

Empirical Research in Support of Incentive Rate Setting in Ontario: Question & Answer Session

Larry Kaufmann, Senior Advisor
Pacific Economics Group

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Introduction

- On May 3, Pacific Economics Group (PEG) released a report that provided empirical analysis in support of incentive rate-setting in Ontario
- The May 2013 PEG report also contained specific recommendations on three elements of the Board's incentive rate adjustment formula
 - The inflation factor
 - The productivity factor
 - Stretch factors that apply to different efficiency “cohorts” in the electricity distribution industry

Introduction (con't)

- Today's presentation will:
 - Review our empirical research
 - Discuss the bases for our recommendations
 - Address stakeholder questions on this work

Outline

- Review of 3rd Gen IR empirical analysis
- Board Policy Direction in its October 18, 2012 Report of the Board, “A Renewed Regulatory Framework for Electricity Distributors: A Performance Based Approach” (the RRF Report)
- Data sources used in PEG’s current analysis
- PEG’s recommendations for incentive rate setting
 - More Ontario-specific inflation factor
 - TFP study for Ontario electricity distributors
 - Benchmarking electricity distributor total costs
 - Econometric benchmarking
 - Unit cost/peer group benchmarking
 - Stretch factors

Review of 3rd Gen IR

The rate adjustment formula in 3rd Gen IR had three main components:

1. An inflation factor;
2. An industry-wide productivity factor; and
3. A company-specific productivity stretch factor.

Review of 3rd Gen IR (con't)

Inflation factor	X-Factor: Industry-wide productivity factor	X-Factor: Company-specific productivity stretch factor
<p>Gross Domestic Product Implicit Price Index for final demand (GDP-IPI)</p>	<p>US electricity distribution industry used as proxy for Ontario</p> <p>US distributors' average TFP growth 1988-2006 = 0.72%</p>	<p>Three efficiency cohorts, based on two benchmarking studies of OM&A cost</p> <ul style="list-style-type: none"> • Statistically superior on econometrics and top quartile unit cost >> stretch factor = 0.2% • Statistically inferior on econometrics and bottom quartile unit cost >> stretch factor = 0.6% • All others >> stretch factor = 0.4%

Board Policy Direction in the RRF Report

Inflation Factor

- It is now appropriate to adopt a more industry-specific inflation factor
- Volatility will be mitigated by methodology adopted by Board
- Also:
 - Inflation factor must be constructed and updated using data that is readily available from public and objective sources (e.g. StatsCanada)
 - To the extent practicable, the component of inflation factor designed to adjust for non-labor price inflation should be indexed by Ontario distribution industry-specific indices
 - The component of the inflation factor that adjusts for labor prices will be indexed by an appropriate generic and off-the-shelf labor price index

Board Policy Direction in the RRF Report (con't)

Productivity Factor

- Intended to be the external benchmark which all distributors are expected to achieve
- Board will continue to build on its approach to benchmarking with further empirical work, including an Ontario TFP study
 - Productivity factor to be based on an index-based estimate of total factor productivity (TFP) growth in Ontario's electricity distribution industry
- >> PEG notes that external X factor critical to design of IR plans and creating appropriate incentives (Chapter 2 PEG report)

Board Policy Direction in the RRF Report (con't)

Benchmarking

- Board will continue to build on its approach to benchmarking with further empirical work, including Total Cost Benchmarking

Board Policy Direction in the RRF Report (con't)

Stretch Factor

- Intended to reflect the incremental efficiency gains distributors are expected to achieve under IR
- Can vary by distributor and depend on the efficiency of a given distributor at the outset of the IR plan
- The Board's approach in relation to the use and assignment of stretch factors will continue
 - Distributors will continue to be assigned annually to efficiency cohorts
 - Assignments will be made on the basis of total cost benchmarking evaluations
- The Board will further consider whether the current stretch factor values continue to be appropriate or whether there should be greater differentiation between the values

Data Sources for Empirical Analysis

- Ontario-specific data posted on the Board's website by Board staff
 - Main data source: RRR filings 2002-2011
- To obtain longer time series and other necessary data, Board staff has also posted:
 - Ontario MUDBANK data on capital 1989-1998
 - Smart meter capital additions data
 - Data on distributor ownership of high voltage equipment
 - Data on low voltage charges paid by embedded distributors to host distributors
- Ontario Hydro Retail System data not available
- Electricity distributor data 1999-2001 incomplete and many stakeholders expressed concern over the accuracy of the data

Data Sources for Empirical Analysis (con't)

- Measuring capital input an important part of the empirical work
- Capital input quantity begins with a “benchmark” capital year
 - Should be as distant from present as possible
 - Rationale for use of MUDBANK data
 - Used 1989 as benchmark year (except for six distributors)
 - Capital stocks built up using data on changes in gross capital 1989-1998

Data Sources for Empirical Analysis (con't)

- RRR data begin in 2002
- “Data gap” between 1997/98 and 2002
 - PEG inferred capital additions between these years
 - In most cases, we used differences in gross plant to infer these capital additions
- In some instances 2002 gross plant data implausible and we inferred using assumptions and process explained on p. 33 of May 2013 PEG report

Data Sources for Empirical Analysis (con't)

- It was also appropriate to develop separate cost measures for TFP and benchmarking analyses
- Benchmarking cost began with TFP cost measure but:
 1. Subtracted HV transformation capital and OM&A costs
 2. Added contributions in aid of construction to capital stock
 3. Added LV charges paid by embedded distributors to host distributors

