



> 2016-2020 CUSTOM INCENTIVE REGULATION RATE APPLICATION

Presentation to ONTARIO ENERGY BOARD – July 7, 2015

PRESENTATION OVERVIEW

- > Introduction
- > Operating Environment
- > Strategic Direction
- > Evolving Distribution System & Challenges
 - The increasing role of technology
 - Long term capital planning
 - Long term workforce planning
- > Our application & rate framework overview

HYDRO OTTAWA PRESENTERS



Norm Fraser
Chief Operating Officer



Geoff Simpson
Chief Financial Officer



Lyne Parent-Garvey
Chief Human Resources Officer



Mark Fernandes
Chief Information Officer

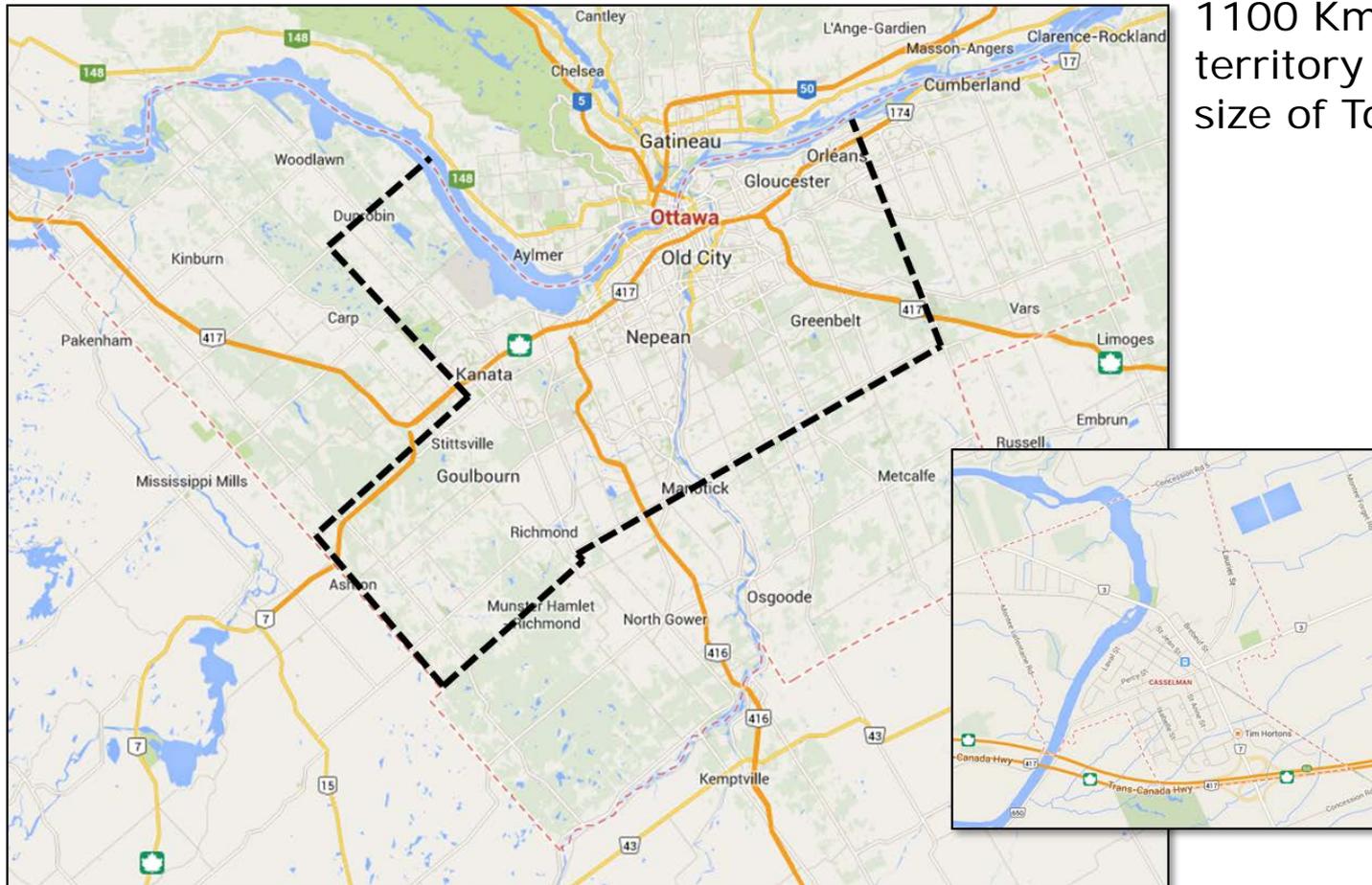
ELECTRICAL DISTRIBUTOR TO THE NATION'S CAPITAL

- Third largest local distribution company in Ontario
- Safe, reliable delivery of electricity to more than 319,500 customers in the City of Ottawa and Village of Casselman



A LARGE SERVICE TERRITORY

1100 Km² of service territory – twice the size of Toronto



OUR CUSTOMERS AND ENVIRONMENT

- Highly educated and technically savvy customer base
- Very high internet penetration
- Hot summers and long cold winters
- High density urban, suburbs and rural customers
- Premium paid to attract specialized contractors
- No heavy manufacturing
- Nomadic customers - large university/college populations



