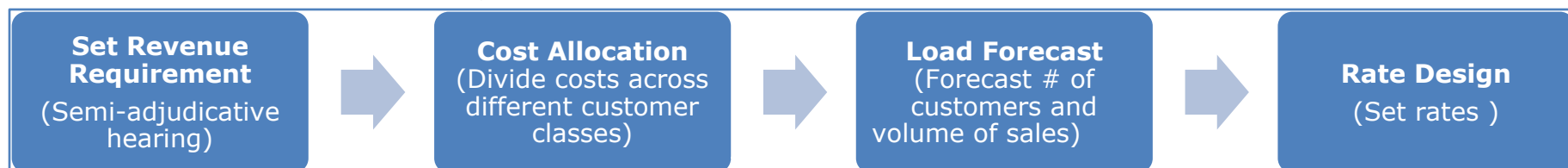
Previously Considered Cost Mitigation Options

- The Ministry has considered distribution sector cost reduction options in the past which stemmed from determinations that certain aspects of the sector status quo were not appropriate or in the public interest.
- Ministry staff recommend not pursuing these options due to their contentious nature and the availability of more comprehensive solutions that can drive both cost reductions and system performance improvements.
 1. **Direct Consolidation Policy:** The Ministry could mandate LDC consolidation or provide additional incentives for voluntary consolidation in an attempt to reduce OM&A costs, leading to rate reductions for consumers.
 - Historical analysis reveals that, in general, consolidation has not led to the expected efficiency gains or cost reductions for affected customers. Hydro One, which has led the bulk of consolidation activity, is recognized by the OEB as one of the most inefficient LDCs in the province. Without appropriate regulatory incentives, consolidation transactions may not result in OM&A reductions to the benefit of customers.
 2. **ROE Reduction:** The Ministry could instruct the OEB to review its ROE policy in light of LDCs monopoly position and fixed distribution rates.
 - ROE is an established requirement of utility regulation and has been upheld by judicial review. Attempts to reduce ROE could be challenged in court. As well, as ROE is used by municipal shareholders to fund municipal services, this could lead to broader communication and stakeholder management issues.
 3. **Payments-in-Lieu of Taxes Policy:** The Ministry of Finance could restructure or eliminate the PILs regime to reduce the tax burden on LDCs, which would lead to cost savings for ratepayers.
 - PILs are a vital component of OEFC's debt retirement outlook. With the departure of Hydro One from the PILs regime and the ending of the debt retirement charge on residential bills, restructuring the PILs regime would impact OEFC's ability to service the debt and could impact Ontario's credit outlook.
- Performance-based options have the potential to indirectly incent consolidation (in a manner that returns benefits to consumers) and potentially reduce ROE in an equitable manner in the event performance expectations are not met.

Appendix B: Distribution Rate-Setting

Setting Distribution Rates

- Electricity distributors apply to the OEB to determine which costs they can pass on to their customers through rates (revenue requirement). The OEB has a mandate to set just and reasonable rates for LDCs that protect the interests of consumers while facilitating the maintenance of a financially-viable electricity industry.
- The OEB's "Renewed Regulatory Framework" is continuing to evolve how LDC's apply for rates to drive increased productivity. Principally there are two streams of electricity rate applications.
 - Cost-based applications (Cost of Service or Custom)- where the OEB sets rates based on an LDC's forecast of their costs and volumes, including a return on capital. Typically these are set for a 5 year term, with the 1st year establishing the base rates for the term.
 - Mechanistic Incentive Rates (IRM) that are based on the current approved rates plus inflation and any productivity improvement requirements. This methodology is used annually following a cost-based application until the end of the term.
- When establishing distribution rates, the OEB must evaluate a number of costs to establish the approved revenue requirement that is the basis for the rates charged by the LDC.
- Once the revenue requirement is established, the OEB must approve a fair allocation of those costs to the various customer classes (residential, commercial, industrial etc.)
- From that the OEB approves the specific rates charged to each customer class, which can include some fixed charges as well as ones based on volume.



Application Review Process

- The OEB reviews each rate application independently through a public process.
- The process begins with an LDC submitting an application and includes a number of activities at each stage.
- The process includes opportunities for various representatives (intervenor) to make arguments about the facts of the application.
- The application review process can vary from a few months to up to a year depending on complexity of the application.
 - Cost-based applications tend to take a longer review timeline than IRMs.
 - More complex applications will also typically have an oral hearing.

LDC Rate Application Stages



Cost of Service Rate Application Schematic