Table 7

Cost Measures for Empirical Analysis

Industry TFP Growth		Distribution Cost Benchmarking	
Candidate Capital Costs:	Included in Study?	Candidate Capital Costs:	Included in Study?
Capital Benchmark Year: 1989*		Capital Benchmark Year: 1989*	
Transmission Substations > 50 KV Assets**	Yes	Transmission Substations > 50 KV Assets**	No
Gross Capital Expenditures	Yes	Gross Capital Expenditures	Yes
CIAC	No	CIAC	Yes
Smart Meter Expenditures	Yes	Smart Meter Expenditures	Yes
Candidate OM&A Costs:		Candidate OM&A Costs:	
Distribution OM&A	Yes	Distribution OM&A	Yes
High Volatage OM&A***	Yes	High Volatage OM&A***	No
Low Voltage Charges Paid to Host Distributors****	No	LV Charges Paid to Host Distributors****	Yes
Notes:			
* Exceptions are Hydro One, Algoma Power, Canadian Niagara Power, Greater Sudbury Power, Innisfill Hydro and PUC Distribution, where data before 2002 were not available			
** Account Number 1815			
*** Proxy High Voltage OM&A costs were calculated as the sum of OM&A in accounts 5014, 5015, and 5112			
**** Excludes Regulatory Asset Recovery Charges			



Inflation Factor Recommendation

PEG recommends a “three-factor” inflation factor

- Capital
 - capital service price constructed by PEG including the Electric Utility Construction Price Index (EUCPI)
 - WACC calculated using Board-approved cost of capital parameters
 - PEG calculated value of the economic, “geometric” depreciation rate
- Labour
 - the average weekly earnings for workers in Ontario
- Non-Labour OM&A
 - Canada GDP-IPI

PEG also recommends that inflation be measured as a three-year moving average of recommended inflation measure

Inflation Factor Recommendation (con't)

- Rationale
 - Components the best, feasible price indices for satisfying Board criteria
 - Leads to more accurate measure of industry input price inflation than alternatives
 - Easy to implement and update

Details of Recommended “Three Factor” IPI Inflation Factor

Year	Values of Current Inflation Factor		Values of Recommended Inflation Factor		
	May 1st	Jan 1st	Index	Annual Growth	3-Year Moving Avg
2002			100.00		
2003			101.10	1.09%	
2004			102.15	1.04%	
2005			103.94	1.74%	1.29%
2006	1.90%		104.07	0.12%	0.97%
2007	2.10%		106.90	2.68%	1.52%
2008	2.30%		109.45	2.36%	1.72%
2009	1.30%		110.82	1.24%	2.09%
2010	1.30%		113.55	2.44%	2.01%
2011	2.00%	1.70%	114.35	0.70%	1.46%
2012	1.60%	2.20%	112.51	-1.62%	0.51%

Productivity Factor Recommendation

- PEG estimated TFP growth in Ontario's electricity distribution using two methods:
 - Index-based measure of productivity growth >>> most important approach, as per Board guidance
 - Econometrics as supplement to index-based estimate of TFP trend

Productivity Factor Recommendation (con't)

- Toronto Hydro and Hydro One excluded because statistical tests show they are significantly and materially impacting the industry TFP trend
 - Impact on cost elasticities
 - Impact on industry cost trend
- In incentive regulation, industry TFP trend should not be materially impacted by one or two utilities in the industry

Table 14

Output Quantity Trends for Ontario Power Distributors, 2002-2011

Year	Total Customers		Peak Demand (KW)		Delivery Volume (KWh)		Output Quantity Index	
	Level	Growth	Level	Growth	Level	Growth	Index	Growth
2002	2,525,210		14,953,754		65,523,878,635		100.00	
2003	2,590,817	2.6%	15,124,270	1.1%	67,480,321,397	2.9%	101.94	1.9%
2004	2,647,118	2.1%	15,282,376	1.0%	68,588,997,365	1.6%	103.52	1.5%
2005	2,703,821	2.1%	15,710,004	2.8%	72,989,180,570	6.2%	106.61	2.9%
2006	2,748,114	1.6%	16,004,095	1.9%	71,323,881,577	-2.3%	107.95	1.3%
2007	2,781,589	1.2%	16,030,411	0.2%	75,581,326,413	5.8%	109.33	1.3%
2008	2,823,654	1.5%	16,040,362	0.1%	74,626,460,193	-1.3%	109.83	0.5%
2009	2,864,567	1.4%	16,095,983	0.3%	71,454,871,565	-4.3%	110.05	0.2%
2010	2,885,251	0.7%	16,172,034	0.5%	71,603,206,532	0.2%	110.64	0.5%
2011	2,919,186	1.2%	16,287,524	0.7%	71,223,956,582	-0.5%	111.46	0.7%
Average Annual								
Growth Rate								
2002-2011		1.61%		0.95%		0.93%		1.21%

Table 15

Capital Quantity and Cost Trends for Ontario Power Distributors, 2002-2011

Year	Capital Cost		Capital Price Index		Capital Quantity	
	Index	Growth	Index	Growth	Index	Growth
2002	100.00		100.00		100.00	
2003	101.44	1.4%	100.47	0.5%	100.97	1.0%
2004	103.28	1.8%	100.66	0.2%	102.60	1.6%
2005	105.91	2.5%	101.59	0.9%	104.25	1.6%
2006	105.93	0.0%	100.84	-0.7%	105.05	0.8%
2007	111.44	5.1%	103.31	2.4%	107.87	2.6%
2008	115.69	3.7%	105.82	2.4%	109.33	1.3%
2009	117.22	1.3%	107.10	1.2%	109.45	0.1%
2010	121.02	3.2%	109.31	2.0%	110.71	1.2%
2011	123.06	1.7%	109.45	0.1%	112.41	1.5%
Average Annual Growth Rate 2002-2011		2.31%		1.00%		1.30%