SUPPLIER TO A G7 CAPITAL CITY



Canadian Security Intelligence Service

Service canadien du renseignement de sécurité

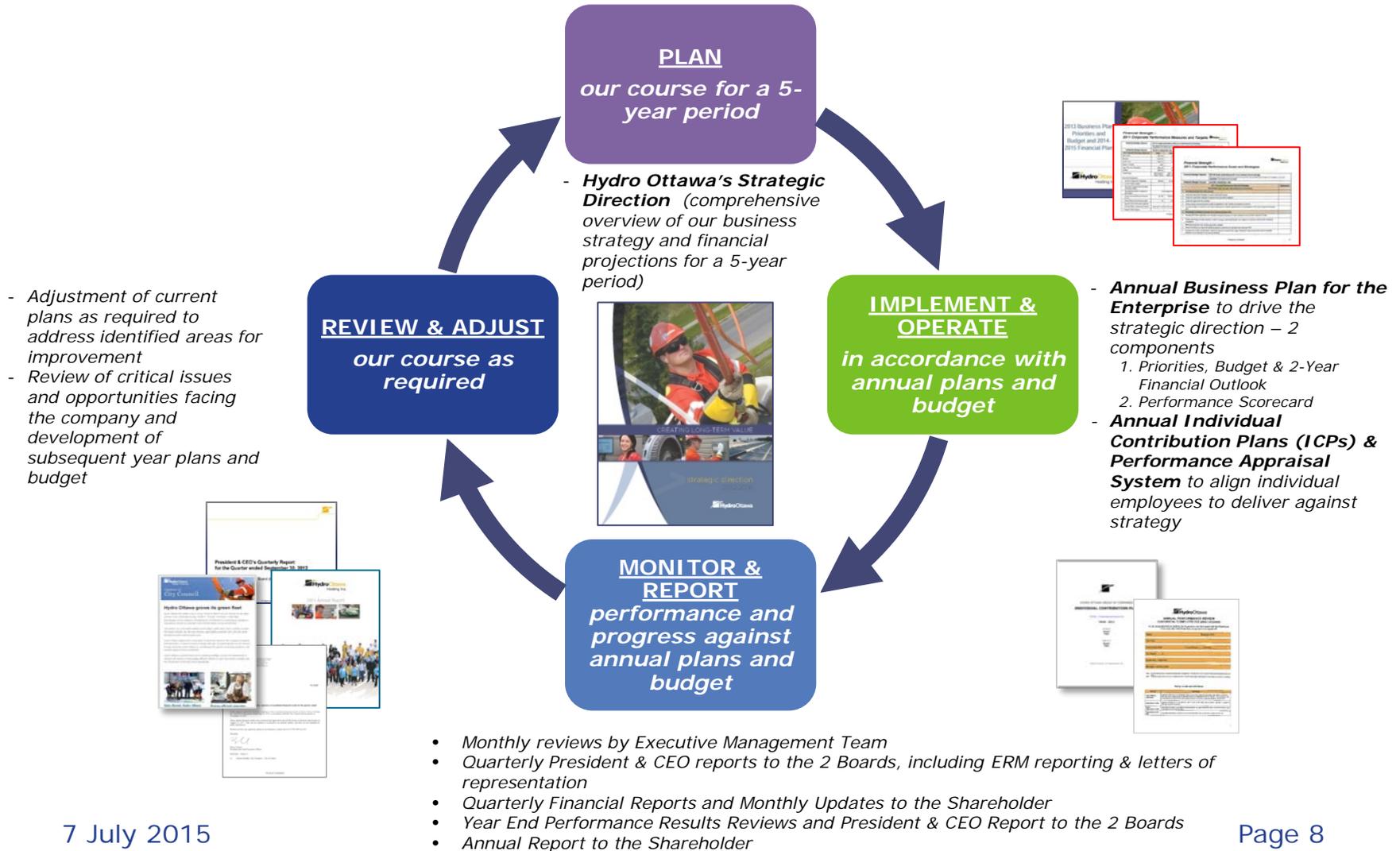
Communications Security Establishment Canada



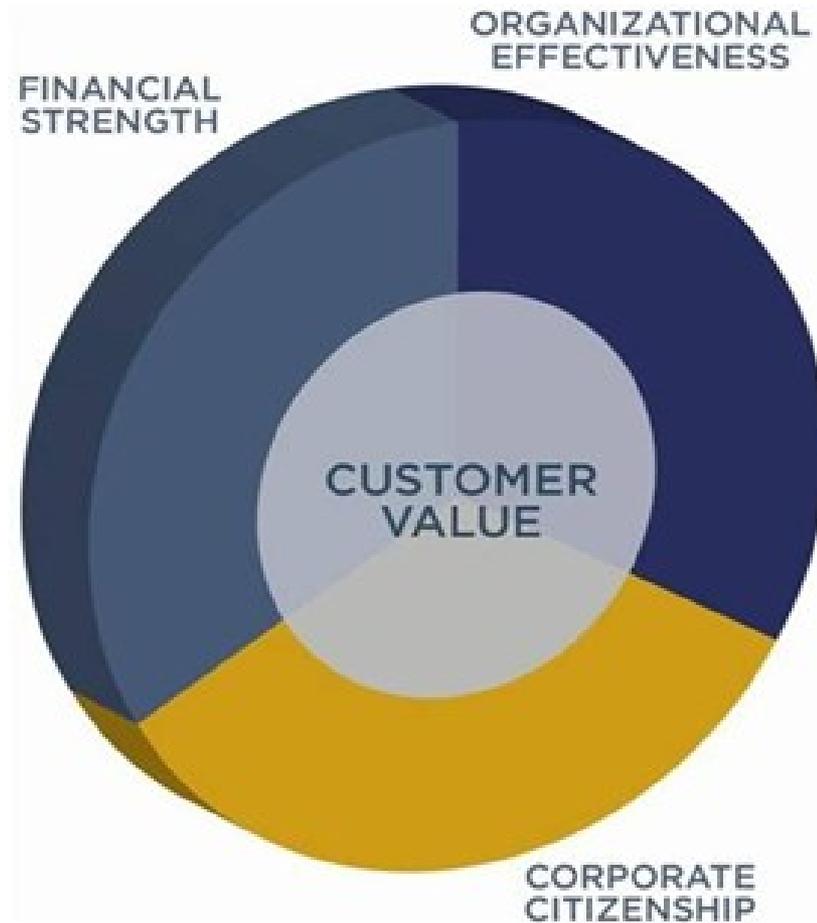
Centre de la sécurité des télécommunications Canada



INTEGRATED PLANNING & PERFORMANCE MANAGEMENT FRAMEWORK



KEY AREAS OF FOCUS



CULTURE OF PRODUCTIVITY

LABOUR UTILIZATION

To ensure staff are doing the right work and doing more of it

OPERATING, MAINTENANCE, AND ADMINISTRATION COSTS (OM&A)

To measure the effectiveness in OM&A

ASSET EFFICIENCY

To manage cost and effectiveness of major capital programs

PROFITABILITY

To monitor our ability to manage EBITDA and production costs and generate revenue

EVOLVING DISTRIBUTION SYSTEM & CHALLENGES

- Changing customer needs and expectations
- Rapid technological advancements and associated risks
- Aging infrastructure; significant investment required to maintain and enhance reliability
- Aging workforce; shifting demographics
- Policy and regulatory changes

THE ENERGY AND UTILITIES INDUSTRY WILL CHANGE SIGNIFICANTLY BY 2024



Smart appliances become ubiquitous



Consumers can easily sell surplus energy to the grid or contract with a third party



Regulatory environment allows new business opportunities for energy providers



Battery technology will become increasingly available



Automated Demand Response will be used to control peak demand



Electric vehicles are affordable, and utility-sponsored purchasing programs are available



Energy management systems are inexpensive and prevalent



Consumer-owned generation is affordable for the average household



Microgrids emerge where existing infrastructure is insufficient



There is an app for that.. consumers will connect to their utility via their smart phone

CONNECTED, EMPOWERED CUSTOMERS AND CONSUMERS ARE DRIVING NEW DEMANDS ON SERVICE PROVIDERS



Three billion people online

In 2014, over 1/3 of the global population – 3 billion people - were on the internet



Global mobile expansion

Over 5 billion mobile devices are being used globally



Smart devices everywhere

There could be 50bn mobile devices connected to the internet by 2020



Social networking giant

If Facebook were a country, with over 1 billion members it would be the 3rd largest population in the world



Data explosion

“Every two days we create as much information as we did between the dawn of civilization up until 2003”



“Appification” of everything

There are expected to be 77bn mobile apps downloads in 2014

Source: IBM

CYBERSECURITY – FROM DIGITAL TO PHYSICAL

the WHITE HOUSE PRESIDENT BARACK OBAMA

BLOG PHOTOS & VIDEO BRIEFING ROOM ISSUES the ADMINISTRATION

Home • The White House Blog

The White House Blog

Protecting the Nation's Electric Grid from Cyber Threats

Protecting the electric system from cyber threats and ensuring its resilience are vital to our national security and economic well-being. This is exactly why cybersecurity is one of four key themes in the White House's Policy Framework for a 21st Century Grid. For obvious reasons, the private sector shares our interest in a safe and secure electric grid. The Administration has benefited from working closely with industry, including to develop the Roadmap to Achieve Energy Delivery Systems Cybersecurity, released by the

How
Janu
03:58
Shar

North American grid is vulnerable to cyber attacks

Andrew Brooks
@andrewitwc
Published: May 12th, 2014

North American energy utilities are more vulnerable than ever to cyber attacks launched by criminals, terrorists and foreign states, says an [article](#) in the *Globe and Mail*.

The article, reporting on a regulators' conference held in Halifax, said that attendees were told utilities need to devote more resources to securing their infrastructure.

"There is a growing appreciation among utilities that this is real, and it is part and parcel of doing business now," said Francis Bradley, vice president of the Canadian Electricity Association.

The threats include 'nuisance' hacking that can disrupt software, and attacks by clandestine, state-backed groups looking for sensitive secrets or trying to disable infrastructure.

"Hacktivists," who seek to disable transmission lines or pipelines as a protest action, are also a threat. One hacktivist group, Anonymous, has publicly opposed TransCanada Corp.'s proposed Keystone XL pipeline project and has vowed to fight the project.

Bracing for a big power grid attack: 'One is too many'

Steve Reilly, USA Today 2:18 p.m. EDT March 24, 2015



(Photo: The Indianapolis Star)

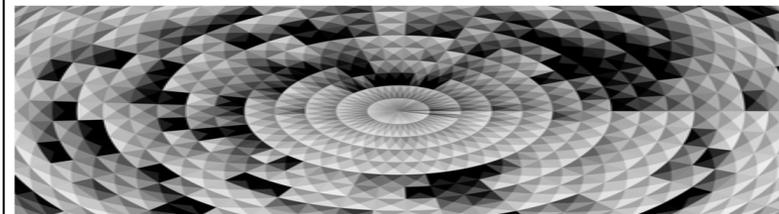
109

COMMENT

EMAIL

About once every four days, part of the nation's power grid — a system whose failure could leave millions in the dark — is struck by a cyber or physical attack, a USA TODAY analysis of federal energy records finds.

A CYBERATTACK HAS CAUSED CONFIRMED PHYSICAL DAMAGE FOR THE SECOND TIME EVER



Getty Images

2k

f

t

p

m

e

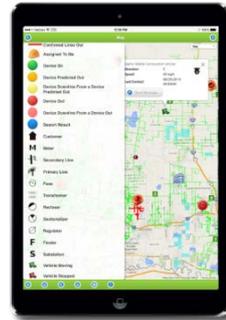
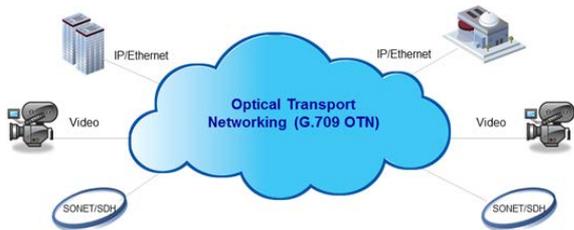
AMID ALL THE noise the Sony hack generated over the holidays, a far more troubling cyber attack was largely lost in the chaos. Unless you follow security news closely, you likely missed it.