Table 16

OM&A Quantity Trends for Ontario Electric Distributors, 2002-2011

Year	OM&A Cost		OM&A Price Index		OM&A Quantity	
	Index	Growth	Index	Growth	Index	Growth
2002	100.000		100.000		100.000	
2003	104.040	4.0%	102.142	2.12%	101.858	1.84%
2004	105.063	1.0%	104.672	2.45%	100.373	-1.47%
2005	107.207	2.0%	107.961	3.09%	99.302	-1.07%
2006	110.827	3.3%	109.664	1.57%	101.061	1.76%
2007	119.077	7.2%	113.133	3.11%	105.254	4.07%
2008	123.993	4.0%	115.771	2.31%	107.102	1.74%
2009	126.377	1.9%	117.277	1.29%	107.759	0.61%
2010	127.286	0.7%	120.975	3.10%	105.217	-2.39%
2011	136.679	7.1%	122.969	1.63%	111.150	5.49%
Average Annual Growth Rate 2002-2011		3.47%		2.30%		1.17%

Table 17

Input Quantity Trends for Ontario Electric Distributors, 2002-2011

Year	Capital Quantity		O&M Quantity		Input Quantity Index	
	Index	Growth	Index	Growth	Index	Growth
2002	100.00		100.00		100.00	
2003	100.97	1.0%	101.86	1.8%	101.29	1.3%
2004	102.60	1.6%	100.37	-1.5%	101.77	0.5%
2005	104.25	1.6%	99.30	-1.1%	102.39	0.6%
2006	105.05	0.8%	101.06	1.8%	103.56	1.1%
2007	107.87	2.6%	105.25	4.1%	106.91	3.2%
2008	109.33	1.3%	107.10	1.7%	108.52	1.5%
2009	109.45	0.1%	107.76	0.6%	108.85	0.3%
2010	110.71	1.2%	105.22	-2.4%	108.64	-0.2%
2011	112.41	1.5%	111.15	5.5%	111.99	3.0%
Average Annual Growth Rate						
2002-2011		1.30%		1.17%		1.26%

Table 18

TFP Index Calculation for Ontario Power Distributors, 2002-2011

Year	Output Quantity Index		Input Quantity Index		TFP Index	
	Index	Growth	Index	Growth	Index	Growth
2002	100.00		100.00		100.00	
2003	101.94	1.9%	101.29	1.3%	100.63	0.63%
2004	103.52	1.5%	101.77	0.5%	101.72	1.08%
2005	106.61	2.9%	102.39	0.6%	104.12	2.32%
2006	107.95	1.3%	103.56	1.1%	104.24	0.12%
2007	109.33	1.3%	106.91	3.2%	102.26	-1.91%
2008	109.83	0.5%	108.52	1.5%	101.21	-1.04%
2009	110.05	0.2%	108.85	0.3%	101.10	-0.10%
2010	110.64	0.5%	108.64	-0.2%	101.84	0.73%
2011	111.46	0.7%	111.99	3.0%	99.53	-2.30%
Average Annual Growth Rate						
2002-2011		1.21%		1.26%		-0.05%

Productivity Factor Recommendation (con't)

- PEG recommends productivity factor of zero
 - consistent with both index-based (-0.05%) and econometric (-0.03%) estimates of TFP growth for Ontario electricity distribution industry
- Rationale
 - Productivity factor of zero is reasonable
 - Slow growth in industry TFP is primarily due to slow output growth, which is expected to continue
 - Negative productivity factor not warranted
 - Stretch factors will still lead to “real” price declines for most customers

Total Cost Benchmarking Recommendations

PEG developed two models to benchmark distributors' total cost performance and to inform stretch factor assignments

- econometric
- unit cost/peer group

Total Cost Benchmarking Recommendations (con't)

- Business Condition Analyses
 - Extensive consultation on options with Working Group and industry
 - Examined many different variables
- Same set of statistically significant business conditions used in econometric and unit cost/peer group analyses

Total Cost Benchmarking Recommendations (con't)

- Econometric Model
 - Estimates main “drivers” of electricity distribution costs in Ontario
 - Model used to predict cost of each distributor
 - Difference between actual and predicted cost (plus or minus “confidence intervals”) identifies statistically superior, statistically inferior, and average cost performers
- Unit Cost/Peer Group Model
 - Peer group benchmarking compares each distributors’ unit cost (i.e. total cost divided by output) to the average for the peer group
 - Peer groups determined based on similarities in cost drivers identified in econometric model

Econometric Benchmarking

Significant cost drivers

Outputs: Customer numbers
System peak capacity
kWh

Other Business Conditions:

Average line length (km)
2011 Service territory
Share of lines underground
Share of 2011 customers added in last 10 years

Econometric Benchmarking (con't)

Econometric benchmarking (Table 13) shows

- Nine distributors significantly superior cost performers at 90% confidence (and five of these significantly superior at 95% confidence)
- 17 distributors significantly inferior cost performers at 90% confidence (and twelve of these significantly inferior at 95% confidence)

Peer Group/Unit Cost Benchmarking

- Objective was to select peer groups
 - Using similarity in cost drivers
 - Through a transparent process
 - Where peer groups are above a critical size (i.e. not as small as four distributors)
- Process began with seven cost drivers identified in econometric analysis

Peer Group/Unit Cost Benchmarking (con't)

- Four cost drivers aggregated into overall output index based on estimated cost elasticities
 - Customer numbers
 - System peak capacity
 - kWh
 - Average line length
- Each distributor's aggregate output expressed relative to sample mean output index in industry
 - >> bilateral output index

Peer Group/Unit Cost Benchmarking (con't)

- Each distributor's bilateral index then plotted against its average area in two-dimensional graph
 - >>creates four quadrants
 - >>one quadrant empty, three quadrants remain
- Two remaining cost drivers
 1. Percent of lines underground
 2. Share of 2011 customers added in last 10 years
- When a given distributor's values for these two cost drivers are considered relative to their sample means, there are four possible options

Peer Group/Unit Cost Benchmarking (con't)