I'm referring to the revelation, in a German report released just before Christmas (.pdf), that hackers had struck an unnamed steel mill in Germany. They did so by manipulating and disrupting control systems to such a degree that a blast furnace could not be properly shut down, resulting in "massive"—though unspecified—damage.

This is only the second confirmed case in which a wholly digital attack caused physical destruction of equipment. The first case, of course, was Stuxnet, the

HOW ARE WE RESPONDING?

Telecommunication Plans (Smart Grid)



Zero Impact on Consumption

6% Drop in Consumption



Outage Communications



Workforce Scheduling Software



Asset Management Technology

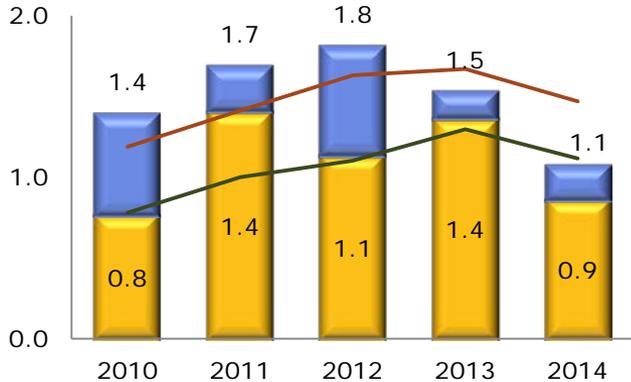
A ROBUST ASSET MANAGEMENT PLAN IS ESSENTIAL

- Aging infrastructure
- Equipment failures
- New customer connections
- City infrastructure projects
- More distributed generation
- New technologies
- Rising cost of materials

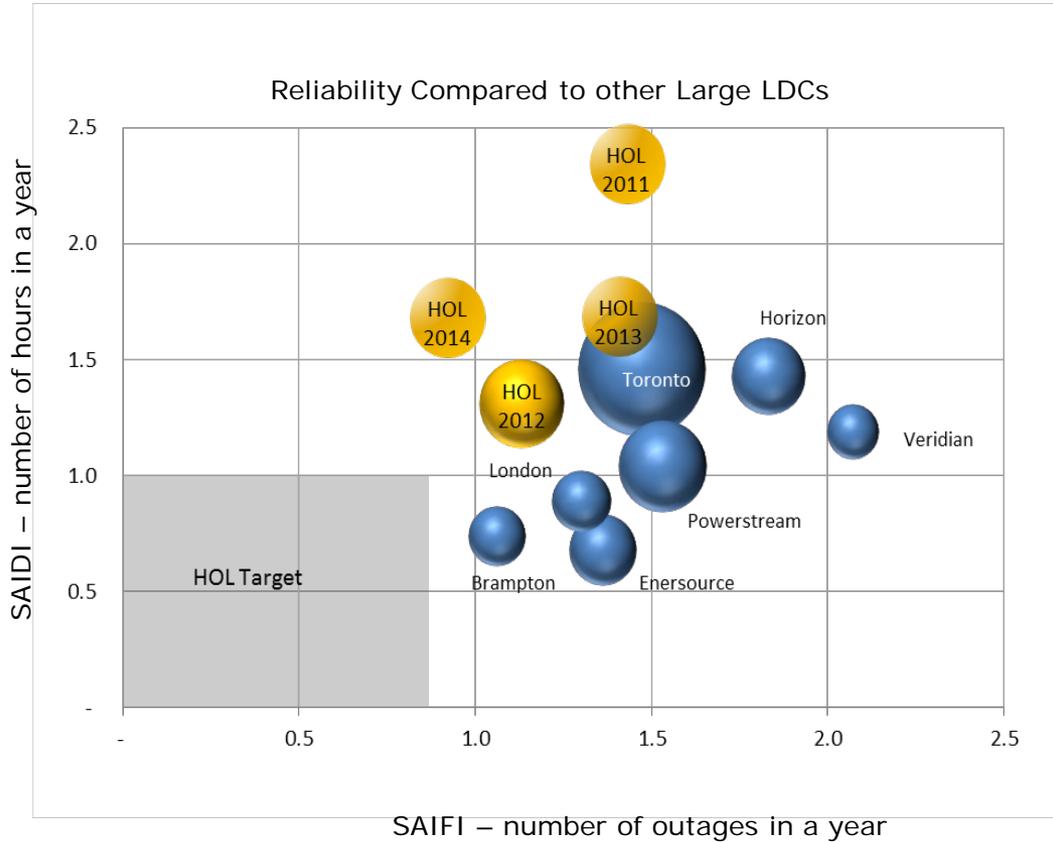
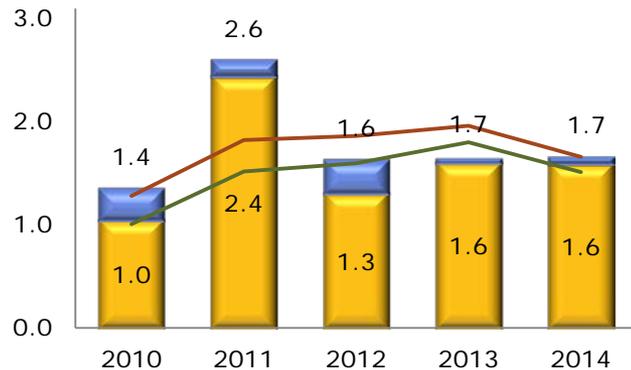