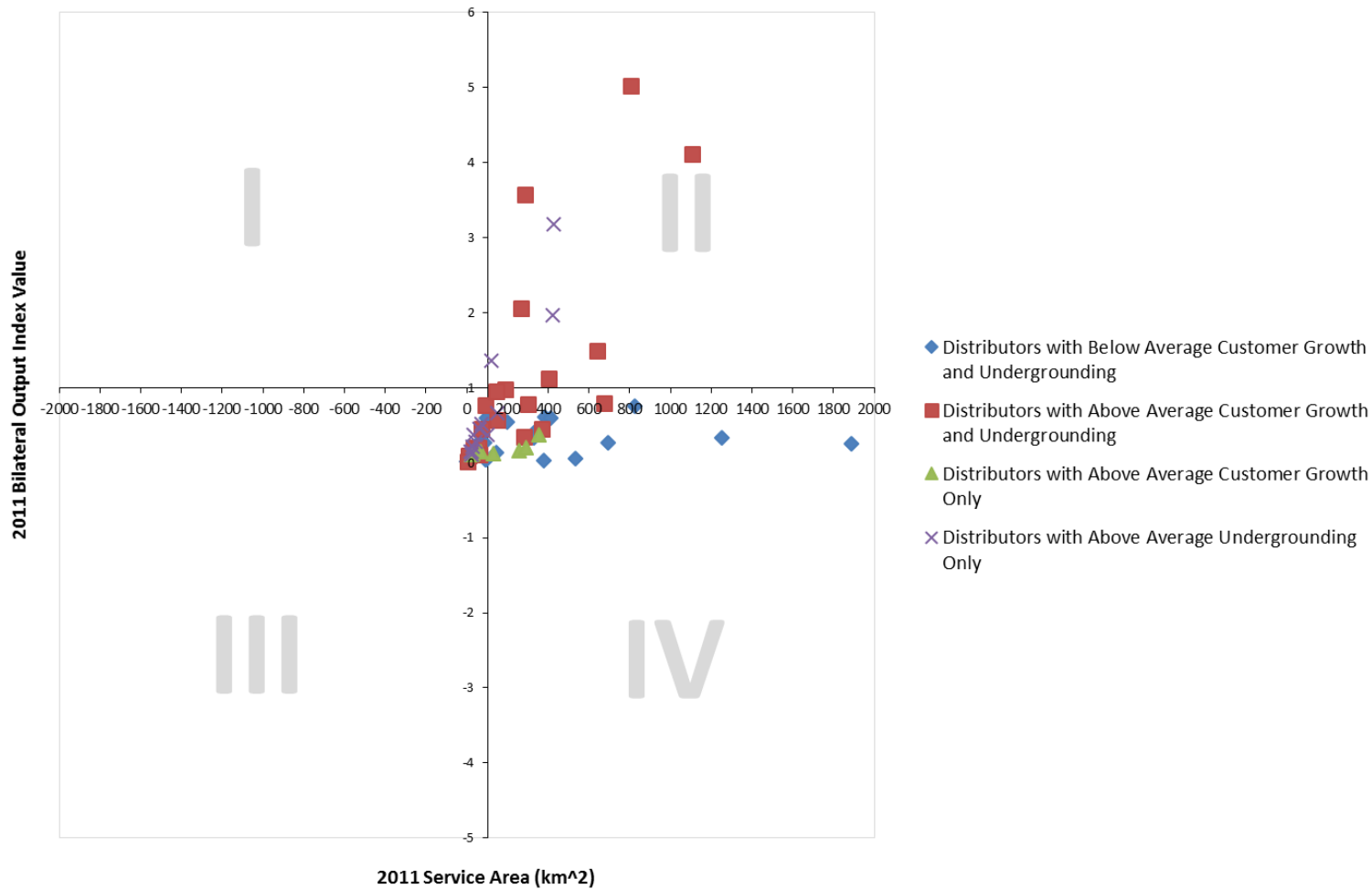
Four options:

1. Above average customer growth only >> X
2. Above average undergrounding only >> triangle
3. Above average on both >> square
4. Below average on both >> diamond

These options apply in each of the three populated quadrants

>> (three quadrants) x (four options) of other variables = twelve different groups of distributors based on similarities in seven cost driver variables

Chart 1
Cost Drivers and Ontario Peer Groups



Alternate Chart

Cost Drivers and Ontario Peer Groups

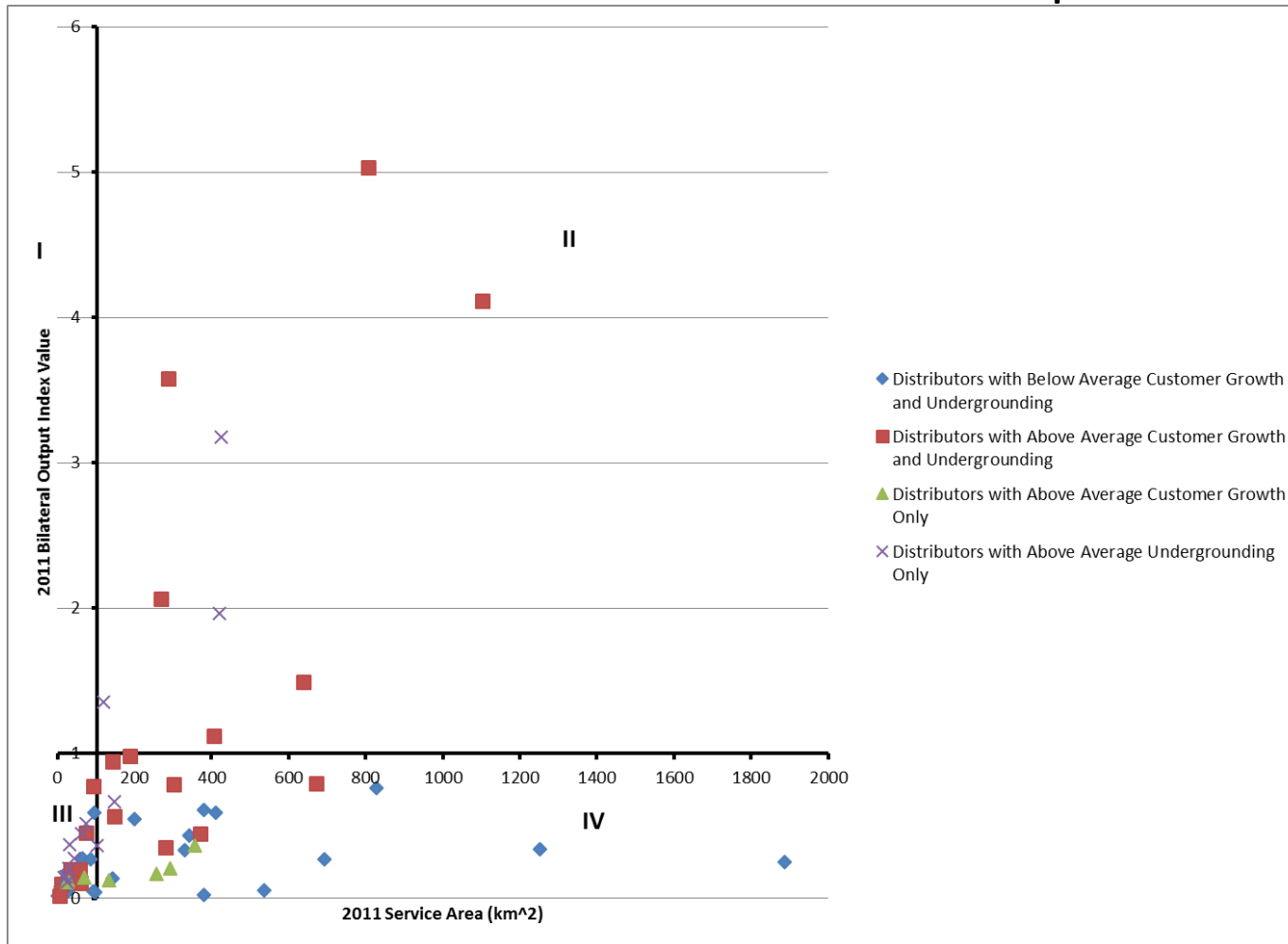


Table 22

Potential Ontario Distributor Peer Groups

Quadrant	Group 1: Above average output, above median area, above average undergrounding	Group 2: Above average output, above median area, above average customer growth	Group 3: Above average output, above median area, above average undergrounding and customer growth	Group 4: Above average output, above median area, below average undergrounding and customer growth
II	ENWIN UTILITIES LTD.	None	KITCHENER-WILMOT HYDRO INC.	HYDRO ONE NETWORKS INC.
	LONDON HYDRO INC.		VERIDIAN CONNECTIONS INC.	
	HORIZON UTILITIES CORPORATION		HYDRO OTTAWA LIMITED	
	TORONTO HYDRO-ELECTRIC SYSTEM LIMITED		ENERSOURCE HYDRO MISSISSAUGA INC. POWERSTREAM INC.	
			HYDRO ONE BRAMPTON NETWORKS INC.	
	Group 5: Below average output, above median area, above average undergrounding	Group 6: Below average output, above median area, above average customer growth	Group 7: Below average output, above median area, above average undergrounding and customer growth	Group 8: Below average output, above median area, below average undergrounding and customer growth
III	OSHAWA PUC NETWORKS INC.	CANADIAN NIAGARA POWER INC.	WATERLOO NORTH HYDRO INC.	ATIKOKAN HYDRO INC.
		BRANT COUNTY POWER INC.	CAMBRIDGE AND NORTH DUMFRIES HYDRO INC.	ALGOMA POWER INC.
		INNISFIL HYDRO DISTRIBUTION SYSTEMS LI	HALTON HILLS HYDRO INC.	SIOUX LOOKOUT HYDRO INC.
		NIAGARA-ON-THE-LAKE HYDRO INC.	MILTON HYDRO DISTRIBUTION INC.	HALDIMAND COUNTY HYDRO INC.
			BURLINGTON HYDRO INC.	NORFOLK POWER DISTRIBUTION INC.
			WHITBY HYDRO ELECTRIC CORPORATION	PUC DISTRIBUTION INC.
			OAKVILLE HYDRO ELECTRICITY DISTRIBUTION INC.	NORTH BAY HYDRO DISTRIBUTION LIMITED
				THUNDER BAY HYDRO ELECTRICITY DISTRIBUTION INC.
				ERIE THAMES POWERLINES CORPORATION
				LAKELAND POWER DISTRIBUTION LTD.
			GREATER SUDBURY HYDRO INC.	
			NIAGARA PENINSULA ENERGY INC.	
			BLUEWATER POWER DISTRIBUTION CORPORATION	
	Group 9: Below average output, below median area, above average undergrounding	Group 10: Below average output, below median area, above average customer growth	Group 11: Below average output, below median area, above average undergrounding and customer growth	Group 12: Below average output, below median area, below average undergrounding and customer growth
IV	PETERBOROUGH DISTRIBUTION INCORPORATED	LAKEFRONT UTILITIES INC.	ST. THOMAS ENERGY INC.	NORTHERN ONTARIO WIRES INC.
	FESTIVAL HYDRO INC.	MIDLAND POWER UTILITY CORPORATION	COLLUS POWER CORPORATION	RENFREW HYDRO INC.
	TILLSONBURG HYDRO INC.	GRIMSBY POWER INCORPORATED	CENTRE WELLINGTON HYDRO LTD.	CHAPLEAU PUBLIC UTILITIES CORPORATION
	KINGSTON HYDRO CORPORATION		COOPERATIVE HYDRO EMBRUN INC.	ESPANOLA REGIONAL HYDRO DISTRIBUTION CORPORATION
	WOODSTOCK HYDRO SERVICES INC.		WASAGA DISTRIBUTION INC.	PARRY SOUND POWER CORPORATION
	BRANTFORD POWER INC.		NEWMARKET-TAY POWER DISTRIBUTION LTD.	KENORA HYDRO ELECTRIC CORPORATION LTD.
	E.L.K. ENERGY INC.		GUELPH HYDRO ELECTRIC SYSTEMS INC.	RIDEAU ST. LAWRENCE DISTRIBUTION INC.
	ORANGEVILLE HYDRO LIMITED			FORT FRANCES POWER CORPORATION
	ESSEX POWERLINES CORPORATION			OTTAWA RIVER POWER CORPORATION
				WELLINGTON NORTH POWER INC.
				HYDRO 2000 INC.
				HYDRO HAWKESBURY INC.
				HEARST POWER DISTRIBUTION COMPANY LIMITED
			ORILLIA POWER DISTRIBUTION CORPORATION	
			WEST COAST HURON ENERGY INC.	
			WESTARIO POWER INC.	
			ENTEGRUS POWERLINES	
			WELLAND HYDRO-ELECTRIC SYSTEM CORP.	