RELIABILITY – THE BACKBONE OF OUR CAPITAL PLAN

SAIFI – number of outages in a year

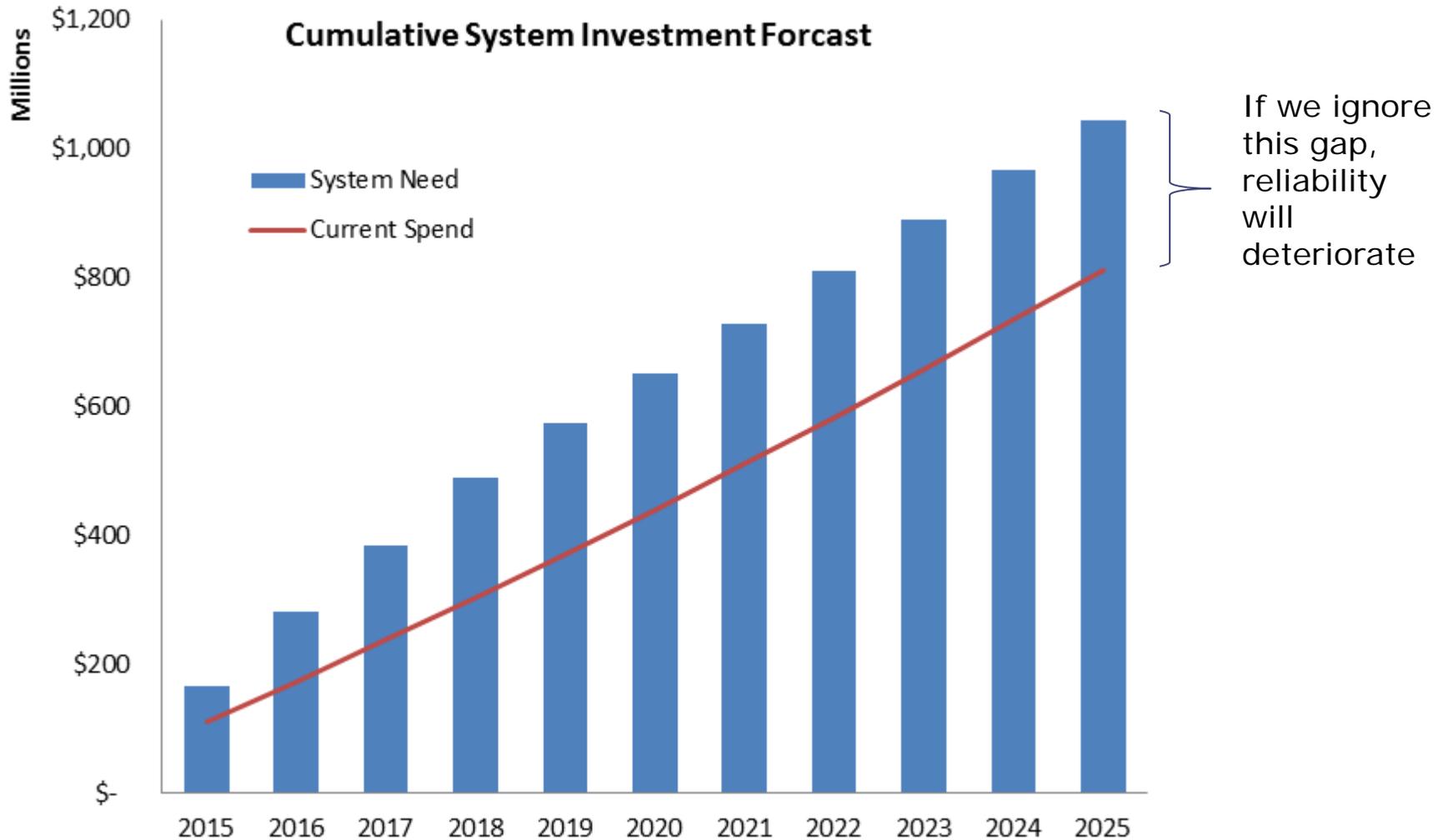


SAIDI – number of hours in a year



*Other LDCs are based on 2012 OEB yearbook

SYSTEM AGING IS OUTPACING INVESTMENTS



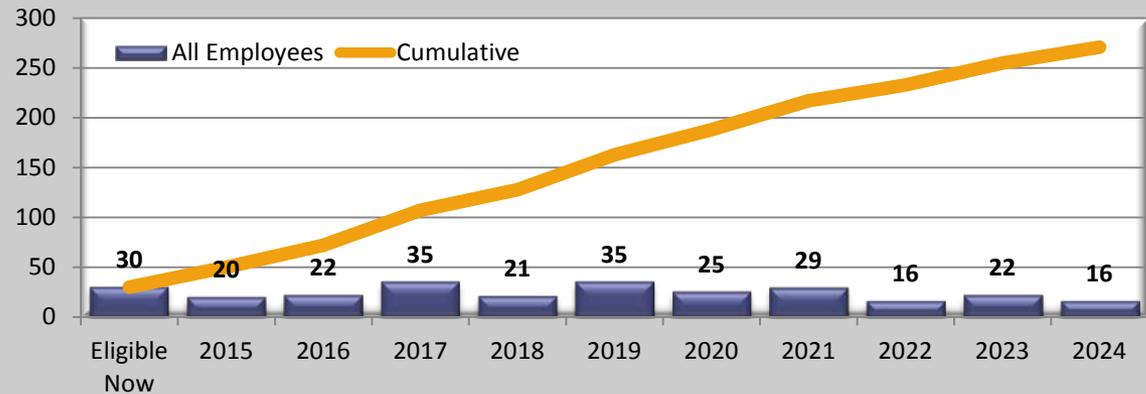
CLOSING THE GAP: INVESTMENT = CUSTOMER VALUE

- > There are four main areas being focused on to close the gap
 - Productivity - Getting more work done for the same or less cost
 - Maintenance Optimization – Re-focusing maintenance spending to optimize results and lengthen the life of assets
 - Data Analytics – Prioritization of asset replacement based on sound condition information
 - Technology - The use of smart grid type technology to reduce the impact of outages as well as providing real time data