Potential Ontario Distributor Peer Groups (con't)

- Group 1
 - Group 2
 - Group 3
 - Group 4
- Peer Group A

- Group 10
 - Group 11
- Peer Group D

- Group 12 – Peer Group E

- Group 6
 - Group 7
- Peer Group B

- Group 5
 - Group 9
- Peer Group F

- Group 8 – Peer Group C

Table 23

Peer Groups for Ontario Distributors

Group A- Large Output, Extensive Area	Group B- Small Output, Extensive Area, Above Average Customer Growth	Group C- Small Output, Extensive Area, Below Average Undergrounding and Growth
ENERSOURCE HYDRO MISSISSAUGA INC.	BRANT COUNTY POWER INC.	ALGOMA POWER INC.
ENWIN UTILITIES LTD.	BURLINGTON HYDRO INC.	ATIKOKAN HYDRO INC.
HORIZON UTILITIES CORPORATION	CAMBRIDGE AND NORTH DUMFRIES HYDRO INC.	BLUEWATER POWER DISTRIBUTION CORPORATION
HYDRO ONE BRAMPTON NETWORKS INC.	CANADIAN NIAGARA POWER INC.	ERIE THAMES POWERLINES CORPORATION
HYDRO ONE NETWORKS INC.	HALTON HILLS HYDRO INC.	GREATER SUDBURY HYDRO INC.
HYDRO OTTAWA LIMITED	INNISFIL HYDRO DISTRIBUTION SYSTEMS LIMITED	HALDIMAND COUNTY HYDRO INC.
KITCHENER-WILMOT HYDRO INC.	MILTON HYDRO DISTRIBUTION INC.	LAKELAND POWER DISTRIBUTION LTD.
LONDON HYDRO INC.	NIAGARA-ON-THE-LAKE HYDRO INC.	NIAGARA PENINSULA ENERGY INC.
POWERSTREAM INC.	OAKVILLE HYDRO ELECTRICITY DISTRIBUTION INC.	NORFOLK POWER DISTRIBUTION INC.
TORONTO HYDRO-ELECTRIC SYSTEM	WATERLOO NORTH HYDRO INC.	NORTH BAY HYDRO DISTRIBUTION LIMITED
VERIDIAN CONNECTIONS INC.	WHITBY HYDRO ELECTRIC CORPORATION	PUC DISTRIBUTION INC.
		SIoux LOOKOUT HYDRO INC.
		THUNDER BAY HYDRO ELECTRICITY DISTRIBUTION INC.
Group D- Small Output, Small Area, Above Average Customer Growth	Group E- Small Output, Small Area, Below Average Customer Growth	Group F- Small Output, Above Average Undergrounding, Below Average Customer Growth
CENTRE WELLINGTON HYDRO LTD.	CHAPLEAU PUBLIC UTILITIES CORPORATION	BRANTFORD POWER INC.
COLLUS POWER CORPORATION	ENTEGRUS POWERLINES	E.L.K. ENERGY INC.
COOPERATIVE HYDRO EMBRUN INC.	ESPANOLA REGIONAL HYDRO DISTRIBUTION CORPORATION	ESSEX POWERLINES CORPORATION
GRIMSBY POWER INCORPORATED	FORT FRANCES POWER CORPORATION	FESTIVAL HYDRO INC.
GUELPH HYDRO ELECTRIC SYSTEMS INC.	HEARST POWER DISTRIBUTION COMPANY LIMITED	KINGSTON HYDRO CORPORATION
LAKEFRONT UTILITIES INC.	HYDRO 2000 INC.	ORANGEVILLE HYDRO LIMITED
MIDLAND POWER UTILITY CORPORATION	HYDRO HAWKESBURY INC.	OSHAWA PUC NETWORKS INC.
NEWMARKET-TAY POWER DISTRIBUTION	KENORA HYDRO ELECTRIC CORPORATION LTD.	PETERBOROUGH DISTRIBUTION INCORPORATED
ST. THOMAS ENERGY INC.	NORTHERN ONTARIO WIRES INC.	TILLSONBURG HYDRO INC.
WASAGA DISTRIBUTION INC.	ORILLIA POWER DISTRIBUTION CORPORATION	WOODSTOCK HYDRO SERVICES INC.
	OTTAWA RIVER POWER CORPORATION	
	PARRY SOUND POWER CORPORATION	
	RENFREW HYDRO INC.	
	RIDEAU ST. LAWRENCE DISTRIBUTION INC.	
	WELLAND HYDRO-ELECTRIC SYSTEM CORP.	
	WELLINGTON NORTH POWER INC.	
	WEST COAST HURON ENERGY INC.	
	WESTARIO POWER INC.	