AGING WORKFORCE

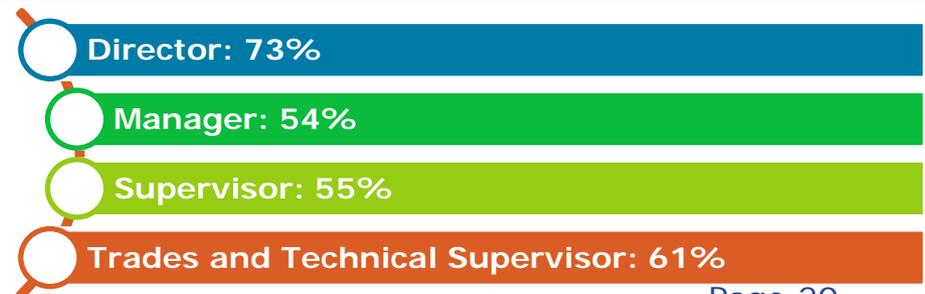


- Almost 41% of workforce eligible to retire by 2024, representing 7,457 years of service.
- 44% of all trades and technical employees eligible to retire by 2024, representing 4,727 years of service.

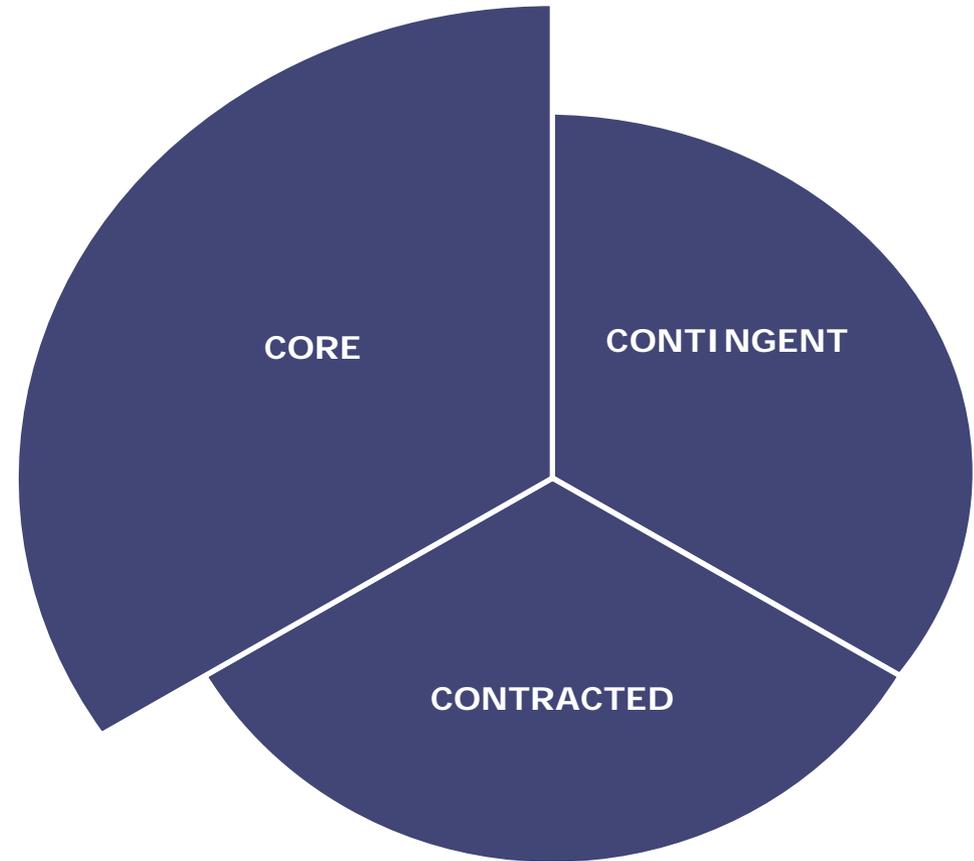


Over the next five years, 32% of Hydro Ottawa's existing people leaders will be eligible to retire, increasing to 57% by 2024.

% Eligible to Retire by 2024



SMART WORKFORCE MODEL



REPLENISHING THE WORKFORCE

Forecasted Hiring in Powerline Maintainer Trade

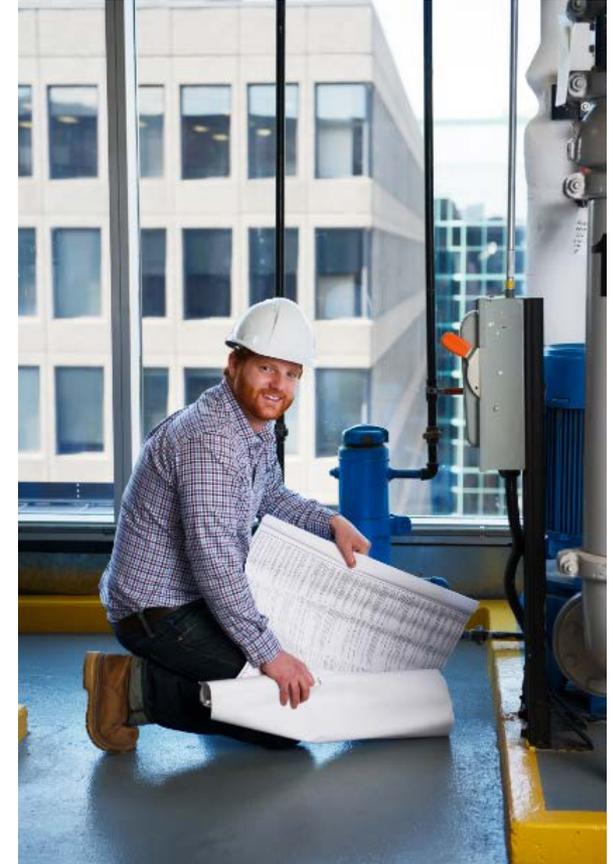
	2014 Forecast & Actual	2015	2016	2017	2018	2019	2020	Total
Apprentice Hiring	6	5	5	5	5	4	4	34
Journeyman Hiring	2	2	2	2	2	2	2	14

Forecasted Apprentice Hiring in Remaining Trades

	2014 Forecast & Actual	2015	2016	2017	2018	2019	2020	Total
Cable Jointer			2		2		2	6
Meter Technician		2	2	2	2			8
Station Electrician	3	4						7
System Operator		1	1	2	2	1		7

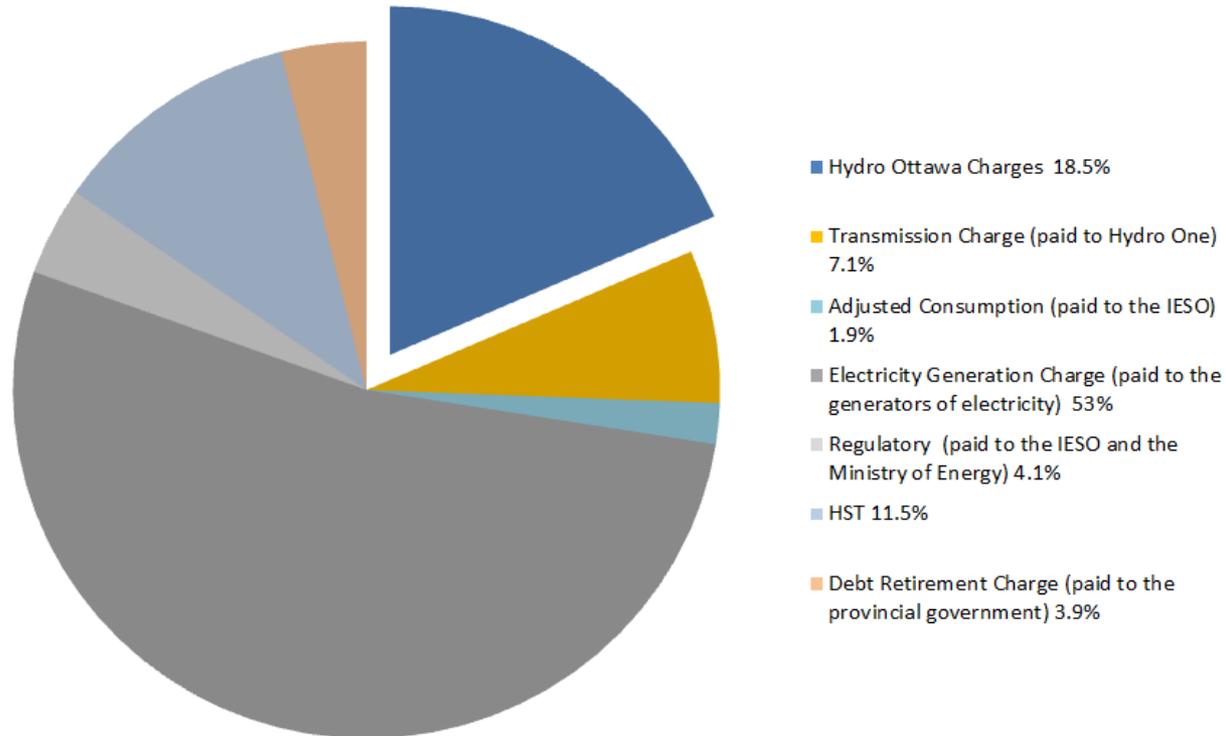


WORKFORCE PRODUCTIVITY



HISTORY OF INCENTIVE RATE MAKING

Typical Residential Monthly Bill with TOU November 1, 2014



	JAN 1, 2012	JAN 1, 2013	JAN 1, 2014	JAN 1, 2015
Distribution Rate increases arising from the regulatory incentive rate-making (IRM) process	9.16%	0.95%	1.34%	1.28%

WHY A CUSTOM IR APPLICATION?

- Significant infrastructure investments must continue to avoid risks to system and service reliability

(\$millions)	2016	2017	2018	2019	2020
Capital Expenditures (Including new Facilities)	\$145	\$149	\$119	\$121	\$120
Depreciation	\$41	\$44	\$47	\$49	\$50
Multiple	3.5	3.3	2.5	2.4	2.3

Custom IR offers a financial sustainability model to provide timely return on needed capital investments

GUIDING PRINCIPLES

- Ensure rate increases are just and reasonable, and that rates are timely and commensurate with costs
- Invest in sufficient capital to maintain system reliability
- Ensure flexibility to introduce new customer services
- Demonstrate Hydro Ottawa's culture of innovation, productivity and cost containment
- Earn an appropriate rate of return in a timely manner to permit continued investment in capital assets to meet customer expectations

CONSISTENT WITH POLICY FRAMEWORK

Renewed Regulatory Framework Objectives:

To permit flexible rate setting options that:

1	Incorporates long term capital/operational planning	
2	Incorporates balanced incentives	
3	Is outcome-focused	
4	Provides value for money for customers	

ASSET MANAGEMENT PLAN IS RIGOROUS AND COMPLETE

> Multi-Year forecast

- Average gross investment \$130 Million
- Investment consistent with 2013-2015 for distribution plant
- 2016 rebase; 2017-2020 detailed forecast



> RATIONALE

- Ensures safe and reliable service
- Provides incentive to prioritize pace and effectively manage

Summary of Rate Base for Test Years

Millions	2016	2017	2018	2019	2020
Rate Base	923	971	1,020	1,051	1,094

A GENERATIONAL INVESTMENT IS REQUIRED



***Y factor** will be applied to pass along the costs associated with the construction of a new administrative building, and operational centres*