Table 24

Unit Costs By Peer Group

Group A- Large Output, Extensive Area		
Company Name	2009-2011 Unit Cost Average	Benchmark Unit Cost Comparison
DISTRIBUTOR 63	39,751,187.48	-8.2%
DISTRIBUTOR 34	41,480,380.51	-4.2%
DISTRIBUTOR 19	33,331,805.58	-23.0%
DISTRIBUTOR 7	38,012,939.23	-12.2%
DISTRIBUTOR 26	73,591,195.80	69.9%
DISTRIBUTOR 32	40,345,821.90	-6.8%
DISTRIBUTOR 14	33,249,560.45	-23.2%
DISTRIBUTOR 43	32,708,205.57	-24.5%
DISTRIBUTOR 52	41,092,822.54	-5.1%
DISTRIBUTOR 68	56,014,118.39	29.3%
DISTRIBUTOR 60	46,789,311.33	8.0%
Group Average	43,306,122.62	
Group B- Small Output, Extensive Area, High Growth		
Company Name	2009-2011 Unit Cost Average	Benchmark Unit Cost Comparison
DISTRIBUTOR 36	48,302,776.30	4.6%
DISTRIBUTOR 23	36,206,139.62	-21.6%
DISTRIBUTOR 2	34,737,859.61	-24.7%
DISTRIBUTOR 42	53,188,192.30	15.2%
DISTRIBUTOR 44	50,240,894.03	8.8%
DISTRIBUTOR 58	58,365,014.83	26.4%
DISTRIBUTOR 27	48,546,484.60	5.2%
DISTRIBUTOR 16	45,072,995.81	-2.4%
DISTRIBUTOR 13	47,231,842.21	2.3%
DISTRIBUTOR 50	41,599,533.16	-9.9%
DISTRIBUTOR 6	44,302,032.49	-4.0%
Group Average	46,163,069.54	
Group C- Small Output, Extensive Area, Below Average Undergrounding and Growth		
Company Name	2009-2011 Unit Cost Average	Benchmark Unit Cost Comparison
DISTRIBUTOR 49	113,948,443.50	146.8%
DISTRIBUTOR 37	56,725,011.83	22.9%
DISTRIBUTOR 22	39,162,445.49	-15.2%
DISTRIBUTOR 45	56,934,558.15	23.3%
DISTRIBUTOR 70	46,933,979.09	1.7%
DISTRIBUTOR 69	43,539,691.92	-5.7%
DISTRIBUTOR 59	70,795,463.14	53.4%
DISTRIBUTOR 1	46,888,458.20	1.6%
DISTRIBUTOR 56	48,865,910.50	5.9%
DISTRIBUTOR 20	41,340,243.18	-10.4%
DISTRIBUTOR 57	35,016,855.16	-24.1%
DISTRIBUTOR 18	62,569,064.40	35.5%
DISTRIBUTOR 64	43,401,768.26	-6.0%
Group Average	54,317,068.68	

Group D- Small Output, Small Area, High Growth		
Company Name	2009-2011 Unit Cost Average	Benchmark Unit Cost Comparison
DISTRIBUTOR 29	50,486,278.41	16.6%
DISTRIBUTOR 62	51,108,226.00	18.0%
DISTRIBUTOR 25	77,988,639.03	80.1%
DISTRIBUTOR 35	38,490,822.81	-11.1%
DISTRIBUTOR 72	43,500,450.88	0.4%
DISTRIBUTOR 21	47,924,777.74	10.7%
DISTRIBUTOR 55	59,360,554.75	37.1%
DISTRIBUTOR 39	40,069,741.45	-7.5%
DISTRIBUTOR 4	36,947,872.00	-14.7%
DISTRIBUTOR 5	51,492,288.62	18.9%
Group Average	49,736,965.17	
Group E- Small Output, Small Area, Slow Growth		
Company Name	2009-2011 Unit Cost Average	Benchmark Unit Cost Comparison
DISTRIBUTOR 47	39,701,692.31	-14.0%
DISTRIBUTOR 30	36,471,578.22	-21.0%
DISTRIBUTOR 10	66,658,364.04	44.4%
DISTRIBUTOR 40	44,789,087.22	-3.0%
DISTRIBUTOR 24	46,947,846.18	1.7%
DISTRIBUTOR 17	57,964,312.49	25.6%
DISTRIBUTOR 73	35,933,788.93	-22.2%
DISTRIBUTOR 31	41,801,142.67	-9.4%
DISTRIBUTOR 15	39,196,204.86	-15.1%
DISTRIBUTOR 67	49,965,446.91	8.2%
DISTRIBUTOR 12	69,396,290.62	50.3%
DISTRIBUTOR 53	57,293,999.19	24.1%
DISTRIBUTOR 48	77,119,044.59	67.1%
DISTRIBUTOR 28	44,399,971.02	-3.8%
DISTRIBUTOR 54	33,295,297.85	-27.9%
DISTRIBUTOR 46	66,963,653.79	45.1%
DISTRIBUTOR 61	36,349,509.96	-21.3%
DISTRIBUTOR 71	55,622,140.60	20.5%
Group Average	49,992,742.86	
Group F- Small Output, Above Average Undergrounding, Below Average Growth		
Company Name	2009-2011 Unit Cost Average	Benchmark Unit Cost Comparison
DISTRIBUTOR 33	37,081,179.83	-14.4%
DISTRIBUTOR 11	44,017,464.50	1.6%
DISTRIBUTOR 65	51,829,376.32	19.7%
DISTRIBUTOR 66	43,079,283.82	-0.5%
DISTRIBUTOR 8	32,982,826.86	-23.8%
DISTRIBUTOR 41	55,354,574.79	27.8%
DISTRIBUTOR 38	37,037,119.02	-14.5%
DISTRIBUTOR 51	47,946,122.78	10.7%
DISTRIBUTOR 3	38,269,240.30	-11.6%
DISTRIBUTOR 9	53,089,710.56	22.6%
Group Average	44,068,689.88	