BALANCED INCENTIVES

Operations, Maintenance, and Administration (OM&A)

- > Cost Rebasing for 2016 Test Year
- > Inflation (I) – Productivity (X) formulaic adjustment for 2017 - 2020
 - **Inflation** = *Conference Board of Canada* current forecast for 2017 – 2018
 - To be updated in Fall 2017 for 2019 -2020
 - **Productivity X-Factor drawn from Empirical Evidence**
 - Average of 4 Industry Experts



Cost of Capital Parameters

- > Return on and ST Debt rates as prescribed by OEB for 2016; held for 2017-2018
- > LT Debt = weighted average of embedded and forecast deemed rates; held for 2017-2018
- > Parameters to be reset in 2018, for 2019 and 2020

***Balanced approach requires continuous productivity and innovation,
and provides rate certainty for 3 years***

FINANCIAL SUCCESS WILL BE SHARED WITH CUSTOMER

Earnings Sharing Mechanism



	Deemed ROE Threshold	Treatment
1	Under earning	Borne by shareholder
2	0 to +150 basis points	Retained by shareholder
3	+151 to 250 basis points	50:50 sharing of customer/shareholder
4	+251 basis points and above	90:10 sharing of customer/shareholder

CUSTOMER ENGAGEMENT SURVEY

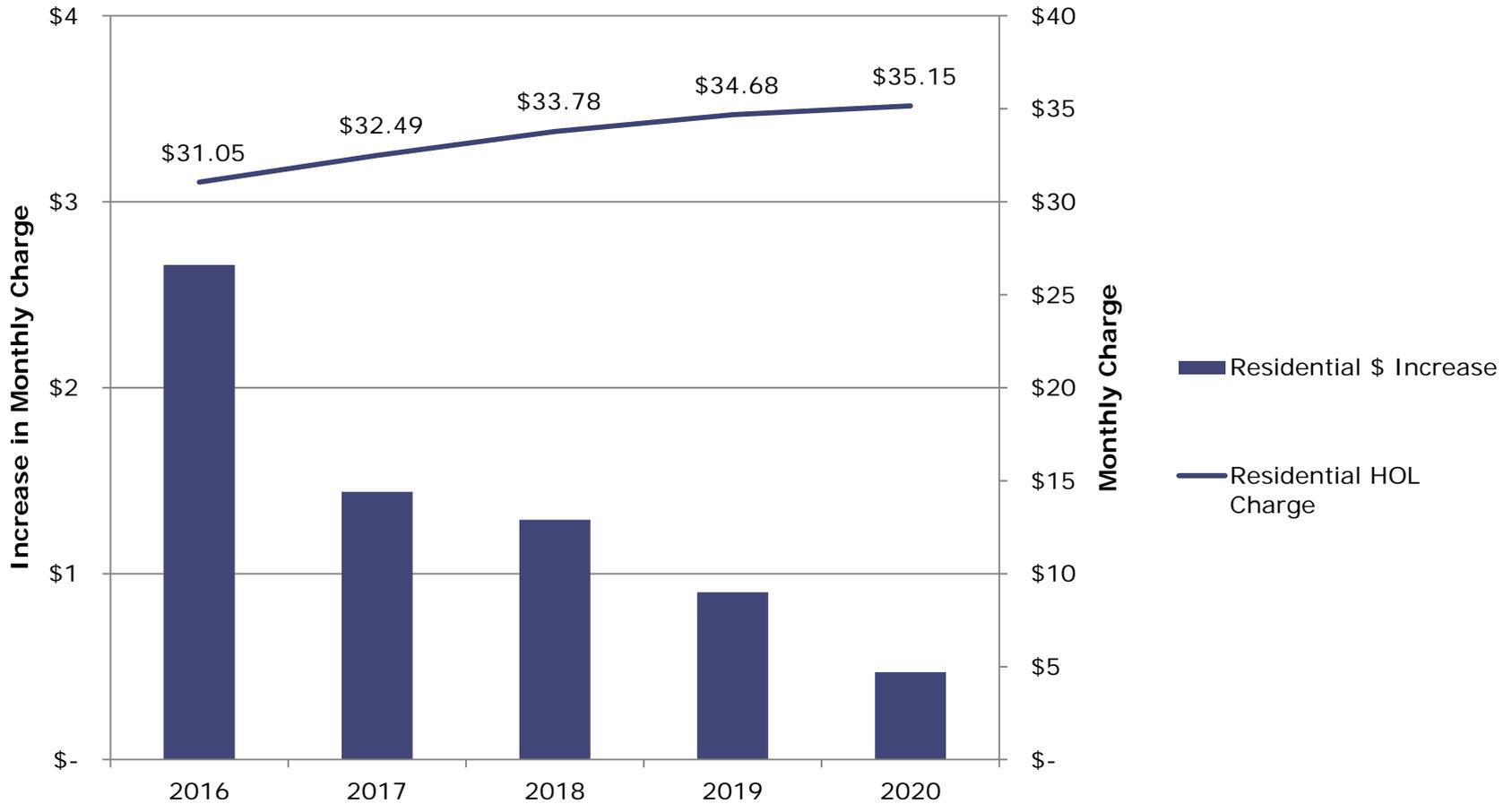
- > 6,086 Hydro Ottawa customers were consulted in March and April 2015
 - Focus groups
 - Online survey
 - Key accounts interviews
 - Telephone survey
- > Innovative Research is a reputable public opinion firm, conducting research for several Ontario utilities



5 YEAR SUMMARY OVERVIEW

Millions	2016	2017	2018	2019	2020
Capital	\$120	\$114	\$119	\$121	\$120
Y Factor	\$25	\$35	\$6	\$0	\$0
OM&A	\$87	\$90	\$93	\$96	\$99
Revenue Requirement from rates	\$177	\$187	\$198	\$207	\$213

RESIDENTIAL BILL IMPACTS



> THANK YOU