Table 25

Unit Cost Evaluations

	2009-2011 Average / 2009-2011 Group Average	Efficiency Ranking	
	[A]		
DISTRIBUTOR 57	-35.5%	1	
DISTRIBUTOR 54	-33.4%	2	
DISTRIBUTOR 73	-28.1%	3	
DISTRIBUTOR 22	-27.9%	4	
DISTRIBUTOR 61	-27.3%	5	
DISTRIBUTOR 30	-27.0%	6	
DISTRIBUTOR 4	-25.7%	7	
DISTRIBUTOR 8	-25.2%	8	Top Quintile
DISTRIBUTOR 2	-24.7%	9	
DISTRIBUTOR 43	-24.5%	10	
DISTRIBUTOR 20	-23.9%	11	
DISTRIBUTOR 14	-23.2%	12	
DISTRIBUTOR 19	-23.0%	13	
DISTRIBUTOR 35	-22.6%	14	
DISTRIBUTOR 15	-21.6%	15	
DISTRIBUTOR 23	-21.6%	16	
DISTRIBUTOR 47	-20.6%	17	
DISTRIBUTOR 64	-20.1%	18	
DISTRIBUTOR 69	-19.8%	19	
DISTRIBUTOR 39	-19.4%	20	
DISTRIBUTOR 31	-16.4%	21	Second Quintile
DISTRIBUTOR 38	-16.0%	22	
DISTRIBUTOR 33	-15.9%	23	
DISTRIBUTOR 1	-13.7%	24	
DISTRIBUTOR 70	-13.6%	25	
DISTRIBUTOR 3	-13.2%	26	
DISTRIBUTOR 72	-12.5%	27	
DISTRIBUTOR 7	-12.2%	28	
DISTRIBUTOR 28	-11.2%	29	
DISTRIBUTOR 40	-10.4%	30	
DISTRIBUTOR 56	-10.0%	31	
DISTRIBUTOR 50	-9.9%	32	
DISTRIBUTOR 63	-8.2%	33	
DISTRIBUTOR 32	-6.8%	34	
DISTRIBUTOR 24	-6.1%	35	
DISTRIBUTOR 52	-5.1%	36	Third Quintile
DISTRIBUTOR 34	-4.2%	37	
DISTRIBUTOR 6	-4.0%	38	
DISTRIBUTOR 21	-3.6%	39	
DISTRIBUTOR 16	-2.4%	40	
DISTRIBUTOR 66	-2.2%	41	
DISTRIBUTOR 11	-0.1%	42	
DISTRIBUTOR 67	-0.1%	43	
DISTRIBUTOR 29	1.5%	44	

	2009-2011 Average / 2009-2011 Group Average	Efficiency Ranking	
	[A]		
DISTRIBUTOR 13	2.3%	45	
DISTRIBUTOR 62	2.8%	46	
DISTRIBUTOR 5	3.5%	47	
DISTRIBUTOR 37	4.4%	48	
DISTRIBUTOR 36	4.6%	49	
DISTRIBUTOR 45	4.8%	50	
DISTRIBUTOR 27	5.2%	51	
DISTRIBUTOR 60	8.0%	52	Fourth Quintile
DISTRIBUTOR 51	8.8%	53	
DISTRIBUTOR 44	8.8%	54	
DISTRIBUTOR 71	11.3%	55	
DISTRIBUTOR 53	14.6%	56	
DISTRIBUTOR 18	15.2%	57	
DISTRIBUTOR 42	15.2%	58	
DISTRIBUTOR 17	15.9%	59	
DISTRIBUTOR 65	17.6%	60	
DISTRIBUTOR 55	19.3%	61	
DISTRIBUTOR 9	20.5%	62	
DISTRIBUTOR 41	25.6%	63	
DISTRIBUTOR 58	26.4%	64	
DISTRIBUTOR 68	29.3%	65	Bottom Quintile
DISTRIBUTOR 59	30.3%	66	
DISTRIBUTOR 10	33.3%	67	
DISTRIBUTOR 46	33.9%	68	
DISTRIBUTOR 12	38.8%	69	
DISTRIBUTOR 48	54.3%	70	
DISTRIBUTOR 25	56.8%	71	
DISTRIBUTOR 26	69.9%	72	
DISTRIBUTOR 49	109.8%	73	

Stretch Factor Recommendations

PEG recommends

- there be five efficiency cohorts
 - >> increasing the number of cohorts makes it easier for distributors to migrate to higher cohorts and therefore benefit from actions to cut costs
- the econometric benchmarking model and unit cost benchmarking model continue to be used to establish distributors into efficiency cohorts
- Stretch factor values based on judgment:
 - Max 0.6% as per 3rd Gen IR
 - Min 0.0% to encourage and reward efforts to reduce unit cost

Stretch Factor Recommendations (con't)

Cohort I: Significantly superior econometric benchmarking
Top quintile unit cost benchmarking
Stretch factor = 0

Cohort II: Significantly superior econometric benchmarking
Second quintile unit cost benchmarking
Stretch factor = 0.15%

Cohort IV: Significantly inferior econometric benchmarking
Fourth quintile unit cost benchmarking
Stretch factor = 0.45%

Cohort V: Significantly inferior econometric benchmarking
Fifth quintile unit cost benchmarking
Stretch factor 0.6%

Cohort III: All others
Stretch factor 0.3%

Comparison 3rd Gen IR and 4th Gen IR

	3rd Gen IR	4th Gen IR
Inflation Factor	GDP-IPI for Canada	IPI for Ontario LDCs, three-year moving average
Productivity Factor	Proxy from US LDCs =0.72%	TFP trend for Ontario LDC's =0%
Stretch Factor	Three cohorts OM&A benchmarking 0.2% minimum 0.6% maximum	Five cohorts Total cost benchmarking 0% minimum 0.6% maximum

Conclusion

- PEG believes its recommendations are consistent with the Board's Policy direction in its RRF Report
- More Ontario-specific inflation factor possible; volatility can be mitigated in a straightforward way
- Low value of productivity factor mostly reflects slow growth in output quantity
- Benchmarking suggests some distributors can still achieve significant efficiency gains through cost-cutting
- 4th Gen IR should strengthen incentive to pursue incremental efficiency gains